How do our graduates affect student learning?

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Abstract

In this research project we are investigating how our graduates affect student learning in their classrooms. Participants included graduates of our teacher education program who hold jobs teaching within driving distance of our university. Information was gathered through a classroom observation and interview with each graduate. Results will be analyzed when we can thoroughly and carefully code the data.

Keywords: CAEP accreditation; evidence of student learning; teacher education; teacher work samples; novice teachers

One of the challenging tasks of teacher education programs is to demonstrate whether their graduates are affecting p-12 student learning and to what degree the graduates are applying the professional knowledge, skills, and dispositions that we expect them to demonstrate. Traditionally graduates have been more influenced by the apprenticeship of observation than by their university studies (Lortie, 1975, p. 19) however researchers have recently found that graduates of schools that have successfully transformed their teacher education programs feel prepared for teaching, earn higher ratings from their supervisors, and contribute more to student learning (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Darling-Hammond, 2006; Darling-Hammond & Bransford, 2005). The purpose of this research project is to investigate to what degree our graduates are affecting p-12 student learning and to what degree the graduates are applying the professional knowledge, skills, and dispositions that we expect them to demonstrate.

Impact of Teacher Preparation Programs on Student Learning in K-12 Environments

Teacher education programs play a crucial role in shaping the future of education by preparing individuals to become effective educators. The impact of these programs on student learning is a matter of significant importance, as the quality of teachers directly influences educational outcomes (Darling-Hammond, 2017). Research indicates that the design and structure of teacher education programs significantly influence educators' preparedness and, subsequently, their impact on student learning. Darling-Hammond (2017) emphasizes the importance of rigorous and clinically-rich teacher preparation programs in producing educators better equipped to meet diverse student needs. Preservice teachers find value in real-life classroom practice with the right mentors (Maskit & Orland-Barak, 2015). Student teaching

experiences underscore the importance of mentor teachers and has led to worldwide initiatives advocating for intensified, lengthened, and enriched field experiences (Clarke et al., 2014; Valencia et al., 2009). Challenges faced include managing tensions between preservice teachers' beliefs and program expectations (Opfer & Pedder, 2011).

Teacher Education Programs & K-12 Student Achievement

Darling-Hammond (2017) argues that teachers completing rigorous education programs are more likely to positively impact K-12 student achievement. Preservice teachers commonly express that the most meaningful aspect of their preparation involves opportunities to practice teaching in real-life classrooms with the right mentors (Maskit & Orland-Barak, 2015). Student teaching underscores the influential role of mentor teachers (Clarke et al., 2014; Wang & Odell, 2002). The significance of the student teaching component has led to worldwide policy initiatives advocating intensified, lengthened, and enriched field experiences for preservice teachers (Valencia et al., 2009). These initiatives emphasize student-centered teaching practices aligned with reformed school curriculum standards, holding field-based teacher preparation accountable for desired teaching practices and student learning outcomes (Darling-Hammond, 2010).

High-quality student teaching placements positively impact early-career teachers, especially those with lower GPAs (Goldhaber & Mizrav, 2023; Ronfeldt, 2012). In the complex scenario of field-based teacher education, mentor teachers balance competing expectations and conflicting directions of mentoring (Bastian et al., 2022; Bullough & Drapper, 2010). Orland-Barak and Wang (2021) critically examined four teacher mentoring approaches—personal growth, situated learning, core practice, and critical transformative. Challenges associated with each approach include potential mismatches with field-based education reforms, difficulties in

transferring teaching practices, conflicts with subject-specific teaching concepts, and potential conflicts with field-based reform initiatives. Other factors like teacher experience and ongoing professional development also contribute to educators' overall effectiveness in K-12 classroom environments (Darling-Hammond, 2017).

New Teacher Beliefs.

Teacher beliefs serve as the foundation for pedagogical decision-making and instructional strategies (Pajares, 1992). As novice educators enter the K-12 landscape, their pre-existing beliefs, often shaped during teacher preparation programs, interact with the complexities of the classroom environment (Bartelheim & Conn, 2014). The transition from teacher preparation programs to the classroom often marks a significant shift in teachers' beliefs. Kagan (1992) suggests that novice teachers may experience a transformation of their beliefs as they encounter the realities of day-to-day teaching. The evolving landscape of education, including changes in curriculum standards, educational policies, and technology integration, further contributes to the adaptation of teacher beliefs (Fang, 1996). Research indicates that new teachers often bring innovative perspectives and a willingness to experiment with instructional methods (Orland-Barak & Wang, 2021; Feiman-Nemser, 2001). These evolving beliefs can positively impact student learning by fostering a dynamic and responsive teaching environment. Conversely, challenges may arise when new teachers face discrepancies between their initial beliefs and the practical demands of the classroom (Kyriacou, 1998). New teacher beliefs play a crucial role in shaping classroom dynamics and student engagement. The enthusiasm and fresh perspectives of novice educators can create an energized learning environment (Ingersoll & Strong, 2011). However, challenges may emerge if new teachers encounter difficulties in managing diverse classrooms or adapting to the individual needs of students (Hashweh, 2013; Hobson, 2002). The

alignment of new teacher beliefs with contemporary educational reforms is essential for ensuring effective implementation. As K-12 education undergoes continual transformation, the receptiveness of new teachers to these changes influences their ability to align instruction with evolving standards and pedagogical approaches (Fullan & Hargreaves, 2012). Professional development opportunities and mentorship programs play a pivotal role in supporting new teachers as they navigate the intersection of beliefs and practice (Ingersoll & Strong, 2011). Continued growth and adaptability in response to classroom experiences and ongoing reflection contribute to the evolution of teacher beliefs over time (Bartelheim & Conn, 2014; Hashweh, 2013; Hobson, 2002).

The impact of new teacher beliefs on student learning in K-12 settings is a dynamic and multifaceted phenomenon. While the enthusiasm and fresh perspectives of novice educators can bring innovation to the classroom, challenges may arise when their beliefs encounter the practical complexities of teaching (Darling-Hammond, 2017). Ongoing research and professional development initiatives are essential for understanding, supporting, and harnessing the positive impact of new teacher beliefs on student learning outcomes in diverse educational contexts.

Conclusion

In conclusion, this literature review underscores the critical role of teacher preparation programs in shaping the trajectory of education by molding effective educators. The impact of these programs on student learning is pivotal, with a clear emphasis on the significance of well-structured, clinically rich preparation programs advocated by Darling-Hammond (2017). The journey from preservice training to the complexities of K-12 classrooms involves challenges, particularly in reconciling preservice teachers' beliefs with program expectations. The importance of student teaching experiences, mentorship, and high-quality placements, as

highlighted in this review, contributes significantly to the subsequent effectiveness of educators. Furthermore, the review explores the impact of teacher quality on K-12 student achievement, emphasizing the need for educators to align with student-centered teaching practices and evolving curriculum standards. The multifaceted relationship between teacher preparation and student learning outcomes is further enriched by an examination of new teacher beliefs. The dynamic interplay of pre-existing beliefs, adaptation to classroom realities, and alignment with educational reforms showcases the nuanced nature of this phenomenon. As novice educators bring innovative perspectives and face challenges in translating their beliefs into effective classroom practices, ongoing research and professional development initiatives emerge as essential components for understanding, supporting, and harnessing the positive impact of new teacher beliefs on student learning outcomes in diverse educational contexts. The collective findings presented in this literature review contribute valuable insights for the continual refinement and enhancement of teacher education programs, ultimately serving to elevate the quality of education for students across various settings.

Methods

Participant Selection

To study the effects of our graduates on p-12 learning and also to learn to what extent our graduate employed the knowledge, skills, and dispositions we taught them, we used a collective case study method in which researchers uses multiple case studies to study an issue (Stake, 1995). We invited graduates in their second or third year from our Teacher Education program who teach in schools within a reasonable distance. Researchers invited graduates by email. In our pilot study in 2017, one researcher focused on graduates of the elementary education program, one researcher focused on graduates of the secondary English education program, and one researcher focused on graduates of the secondary social education program. Our plan was to continue this on a schedule that rotated through the departments and some departments did complete successfully complete the tasks (physical education and science) and a researcher from the math department did the observation and interview but did not collect the necessary data. Other departments were hindered by heavy workloads and the pandemic. In spring 2023 we made strong effort to re-start the research and assigned faculty to graduates in the second and third year of teaching. We generated a list of 27 students in their second and third years of teaching that were in the area and reached out to all of their superintendents and then the teachers. Some superintendents did not consent and about half of the teachers declined to participate. We successfully added 10 more participants to our group and conducted the interviews and observations in spring 2023 and fall 2023.

Data Collection

For collection of data we used a case study approach (Stake, 1995) and collected data through observations and interviews. Participants gave some form of pre-assessment to the

students, and then each researcher observed the participants teaching a lesson in the unit once. Observations ranged from 30-50 minutes depending on how long the lesson lasted. In all classroom observations, researchers took detailed field notes either on a computer or by hand and then transcribed and revised them immediately (Emerson, Fretz, & Shaw, 1995). Data collection is a balance of the practical and the ideal (Marshall & Rossman, 1995; Merriam, 1991) and in an effort to complete the project we each observed the participants once.

In addition, researchers evaluated the teachers using the Skills of Teacher Observation Tool (STOT), a rubric for evaluating student teachers developed by a committee with representatives from all the teacher preparation institutions in the state. Researchers filled out the rubrics immediately after observing the participants. See Appendix A for a copy of the instrument.

At the end of the unit, researchers interviewed each participant once and the interviews lasted from 20-30 minutes. Participants were interviewed in their classrooms or in the office of the researcher after school or during a preparation period. Some participants brought charts with data about the performance of students in their classrooms or provided scores for the researchers. Researchers asked questions about the planning and goals of the unit, how teachers decided whether their students met the goals, how students performed on the assessments, how lessons were differentiated, and how the teacher might revise the unit in the future. See Appendix B for a list of interview questions. Researchers transcribed all interviews, most using transcription software, and then revised the transcripts.

Data Analysis

Researchers uploaded the field notes, transcription of the interview, scored STOT, pre- and post-data, and any other items to a shared folder. Three faculty members read all of the

information and began drawing up a list of tentative codes using inductive and deductive coding. We coded them line by line, writing notes in the margins (Emerson et al., 1995). Then we develop an initial list of codes and re-read the documents again, looking for patterns. We anticipate that our questions and even procedures will need revising for further candidates will need revising once we have done an initial analysis of the information (Creswell, 2007; Glesne, 2006).

For the qualitative evidence, three faculty members read the data for themes in the interviews and classroom observations and made a preliminary list of 11 themes that emerged from the data including themes about differentiation, students who were struggling, the usefulness of resources provided by the district, classroom management strategies, administrative support, and using data from classroom and standardized assessment.

Participants

All of the graduates in this phase of the research study identified as white and represented the mix of traditional age (8/12) and returning students (4/12) including one with a military background, which reflects our student population well. They were in a mix of public and private rural k-12 and urban schools in our state and represented most majors with the exception of math, English, and history/social science. Rural schools can have small classes of 5-10 student and one rural school had less than 10 students in a two-grade combination classroom. Ten of the twelve were teaching in the fields for which they prepared. One graduate was a double major in elementary education and art and was teaching in art and another graduate of a physical education program was teaching the Junior Reserve Officer Training Corps (JROTC) classes (See chart). Participants ranged from the fall of their first year to the fall of their fourth year, though the participant in her first year had been subbing for three years.

Research Study Participants

Degree Field	Teaching Field	Timing of Research	Name	Type of School	Age
art/ELED	art	fall 4th year	Tara	urban middle school	traditional
BUS	business	fall 4th year	Sierra	rural k-12	returning
ECE	ECE	spring 3rd year	Rebecca	urban elementary	traditional
ELED	ELED	spring 3rd year	Gina	urban elementary	traditional
ELED	ELED	spring 2nd year	Tiffany	rural k-12	returning
PE	ROTC	spring 3rd year	Dave	urban high school	returning
SPED	SPED	fall 4th year	Rose	urban residential	returning
SPED	SPED	fall 3rd year	Leslie	urban middle school	traditional
music	music	fall 1st year	Katie	private k-12	traditional
science	science	fall 2nd year	Brooke	rural k-12	traditional
science	science	fall 2nd year	Susan	rural k-12	traditional
PE	PE	fall 3rd year	Jessica	rural k-12	traditional

Knowing that we were short of the recommended number of participants, we invited 91of our graduates in their second year of teaching to one of two focus group meetings in December 2023 and 5 attended either in person for local schools or by Zoom for schools elsewhere in the state. Participants in the focus group all identified as white. Two graduated with elementary education degrees, one with an early childhood degree, one with a music degree, and one with an elementary education and English education degree. The double major graduate taught English classes and the early childhood major taught in a newly created position of a preschool for

children with special needs in an urban public school. Four of the participants attended school as traditional age students and one was a returning student.

Focus Group Participants

Degree Field	Teaching Field	Timing of Research	Name	School	Age
ELED	ELED	fall 2nd year	Stephanie	urban elementary	traditional
ECE	ECE SPED	fall 2nd year	Sarah	urban elementary	returning
ELED	K	fall 2nd year	Lindsey	urban elementary	traditional
Music	music	fall 2nd year	Ariana	urban elementary and middle schools	traditional
ELED/Engl	English	fall 2nd year	Crystal	rural k-12	traditional

Positionality

All eleven of the researchers identify as white. All are faculty at our institution and teach or have taught in either in the undergraduate professional education sequence and/or a methods class for the university. All researchers have taught in k-12 schools and have been at MSU for at least three years. Most of the researchers had the participants as students in their undergraduate classes and acknowledge that many of the participants look to the researchers as experts. Many of the interviews mixed questions that the researchers posed with other advice-seeking questions and responses from faculty about issues in their teaching.

Limitations

For logistical reasons we limited our participants to our graduates within driving distance. We could only interview and use as focus group participants those graduates who volunteered, and we acknowledge that they were more likely to be graduates who had a positive view of our university and who felt secure enough in their teaching to invite someone to watch and/or discuss

it. We were constrained by time, and would have had a better sense of their teaching if we had been able to observe multiple lessons. All of our participants are white and therefore do not provide a complete picture of our experience.

Preliminary Findings

Differentiation

We specifically asked each participant in the research study about differentiation and a number of the participants brought it up also. The participants talked about their daily observations of the students serving as the most useful source of information for who struggled and who did well. A focus group participant, Stephanie, who teaches in elementary school, said the state and district-required assessments were useful but too far apart to make decisions on a daily basis. Other participants in fields like special education described their daily differentiation to meet IEP goals for students and many participants mentioned students who needed modifications or differentiation. Ariana and Katie, both music teachers, indicated that they could do more differentiation when students worked in small groups. Participants teaching topics like bowling and how to make a pinch pot reported asking their students about previous experiences so they could provide more support and instruction to some students. An inspiring description came from Sierra, who taught elective classes in business, who commented, "OK here's your gift set-- how can I give you the tools so that you can accomplish this. In the past, I had several students who were on IEP's and looking through their modifications I was able to match them up with tasks where they excelled, and they had such confidence. It was so much fun to see them excited to come to class." Tiffany, a multigrade teacher in a small school, had the advantage of a very small class and could easily differentiate by following up with questions for the students who confused different shapes. Crystal, an English teacher in a rural school, talked about how

she struggled with strategies for differentiation because she had done her student teaching in a high school that had been tracked. These comments reflect the graduates' understanding and implementation of differentiation. Despite our emphasis on differentiating by ability, interest, and learning preferences, most comments on differentiation focused on differentiating by ability. Many of the strategies involved added explanation and instruction as opposed to the differentiation that Sierra used in which strengths were used to facilitate a project. This gives us additional information to help instructors emphasize and develop those strategies.

Resources

Graduates had mixed reactions to the curricular resources that districts provided. Our focus group graduates in the local schools found the resources to be helpful and did get to participate in the training for some of the resources. Crystal, the English teacher in a rural school, did not have any resources her first year and struggled assemble them. Tiffany, an elementary teacher in a rural school, did not get their math textbooks until October so started the school without the books and was working her way through the books for the first time. She noted the support materials for the books were useful but had extensive notes for herself for the next time she taught. Dave found the ROTC curriculum helpful as it gave him choices for how he taught each lesson. He found some activities a bit dated but appreciated being able to use the more engaging activities. One of the challenges that participants in the local urban schools noted was that each time they got a new textbook they had to change all the posters and resources for scales for their lessons. As second-year teachers, they had already done this and could see the tremendous amount of effort in this. In addition, they could see that the textbooks did not always align with district curriculum and state assessments. Our classes emphasize developing a curriculum that matches state standards and district expectations and our classes give students

the experience of reviewing and planning with different textbooks. Based on this research, our graduates are using the resources of the schools to the best of their ability but are hindered by schools without curricular resources.

Support

The state has a mentoring program for new teachers and most of the graduates participated in this. Graduates mentioned a wide variety of support from the program depending on who the mentor was and how much experience the mentor had with their subject and grade level. All of the graduates had found fellow teachers to discuss classroom challenges with in their schools. The elementary teachers worked with other teachers at their grade level and the music teacher worked closely with other teachers in the district. The teacher at a small rural school had a planning period with the social studies teacher and the PE teacher and collaborated on strategies with particular students. Many of them mentioned that their principal set the tone for the school and they respected and appreciated the help from their principals in all aspects. A number of teachers reported that it took the whole year to figure out supportive, collaborative teachers or other staff in the building. They then found these teachers and staff to be a strong part of their professional support group. Many teachers cited the lack of paraprofessionals as a barrier to achieving their goals in the classroom. Few classrooms had the number required by IEPs and one teacher working with kids in special education cited the challenge of special program such as a self-contained classroom for kids with diagnoses of emotional disturbance or the Child and Adolescent Partial Hospitalization (CAPH) program being full and not accepting new students even if they qualified. Our undergraduate program does not have control over the support provided by schools, but these themes help us think about the guidance in collaboration and seeking out colleagues that we provide to our candidates.

Reflection process

Many participants reported using a wide variety of strategies for formative and

summative assessments to help determine whether to adjust their instruction and assessments.

For example, Gina asked her students to give a fist-to-five signal after she completed the lesson

to see to what extent her students comprehended the direct instruction. She then adjusted her

lesson the next day to work with students who were the least confident on their proficiency.

Other graduates talked about how they used informal observations during the lessons to gauge

the best approach. Katie, for example, a music teacher, mentioned that one student demonstrated

anxiety when playing his instrument so she watched closely for signs of stress when teaching

him. Others such as Gina and Rebecca indicated they would incorporate more real-world

examples or manipulatives for subsequent lessons to help students connect to the key concepts in

their math lessons. Tiffany reflected after her math unit that the test emphasized some concepts

more than the daily work and some concepts less, so she had already made a note to herself

about changing the allocation of days to each item in the unit for the next year. Jessica had

likewise previously noticed that students in her bowling unit remained more engaged when she

put up the disco ball and turned out the lights for extreme bowling so she incorporated this into

the unit. Dave's JROTC unit was on making choices, and he wanted to incorporate more role-

playing about everyday situations when they had to make choices and getting kids to think about

how their behavior when wearing their uniforms reflected on the wider Air Force community and

not just them. When working with groups of students from year to year, teachers such as Leslie

filed on how much content students lost over the summer but could quickly pick up when using

instructional strategies she knew had worked well in the spring. Tara, the art teacher, taught

students how to make a pinch pot and assessed them with a multiple-choice quiz as well as

having them construct the pot with no instruction, take a picture, then destroy it and re-create it. She does not usually use quizzes, so thoughtfully remarked, "I want to clarify if it's, if it's the question, or if it's what I'm teaching." We were quite pleased to read and hear the responses from all of our graduates because every one had astute observations about what went well, what did not go as well, and what they would do differently. Our program asks them to reflect frequently and seeing them continue to do this helps us know that this piece is working well.

Classroom management

Not surprisingly, the classrooms we observed had excellent classroom management as students knew there was an additional person observing. A few of the graduates particularly brought up classroom management and indicated they had better strategies and support every year. Brooke had switched schools and indicated she had better support from her principal in addition to taking the behavior less personally. Jessica had the only student whose score dropped on an assessment. Initially the student was releasing the bowling ball well, but by the end of the unit he was bouncing upon release and she thought he was either tired or getting excited and not focusing. Sierra played a game during the observation and commented, "It was wild and loud and fun." Yet the researcher found all students to be engaged and really practicing the concepts in a loud but quite controlled fashion. Dave was quite conscious of how he had to change his teaching strategies to accommodate the personalities in different hours of the day and could articulate exactly what he did and why he did it. Crystal wanted us to know that she felt her classroom management class focused too much on strategies that didn't work for secondary and k-12 students such as callbacks for getting attention. Our graduates in the focus group commented on how much the class size mattered, as well as the number of students on IEPs who spent differing amounts of time in the classroom. A number of graduates mentioned challenges

with students talking out of turn and were seeking suggestions on redirecting and focusing them. Overall, our graduates in the study demonstrated good classroom management in our observations and in our interviews.

Discussion

We are pleased with this group of participants in our research study and in our focus group. The observations of the classroom and interviews brought out a variety of knowledge, skills, and dispositions that we had hoped to see in our graduates. While we acknowledge that the sample is likely overrepresented by confident graduates who have positive feelings toward the researchers and the university, we still are encouraged by the growth in our graduates from their days as students. The results also provide avenues for further exploration such as how the graduates use differentiation by categories other than by ability and ways in which we can support the classroom management and instructional strategies of secondary and k-12 teachers.

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