2022

The Impact of Teacher Research on Classroom Practice and Teacher Autonomy

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Abstract

Faculty instructors of a master's-level teacher research course share findings from a study on the impact of teacher research on classroom practice and teacher autonomy. The authors describe the master of education program and research capstone course, in which graduate students (practicing teachers) complete a semester-long research project. They share their qualitative inquiry examining the impact of teacher research on participants who completed teacher research 2010–2018. Findings derived from surveys and interviews suggest that teachers (a) adapt their instructional practices and their thinking about learners' needs and (b) develop confidence and a greater sense of autonomy following a semester-long research experience. The authors suggest implications for teachers, administrators, and the field of teacher research.

Keywords: Teacher research, teaching practice, practitioner inquiry, teacher research methodology, teacher autonomy

Introduction

As teacher educators, our primary teaching and research since the early 2000s has been with practicing teachers pursuing graduate study in the master of education (MEd) in applied studies in teaching and learning program at our university. This master's program is designed specifically for practicing career educators who have a minimum of one year of teaching experience. The teachers who enroll in this master's program work in public, parochial, and private schools, teaching prekindergarten through 12th grade. Teachers typically complete their MEd program in two to three years while teaching full-time. As

teachers progress through the program, they advance their skills in teaching, reflection, collaboration, and inquiry, the themes embedded in the MEd program.

We prioritize providing opportunities for them to develop an "inquiry stance" toward their practice. To reinforce the inquiry stance described by Cochran-Smith and Lytle (2009), we introduce teacher research as an integral element of the program framework, acknowledging that teachers construct knowledge about teaching and learning every day in schools through deliberate inquiry. Approaching teaching from this stance does not simply mean being reflective or "developing an open and questioning intellectual viewpoint about practice" but entails that "every site of professional practice becomes a potential site of inquiry" (Cochran-Smith & Lytle, 2009, p. 121). According to Cochran-Smith and Lytle, sites for inquiry include the following:

> *The elementary school reading group that meets on a daily basis, the team-teaching arrangement of a special education and a general education teacher, the middle school committee assigned to examine the curriculum in light of new state standards, the grade groups and the IEP meeting, the secondary mathematics department directed to engage in more test preparation, the school committee charged with selecting new textbooks, the process of preparation for school or program accreditation, institutional deliberations about the selection and placement of students, the introduction of new and more challenging curriculum in a subject area, and the task force charged with enhancing relationships among parents, school, and community. (p. 121)*

Similarly, teachers in the MEd program investigate widely ranging topics across various sites of inquiry.

Introducing inquiry as a deliberate and systematic approach to teaching at the beginning of the MEd program and reinforcing it throughout the program courses and assignments prepares students for the completion of teacher research projects as the capstone experience.

Teachers begin to see that

> *a teacher researching her own practice is not about the doing of a research project that is completed at one point in time and is over. Rather, teacher inquiry is a continual cycle that all educators spiral through throughout their professional lifetimes—a professional positioning or stance, owned by the teacher, where questioning, systematically studying, and subsequently improving one's own practice becomes a necessary and natural part of a teacher's work. (Dana, 2015, p. 163–164)*

Between 2006 and 2019, we worked with more than 250 educators, including classroom teachers, specialists, and counselors, as they completed teacher research projects on topics related to teaching methodology, student learning, curriculums, academic disciplines, technology, classroom environment, assessment, and their roles in the school community. Throughout the program, we always value their

points of view as experienced teachers and novice researchers as they begin to develop an inquiry stance through the process and outcomes of teacher research.

We use the term *teacher research* to reflect the process of conducting inquiry in the classroom or school using a clearly defined systematic approach grounded in action research methodology. Others use the term *practitioner inquiry* to confront traditional views of research and reflect the purpose of teacher research to improve classroom practice (Dana & Yendol-Hoppey, 2019). Teacher research utilizes the action research model, which is intended to lead to positive changes in teaching and learning. Merriam and Tisdell (2016) suggest:

> *Action research is a form of practitioner research. It not only seeks to understand how participants make meaning or interpret a particular phenomenon or problem in their workplace, community, or practice, but it also usually seeks to engage participants at some level in the process in order to solve a practical problem … Practitioners also engage in action research in organizations, for social or community development, and for social change. (p. 49)*

It is important to note that there are nuanced and varied definitions for teacher research, practitioner inquiry, and action research. Individuals and organizations utilize these terms differently, and each has a robust, deep history that is comprehensively addressed by numerous authors. Here, rather than discussing varied definitions or differences in the uses of the terms in unique fields or examining the origins and evolution of teacher research, practitioner inquiry, and action research, we share how we use the term *teacher research* in building a foundation for our work with novice teacher researchers.

In our view, teacher researchers follow a well-established action research or similar research methodology to investigate a problem of practice that arises in their own classroom settings. They use reflection as an integral part of the research process and draw on colleagues' input to inform their work. Specifically, teachers in our MEd program engage in the following steps:

1. Develop a research question that is centered on the improvement of teaching practice and student learning or experiences in schools.
2. Reflect throughout the teacher research process as they design and conduct their research.
3. Design a research methodology that is ethical, sound, and within the control of the teacher as researcher.
4. Secure permissions at the university, school, and individual participant levels.
5. Implement the data collection plan and related intervention with ongoing, deliberate reflection on the process of data collection.
6. Examine and systematically analyze data to make sense of the data in response to the research question.
7. Formulate findings related to the data collected with discussion of these findings as they relate to the teachers' individual teaching contexts and the students with whom they are working.

8. Develop conclusions to their research based on their findings.
9. Discuss potential teaching and learning implications.
10. Formulate additional questions and areas for future research that have emerged from the teachers' research, reflection, and input from colleagues.
11. Share findings in informal and formal ways via discussion and presentation within the university classroom.

In addition to these steps, some teachers disseminate their work beyond the university classroom by sharing with school colleagues or seeking opportunities to present or publish their work, often with instructor encouragement and support.

Description of Teacher Research in the MEd Program

The teacher research semester is the capstone experience for teachers in the MEd program at our university. Prior to engaging in the research process described above, teachers complete 24 credits of graduate coursework that embeds various elements of the research process. Teachers do not take a traditional qualitative, quantitative, or mixed methodology research course. Instead, research elements such as examination and analysis of the literature, data collection techniques, and data analysis techniques, are embedded in each course. Teachers complete a semester-long teacher research project to conclude their MEd program. Because teachers do not take a traditional research methods course where they may develop a research proposal early in their MEd program, we find that teacher research questions are timely and driven by teachers' immediate needs. Teachers have the opportunity to investigate a current question and do not feel compelled to stay with topics they may have considered and started investigating in earlier coursework in their MEd program.

The research course occurs in the spring semester. Teachers develop their research questions and design their research methodologies during the first three to four weeks of the semester. They secure necessary permissions from the university, school, and research participants. Teachers spend six to eight weeks collecting data, which often include: observations, surveys or questionnaires, interviews, student artifacts, and assessment data. We have adopted the use of literature as a data source (Dana, 2013; Dana & Yendol-Hoppey, 2019) finding that teachers' use of the literature as data source has allowed them to examine others' work regularly and carefully throughout the research process. Teachers conduct ongoing examinations of data during the data collection period, followed by a formal process for analyzing data, primarily qualitative data, most often employing an emergent theme analysis. As described earlier, teachers then write up their research findings, draw final conclusions, and develop implications for their future practice. They offer new questions that have arisen from their work, suggest questions for their continued inquiry or for the research of others, and reflect on each stage of their research. As expected, teachers report limitations to their research such as time for data collection, classroom interruptions for testing or school breaks, and participant response rate.

During each of these defined stages, teachers meet at the university in small research groups with colleagues and instructors for critical discussion about their research. As teachers prepare their final projects, they reflect both on the process of conducting teacher research and their learning about the topic they investigated. Their final projects are developed and presented in a website format. We moved teachers' final products from a paper-based research project to the website format in 2010. We have since researched and published about the use of multimedia formats to present teacher research and have suggested that "multimedia integration may stimulate action research communities to bring their research and implications into a more accessible sharing format for audiences within and beyond the community" (Leaman & DiLucchio, 2015, p.10). To conclude the course, teachers formally present their findings and discuss their final work with course colleagues. We encourage teachers to share their research beyond the university classroom in various settings. For example, teachers have facilitated school district professional development sessions, presented at conferences, and published their work. Additionally, we invite teachers to serve as co-researchers, co-presenters, and co-authors with us in order to include their voices in the field of teacher research.

Description of Our Research

Since 2007, to improve the research experiences for our graduate students, we have conducted continuous research into our own teaching practices and the teacher research experiences of the graduate students. We have investigated: the transition from analog to digital projects, the definition of quality in teacher research, and the types of questions posed by teacher researchers at various grade levels and across various subject areas. In all our work, we draw on Cochran-Smith and Lytle (1993) who define teacher research as "systematic and intentional inquiry carried out by teachers as an integral part of the activity of teaching and as a critical basis for decisions on practice" (p. 63). In our latest research, we explored the outcomes of teacher research on teachers' practice, professional growth, autonomy, and leadership. Here, we discuss our findings regarding two of these themes: the impact of teacher research on practice and teacher autonomy. A brief review of the literature related to each of these themes is incorporated in the findings and discussion.

Research Methodology

We posed the research question: How does teacher research support teachers' practice, professional development, autonomy, and leadership? This question guided our work during a two-year inquiry (2019–2021) where we administered electronic surveys and conducted follow-up interviews with our research participants.

Following IRB approval, invitations were distributed to 137 teachers who completed their MEd program between 2010 and 2018. Including teachers who completed teacher research projects during this time span allowed us to concentrate on a broad group of teacher researchers who completed their teacher research course and projects over an eight-year period with at least one year of distance from the project itself. It also allowed us to include only teachers who completed their research project in a digital format. All 137 were invited to participate in surveys and interviews. Thirty-eight teachers completed surveys regarding their research experiences (27.7 percent response rate). Eighteen participants agreed to complete follow-up interviews.

Four interview groups, comprised of four to six participants each, were held over Zoom. Interview participants included teachers in kindergarten through high school settings in public schools, private/parochial schools, and international settings. Specifically, interview group participants included 15 teachers from public schools, one from a parochial school, and two from international settings. At the time of the interviews, participants' teaching experience ranged from two years (2 participants) to more than 20 years. Most were mid-career teachers. All eighteen interview group participants were teaching full-time when interviews were conducted, and three were completing doctoral programs. Table 1 reflects interview participants' teacher research topics or questions, grade level, and research site (public, parochial, or international setting).

Table 1. *Group Interview Participants' Research Topics or Questions, Grade Level, and Research Site*

Research Topic or Question	Grade Level and Research Site
Does the use of iPads affect fifth graders' achievement and engagement?	Fifth grade, parochial
Evolution of response to intervention: Four years of progress monitoring	K-6, public
How can contemporary depictions of play framed in children's picture books influence teachers' practice?	K-6, public
How can I structure my third grade leveled reading group time to increase student engagement?	Third grade, public
How can technology be used as a gateway to increasing outdoor experiences for children in a gifted education setting?	Third – fifth grade, public
How do I successfully differentiate my math instruction to meet the needs of my second grade students using a balanced math approach?	Second grade, public
How does self-assessment increase student awareness and growth in writing?	Second grade, public
How does play support early literacy in kindergarten classes?	Kindergarten, public
Increasing seventh grade math student and parent involvement through social media	Seventh grade, public
Integrating music into the kindergarten communications curriculum: The experiences of four Title I students	Kindergarten, public
Motivating fifth grade boys to engage in reading during silent sustained reading (SSR)	Fifth grade, public
Music across the waves: A comparative examination of the Irish generalist and the American specialist models of elementary music education	Elementary, public; US and Ireland
Preparing the middle school student for proficiency in high school technology	Eighth grade, public
What are the effects of a new teacher advisory program, LEAD, on both student academic achievement and school connectedness?	Sixth – eighth grade, public

What effect do weekly classroom modeling sessions have on students' understanding of school-wide positive behavior systems? How do students apply the school-wide rules in the home and community setting?	Sixth grade, charter
What happens when fourth grade students engage in a newly adopted hands-on science curriculum called FOSS?	Fourth grade, public
What happens when fifth grade students self-monitor their fluency?	Fifth grade, public

Data Analysis

We followed qualitative data analysis procedures including organizing, reviewing, and coding data to generate and refine emergent themes (Creswell & Creswell, 2018). During the first review of survey data, coding of responses led to identification of four emergent themes: impact of teacher research on practice, teacher professional development, autonomy, and leadership. We then completed a second review of the survey data "recoding and recategorizing" (Saldaña, 2021, p. 15) to verify these themes. We came together to cross-check our independent codes, meeting regularly to discuss our analysis and compare our coding of data (Creswell & Creswell, 2018, p. 202). As suggested by Saldaña (2021), rather than applying a quantitative measure to determine our coding validity, we used intensive discussion to determine consensus between our codes and analyses (p. 54) to validate our first and second coding reviews.

Following survey analysis, we conducted four group interviews where participants from various graduating classes came together virtually to discuss our initial findings from survey data focusing on our four emerging themes. Survey data were shared with interview group participants to serve as a member check (Creswell & Creswell, 2018, p. 200) regarding initial themes.

Following group interviews, we transcribed recordings. Data from group interviews were hand coded and analyzed independently by both researchers using the same emergent theme approach used in survey analysis. We then came together to cross-check our independent codes from interviews following the same process used in our analysis of survey data.

Finally, we reviewed teacher research projects from the eighteen interview group participants. We determined that project review provided little data related to our research question. Therefore, data from open-ended surveys and in-depth interviews comprised data for this study.

Throughout data analysis, our in depth-knowledge of participants and their work through our role as faculty instructors and research advisors in the MEd program added to the validity of our findings. Creswell and Creswell (2018) suggest, "The more experience that a researcher has with participants in their setting, the more accurate or valid will be the findings" (p. 200).

The primary limitation to our research was the size of our final sample. Of 137 potential participants, 38 responded to initial surveys and eighteen teachers participated in group interviews. Additionally, when recruiting participants, we were unable to contact some graduates of the program who were no longer teaching in the districts where they were employed during the research semester and contact information was not publicly accessible.

Findings From Our Research

Findings from our research were derived from four themes as we investigated the impact of teacher research on: teaching practice, teachers' professional growth, autonomy, and teacher leadership. Data from surveys and group interviews were used to establish our findings. In this article, we discuss two of the four themes from our research: the impact of teacher research on teachers' practice and teacher autonomy.

Theme One: The Impact of Teacher Research on Teachers' Practice

Research participants shared numerous examples of how the teacher research process had an impact on their current practice. They expressed that multiple aspects of the research experience contributed to their professional learning beyond their graduate program including: the importance of reviewing the literature related to their research topic, a deeper understanding of data collection and analysis, and a newly acquired understanding of the potential for teacher research to improve practice. Specifically, teachers described how **engaging in the research process** impacted their practice, and how the **act of reflecting** on their teaching as part of the research process informed their work in the classroom.

The Research Process

Teachers described that their experiences as researchers informed their daily practice in a variety of ways both during the research semester and beyond. Teachers recognized the importance of a comprehensive research experience. For instance, teachers identified the importance of being able to explore a topic of interest, obtain scholarly materials concerning that topic, and develop a comprehensive research plan. Specifically, they suggested that their research experience led to a deeper understanding of the use of data in their practice and that they will be able to utilize the research

process to examine and improve their practice in the future. The following survey comments illustrate continued impact on practice beyond the teacher research semester:

> *"I chose to research whether or not the 4-Square method is an effective tool for improving students' organization and length of persuasive essays. I continue to use this strategy in my classroom since I completed my research in 2010."*

> *"As a result of my research, I continued to implement more student-centered learning and student discourse learning than teacher directed lessons in all subject areas."*

> *"During my research, students developed stories with stronger focuses, greater detail, and more descriptive language. I expect this performance to continue and even improve further, as my own practice will continue to grow with experience."*

The following survey and interview comments reflect teachers' expanded understanding of the way teacher research can inform their daily work in the future:

> *"In the future, when an area of exploration piques my interest, I have the tools I need to independently analyze data, draw conclusions, and create action plans." (survey)*

> *"The research in general gave me the understanding of how important data is. Conducting a teacher research study showed me how to collect and analyze data." (interview)*

> *"Conducting teacher research allowed me to better understand the data collection process our reading specialists use. I've been able to take what I've learned through teacher research and apply it to identifying needs of both myself as an instructor and of my students as learners." (survey)*

> *"My research made me realize how important data sources are. The children change every year, so you have to ask new questions about student performance." (survey)*

Teachers referenced the use of authentic data to draw conclusions about their work that affects the students they see every day in their classrooms. For instance, teachers reported:

> *"My research allowed me to consider alternative approaches to writing conferences with my students. Instead of conferencing only after a student completed a full draft of their work, I came to recognize the value of meeting with students during the brainstorming phase. I was able to test new approaches to writing conferences, and I refined my overall approach to teaching as a result." (survey)*

> *"I usually use the guided reading books provided by the school district. Once I conducted student surveys on their reading interests as part of my research, I was able to find a variety of books of different genres that will help my students with comprehension skills." (survey)*

We appreciate that the teacher research experience has allowed teachers to examine and use data in an authentic way, leading to a change in their practice. Teachers are continuously immersed in data both in the classroom and at the district level, however, their use of data is often disconnected from their daily teaching. School-level data may inform their thinking broadly, and standardized testing data may impact

their classroom teaching, however, teachers clearly articulated the importance of classroom-level data from their own research to address more immediate classroom needs, identified by teachers themselves. Specifically, in the case of teacher research, practitioners develop their own understanding of student learning by developing a rich research question and research methodology that directly impacts their students.

Reflection

Teachers repeatedly referenced the way deliberate reflection on their teaching as a component of the teacher research process led to changes in practice. Several years after completing their first research project, teachers referred to reflection as one of the main elements of teacher research. Teachers' comments from surveys, such as those included here, suggest that ongoing, focused reflection can support efforts toward improving teaching practice.

> *"I feel that the entire purpose of teacher research is to reflect on yourself as a teacher, your teaching instruction, and how it impacts the students."*

> *"I think the purpose of teacher research is to allow us as educators to learn how to grow and reflect to better our teaching. It also allows us to learn how to work with others in our profession and reflect on what they have done and to work together to try and 'fine tune' our practice."*

> *"As teachers, we aim to be reflective in our practice... It ultimately expands our knowledge base and helps us become better practitioners throughout the entire [teacher research] process."*

> *"The purpose of teacher research is developing reflective practitioners. Teacher research provides teachers with a systematic means of answering questions they may have about students or the pedagogical approaches they utilize in the classroom. Ultimately, teacher research enables a practitioner to continually refine teaching practice."*

Teachers recognize how the relationship between reflection and practitioner research can impact their practice. Two teachers who explored new teaching techniques and strategies in their research commented via survey on the role of reflection in their research and practice:

> *"I would say that my research allowed me to be more open and reflective on new teaching experiences in my classroom."*

> *"My research allowed me to reflect on my teaching practices as a whole and encouraged me to try new ideas more often."*

We know that teacher research provides opportunities for reflection on authentic problems of practice, immediate student needs, and issues related to instruction, curriculum, and assessment. However, beyond a more technical form of reflection, teacher research has the potential for teachers to examine long-held beliefs, assumptions, and values that have shaped their practice. For instance, during a group interview, one teacher noted:

"I focused my research on guided reading and the differences between male and female interests, how much they read, etc. … Now, I am conducting similar research but focusing on gender and ethnicity. My teacher research changed my beliefs about boys as readers. I realized that I was selecting books I thought would be interesting to boys, but I learned a lot about what the students' interests really are."

Others recognized how teacher research challenged their existing beliefs and knowledge of students' needs. Without the reflective aspect of the teacher research process, teachers may have continued to be guided by their current understandings, assumptions, and teaching practices.

These examples indicate that conducting intentional, deliberate research in their classrooms following a well-established research process provides teachers with innate opportunities to critically examine practice and reflect on their existing beliefs resulting in important changes in practice. Rust and Meyers (2006) suggest that an understanding of teacher action research is, in fact, an essential activity of a reflective teacher. They add, "Our work has shown us that when teachers question their practice and gather and analyze data using tools easily incorporated into everyday teaching, an improvement in practice is a logical outcome" (p. 73). Teachers who contributed to our recent research exploring the impact of teacher research on classroom practice affirm this outcome, expressing how reflection on what to teach, how to teach, and why to teach can help teachers make informed decisions in the best interest of students.

Related Literature: Impact on Practice

The literature supports our findings on teacher research and the impact on practice. Teacher research encourages teachers to use research to shape their practice (Rust, 2009, p. 1882). Because teacher research is "conducted by 'insiders' in real classrooms and school settings, it is practical; it values individual and group reflection, and its conclusions inevitably inform practice in the individual setting" (Ritchie, 2006, p. 466). Teachers bring a depth of understanding and awareness of students that outside researchers cannot begin to match (Hubbard & Power, 2003, p. xiv). In this capacity, teacher research facilitates opportunities for teachers to better understand and improve their practice in their individual contexts (Hendricks, 2017; Hubbard & Power, 2003; Klehr, 2012). Similarly, teacher research supports teachers as reflective practitioners, improving teaching and student learning (Atay, 2008; Dana & Yendol-Hoppey, 2019; Falk & Blumenreich, 2005; Hendricks, 2017; Hubbard & Power, 2003). Teacher research, when it is well designed, can immediately impact teaching practice, making teachers both the producers and the consumers of the knowledge about teaching and learning generated by their inquiries (Latta & Wunder, 2012, p. 93). This way of knowing about teaching and learning begins with a research question that is framed by the teacher researcher and "embedded in practice and in the time frames of teachers' lives in classrooms" (Rust, 2009, p. 1883).

Because it is grounded in the working lives of teachers, teacher research is a "form of qualitative inquiry that draws on techniques that are already part of the instructional tool kit of most practitioners" (Rust, 2009, p. 1883). These techniques include using data analysis in the classroom to inform their practice.

Teachers regularly examine anecdotal records, time-sampled observations, samples of student work, drawings, photographs, audio and video recordings, interviews, conversations, surveys, students' journals, and teachers' journals to understand questions of practice. The teacher research process engages them in using research techniques more formally to investigate questions they have about their teaching and student learning.

In their seminal work, *Inside/Outside: Teacher Research and Knowledge,* Cochran-Smith and Lytle (1993) suggest, "Teacher researchers are uniquely positioned to provide a truly emic, or insider's perspective that makes visible the ways that students and teachers together construct knowledge and curriculum" (p. 43). Who better to research problems or questions about teaching and learning in schools/classrooms than teacher researchers who bring to their work a sense of place and a sense of history in the schools in which they work (Hubbard & Power, 2003, p. xiv). Teachers know the contexts of their schools and districts—the students, parents, colleagues, and teaching and learning agendas. Teachers use what they know about their teaching contexts to inform their teaching. Further, "teachers have the legitimate authority to know about teaching. When teachers redefine their own relationships to knowledge about teaching and learning, they often begin to reconstruct their classrooms and to offer different invitations to their students to learn and know" (Cochran-Smith & Lytle, 1993, p. 52).

Cochran-Smith & Lytle (2009) describe "inquiry as stance" as "a grounded theory of action that positions the role of practitioners and practitioner knowledge as central to the goal of transforming teaching, learning, and schooling" (p. 119). Virtually every aspect of teachers' professional practice becomes a potential site for inquiry. "Whether reflecting on experiences in the classroom or systematically studying an issue, teachers are often in the best positions to ask and answer questions about students and learning" (Stremmel, 2007, p. 3). Most of the teachers in our program select research questions about improving their teaching practice addressing such issues as a difference between what you intended to do and what actually occurred; a routine that did not work, a conflict, a desire to try something new, or a concern about a child's progress (Falk & Blumenreich, 2005). Regardless of the specific research question, each inquiry has deep meaning for the teacher researcher who is best situated to examine it, leading to improved teaching and learning.

Because teacher research is fundamentally about teachers using their classrooms as sites for inquiry to improve student learning, it is not surprising that teachers in our study described that their teaching was impacted by their research experience. Specifically, participants described both immediate and long-term impact on their teaching practice. They suggested how the research process and their professional learning from their research resulted in adaptations to their instruction, assessment of students, and selection of curriculum materials. Participants also identified ways of engaging in the research process and recognized the critical nature of reflection in teacher research as integral to their learning.

Theme Two: The Impact of Teacher Research on Teachers' Confidence and Autonomy

Survey and interview data strongly suggest that teacher researchers develop a sense of **confidence** and **autonomy** as teachers and professionals. As we examined connections between teacher research and autonomy, we asked research participants to define professional autonomy. As they provided definitions, teachers explained how the teacher research experience resulted in feelings of confidence. Repeatedly, teachers associated their greater sense of self-confidence with recognition of their autonomy. Teachers most often suggested that autonomy means having the confidence to take initiative and to determine what and how to teach, independent of outside controls.

Confidence

While we have assumed a connection between conducting teacher research and increased confidence in evidence-based knowledge around teaching practice and student learning, our participants clearly recognized this connection. Teachers described how confidence led them to attempt new practices and build necessary skills to inform their work in classrooms. The following quotes illustrate teachers' realization that their research experience resulted in greater self-confidence:

> *"I never would have had the opportunity to dive this deep into a topic on my own. Having this experience gave me the opportunity for growth in my own teaching and, therefore, increased my confidence in that area." (survey)*

> *"Having explored various techniques in my classroom, gathering the data, analyzing the results, and reporting on them has given me increased confidence in my knowledge of how students are learning in the elementary setting." (survey)*

> *"I feel comfortable and confident in my reading group instruction because I spent so much time and effort considering and evaluating reading groups as part of my teacher research work." (survey)*

> *"Doing the teacher research project on advisory groups pushed me out of my comfort zone and helped me take more of an active role. I normally would have just sat back and let it happen, but I joined the advisory group committee that helped set up the structure for the program." (interview)*

Additional survey responses suggest teachers' developing confidence:

> *"As a teacher who has gone through the teacher research process, I feel more confident and independent in making decisions in my classroom, as well as the school community."*

> *"Conducting teacher research helped me to learn deeply not only about my students, but about myself. This knowledge helped to increase my confidence in the classroom and in a professional setting."*

> *"Having the opportunity to choose something I was interested in and something that I wanted to learn more about to improve my mathematical instructional practices was priceless."*

While the teachers quoted above described how the research process helped teachers feel more confident in their work and practice, others described how the teacher research process helped them grow and develop as autonomous teachers.

Autonomy

Teachers commented that having choice in their research was important to them. Being able to make decisions about curriculum, instruction, student learning, and professional development was new to many teachers. Therefore, having a choice about what to research in their classroom based on students' needs was powerful for participants. Too often, teachers have little choice in making decisions about their own classrooms and students. Changes in practice are often dictated by others rather than originating from the teacher as classroom expert. Participants in our research recognized the importance of choice in their professional learning because it considers their own needs and interests as critical components of teacher autonomy. When asked to define autonomy, teachers shared:

> *"Autonomy is being an individual with the freedom to make educational decisions on your own."* *(survey)*

> *"The freedom to make decisions and to tap into the artistry of teaching."* *(interview)*

> *"Teachers making their own decisions, [and] being trusted to make their own decisions."* *(interview)*

> *"Teachers must be able to trust one another, to trust that decisions you are making are in the best interests of the children and grounded in solid pedagogical knowledge. As an autonomous teacher, it is important to feel that the decisions you are making are educationally worthwhile."* *(interview)*

> *"Having autonomy to follow your own interests and tweak things to suit your students helps motivate you to continue to do your best. When principals really trust teachers, it motivates you to do your best and to keep trying to meet the needs of your children."* *(survey)*

Teachers also shared their understanding of the teacher research process, and its impact on teachers' sense of autonomy via the following survey comments:

> *"Having the opportunity to conduct teacher research has developed a very strong sense of autonomy for me as a teacher and educational leader."*

> *"Teacher research is conducted in the teacher's own setting, which forces the teacher to take ownership. As teacher research is an ongoing and active process, it helped me to become more confident in my decision making as a teacher. Additionally, teacher research is fueled by the teacher's own interests and experiences. I think this also has a positive effect on teacher autonomy."*

> *"Conducting teacher research very much helped me develop a sense of autonomy as a teacher. I feel comfortable and confident in my reading group instruction because I spent so much time and effort considering and evaluating reading groups."*

> *"Conducting teacher research gave me a sense of autonomy as a teacher by causing me to grow in my knowledge and adapt to changes in both the profession and the students."*

> *"Teacher research has allowed me to take risks with my students and freed me from feeling forced to teach to the page. I am learning more about my students and from that information, asking questions and determining the best answers. I have also allowed my students to develop a sense of autonomy, because I have found the value in it, and I want the students to, as well."*

While connections between the teacher research process and teacher autonomy may be difficult to quantify, teachers' comments on surveys, descriptions of their experiences during interviews, and reflections on their classroom inquiry support what we have observed. That is, teacher research allows teachers to develop or recognize their independence in various ways. Teachers note the confidence and independence they feel as a result of their ownership of the inquiry process and recognize that the teacher research experience, self-directed and driven by individual needs and interests, differs from many of their day-to-day professional experiences. That recognition appears to spark teacher motivation to continue pursuing opportunities where they feel that their voices matter, where they are allowed to be champions for their own students, where they are recognized and acknowledged as professionals, and where following their own needs and interests is no longer novel but expected. It appears to us that a sense of confidence and the opportunity to self-select areas of inquiry, help contribute to a sense of autonomy which teachers indicate is important to them.

We find equally important, the ways in which an evolving sense of autonomy helped teachers feel empowered to take charge of their own professional learning. Participants shared the following examples via survey responses:

> *"Conducting teacher research has helped me develop a sense of autonomy as a teacher because I am able to make my own decisions on what type of professional development I need."*

> *"I feel completely able to investigate areas of interest and need within my own classroom without the assistance of administration or reading specialists."*

> *"I have come to realize that my own research is of value to other teachers … thereby enhancing my sense of autonomy."*

> *"I have more confidence in my methodologies and beliefs about teaching, as I know that they are grounded in solid educational research. This, in turn, increases my autonomy, knowing that I am doing my best for my students, while also knowing that I can seek any advice or information if I need to."*

"My experience conducting teacher research has developed my sense of autonomy as a teacher by empowering me to feel that I can methodically study and understand a topic of interest and analyze the results. I find that I personally have more self-respect and confidence in making decisions for myself. I still will consult with colleagues and educational specialists, but I have more professional independence as it pertains to making decisions about what to teach, how to teach, and why to teach."

The opportunity to determine and pursue one's professional learning needs, to make decisions in one's classroom, to use inquiry as a framework for reflection on student learning, and to have confidence to initiate change, is important to teachers as individuals and professionals. We believe that teacher research, when initiated by teachers' self-selection of topics, can introduce or support teacher autonomy in the classroom and lead to knowledge and confidence that are vital to the professional work and lives of teachers. In an era of accountability that limits teacher choice and teacher professionalism, teacher research may create an opportunity for teachers to recognize their professional strengths and contributions to knowledge about teaching and learning. We agree with our participants that it is essential for teachers to have a voice in decision making in the classroom and in their professional learning. Teachers must be recognized as and recognize themselves as professionals, equipped with the skills and strengths necessary to work confidently and autonomously.

Related Literature: Teacher Autonomy

Teachers' professional independence or autonomy has been acknowledged as an essential component of teachers' work (Fullan & Hargreaves, 2016; Jumani & Malik, 2017; Parker, 2016). Teachers must have professional independence to make decisions about curriculum, instruction, assessment, and learners' needs. Teachers who indicate a feeling of autonomy note increases in empowerment and professionalism (Pearson & Moomaw, 2005). However, accountability measures and resulting curriculum changes have created barriers to independent decision-making and have decreased teachers' sense of autonomy (Walker, 2016). Teacher research requires teachers to act independently within their classrooms as they identify problems of practice, pose questions related to their teaching and students' learning, and take ownership over the inquiry process.

Most often, researchers and authors describe teacher autonomy as freedom to make professional decisions in the best interests of their students. Teachers must have professional independence to make decisions for both instructional effectiveness and job satisfaction (Pearson & Moomaw, 2006). Although some reports suggest teachers' perceptions of autonomy have changed little in recent decades (Sparks & Malkus, 2015), others acknowledge that accountability measures and resulting curriculum changes have created barriers to independent decision-making and have decreased teachers' sense of autonomy (Knight, 2019; Walker, 2016).

Each step of the teacher research process allows space for teachers to reflect on their practice and make decisions that are intended to improve their practice. As teachers engage in classroom-based research, they begin to examine their practice more closely and feel ownership, confidence, and ultimately

autonomy over their work. Researchers confirm that teachers who engage in classroom-based research gain autonomy as they learn more about their teaching and their classroom actions (Bustingorry, 2008; Castle, 2006; Wang & Zhang, 2014; Webb, 2002). According to Kim (2013), "Teacher action research today is acknowledged as a way to value and honour teachers' practical knowledge and to claim their autonomy and agency" (p. 380). Both autonomy and knowledge about teaching and learning are powerful outcomes of teacher research. When teachers can use meaningful data to reflect on practice and are empowered to make changes, they "feel greater self-efficacy and a greater willingness to hold themselves accountable to the highest standards of professional performance" (Sagor, 2000, p. 33).

Further, teacher autonomy and freedom to make professional decisions are often noted as essential elements of school culture that relate to teachers' professional satisfaction. Recent research suggests teachers who perceive autonomy in decisions related to curriculum, instruction, and assessment experience greater job satisfaction (Skaalvik & Skaalvik, 2015; Worth & Van den Brande, 2020) which may lead to teacher retention. Coggins & Diffenbaugh (2013) suggest that specific elements of teachers' work such as teachers' opportunities for leadership also provide opportunities for increased autonomy.

Our research participants consistently identified confidence and autonomy as a result of their research experience and suggested the importance of autonomy in their work. As suggested by Hyslop-Margison & Sears (2010):

> *Professional autonomy enhances rather than undermines teacher responsibility by situating educators as the primary authors of their own success or failure. This professional personal responsibility encourages teachers to take ownership of their teaching and assume greater personal responsibility for student academic achievement. (p. 2)*

There are implications for teacher research to build teachers' skills, knowledge and overall confidence while contributing to their autonomy and resulting professional and career satisfaction. The opportunity to use teacher research to support teachers' confidence and sense of autonomy should not be overlooked as we seek to enhance teachers' professional learning, lives, and work.

Conclusions

Through classroom inquiry, teachers gain confidence in their practice. Teacher researchers report having more confidence in their knowledge about teaching methodologies when they are based on systematic research they conduct in their own classrooms. They research authentic questions to make classroom changes that better serve an increasingly diverse student population. Further, based on their ability to generate knowledge about teaching and learning and increased confidence in their own professional judgment and sense of autonomy, teachers can take risks and try new teaching techniques and strategies. They have the research tools to continue to investigate their practice and improve instruction. Put another way, teachers' increased confidence shapes both their perceptions of themselves as capable professionals and as teachers capable of making important educational decisions

in their classrooms. This is an important finding. We know that teachers' knowledge about teaching and learning is often silenced "in a climate of perpetual reform, with constant political rhetoric critical of teachers" (Paterson, 2018, para. 2).

The teachers with whom we work often describe school cultures where teachers feel silenced and their confidence to voice their honest concerns and opinions is diminished. If teacher research builds confidence in their work, teachers may be more likely to assert their knowledge, expertise, and voice. We agree with Paterson that

> *For too long educators have allowed others to set the agenda. The tacit knowledge of teachers is often devalued and teachers are voiceless in educational policy. Education has yet to put in place a system that guarantees teachers a voice and makes it an accepted, integral part of the day-to-day operations of schools. (Setting the Agenda, para. 1)*

Teacher research has the potential to be that system or catalyst as practitioners construct and reconstruct knowledge about teaching and learning every day in the classroom. This knowledge should be recognized, and teachers' opinions should be sought, valued, and included in discussions and decisions about all aspects of education.

The work of teacher researchers who are using well-established methods to deliberately and intentionally study issues of teaching and learning in their classrooms is complex. As teacher researchers with whom we have collaborated will attest, approaching your professional work from an inquiry stance is hard work—especially now when the demands of teaching are constantly increasing. In the past year, educators had to adjust to remote instruction, making a very social, interactive experience an isolating one. As this "new normal" evolves, teachers will increasingly be called upon to meet its unexpected challenges. In addition, teachers will still be facing the barriers to conducting teacher research such as finding the time in already demanding schedules and receiving support from colleagues and administrators. Additionally, teachers who are not enrolled in graduate coursework—where teacher research may be well supported—may not have access to this important professional learning model.

At times, it becomes difficult for educators to see how their work is worthwhile. Teacher research is a way to re-professionalize the image of teachers and validate teaching "while also contributing to the general knowledge regarding teaching and learning instruction, elevating the status of teaching as a profession" (Gentry, et al, 2016, p. 56). Professionalism does not mean that teachers "do what they think or feel is right in a given situation, but rather that they do what they know is right based on their deep understanding of professional practice (Schleicher, 2018, p. 27). Teacher research provides teachers an opportunity for deeper understanding of their daily work in classrooms.

Our findings suggest that teachers change their thinking about students, curriculum, instruction, and assessment, as a result of their semester-long, teacher research process. We have discussed how teacher research based on organized, structured examination of problems, concerns, and questions

identified by teachers improves teaching practice and increases teachers' confidence and sense of autonomy. Teacher researchers, working independently or with colleagues conducting classroom inquiry, with knowledge of teaching practice, students, and context have the potential to contribute to teachers' professional autonomy. Autonomy is essential for teachers' work and for the success of their students as independent learners and active citizens (Hyslop-Margison & Sears, 2010, p. 12).

Recommendations and Further Research

We recommend that districts examine their current professional development planning and look for ways to include teacher research as a significant professional learning opportunity. It is essential that districts support this work by providing resources and time for teachers to research their own practice and share their findings with others. At a time when teachers have increasing demands and responsibilities, it might be argued that teacher research should not be a priority. However, as schools are under more and more pressure for improved student performance, this is the right time for teachers to conduct research in their own classrooms to provide authentic, immediate feedback to meet the needs of an increasingly diverse student population.

Further research should examine specific stories from teachers whose practice was most significantly impacted by the teacher research experience, and how those teachers have continued to use their classrooms as sites for inquiry. Teacher research has the potential to support teachers in all areas of their work. As teacher educators, we believe that offering teachers a rigorous, meaningful, and intentional teacher research experience that requires them to follow well-established research methodology supports teachers' confidence. We feel that the teacher research experience can be used in a variety of settings with similar results in building teachers' confidence and improving teaching practice.

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