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Teacher inquiry is the process of applying action research to educational problems of practice, carried out by educational practitioners. The value of teacher inquiry—and all applications of action research—is that the research is being conducted by insiders, those who work directly with the problem being studied. It is based upon critical reflection and investigation into one's own professional practice. This paper presents discussion of teacher inquiry as a viable approach to resolving practitioner-based problems of practice in a process that also affords teachers the operation to generate their own knowledge about classroom practices. The process of conducting action research, along with its applications and benefits, are reviewed and contextualized within the work of classroom teachers. Perspectives held by educators regarding teacher inquiry are also discussed. The paper closes with a discussion of ways in which teacher inquiry can be highly beneficial as a means of professional growth during and following the COVID-19 global pandemic and includes a concrete example of teacher inquiry during the pandemic.

Introduction

Action research has been a respected and widely used approach for conducting applied research in educational settings for decades but continues to suffer from general misunderstandings among researchers and practitioners alike (Mertler, 2020a). While there are numerous similarities between action research and more traditional forms of educational research, the important distinguishing characteristics of action research (Mertler, 2020a)—it is a process that improves education by incorporating change and involving educators working together to improve their own practices; it is collaborative and participative, since educators are integral members of the research process; it is practical and relevant, allowing educators direct access to research findings; and, it focuses on critical reflection about professional practice—are what make it an ideal approach to systematic inquiry for the educational practitioner, specifically in the form of *teacher inquiry*. The main goal of action research is to address local-level problems in practice with the anticipation of finding immediate answers to questions or solutions to those problems (Mertler, 2018). The purpose of this paper is to shed light on the process of conducting teacher inquiry in the form of action research—including its benefits and applications—to facilitate applied research in contextualized and practical settings, conducted by practitioners who are focused on solving their own, self-identified problems of practice.

Teacher Inquiry as Applied Educational Research for Practitioners

Dana and Yendol-Hoppey (2019) define *teacher inquiry* as "systematic, intentional study of one's own professional practice" (p. 6). There exists a great deal of overlap between the concepts of action research and teacher inquiry. In fact, the literature contains numerous terms used synonymously with "teacher inquiry," including "teacher research," "classroom research," "classroom inquiry," and "practitioner inquiry." In essence, teacher inquiry consists of the application of action research to classroom problems, conducted by professional educators (e.g., classroom teachers, counselors, special educators, and administrators).

Regardless of the term that we might use to describe this practice, all the above refer to the act of professional educators not only being involved in the research process, but actually leading that process. They are responsible for identifying the problem, specifying its scope and breadth, making informed decisions about appropriate data to collect and analyze, and then actually collecting and analyzing those data, for purposes of drawing conclusions and addressing their initially-stated problem under investigation.

When we talk about teacher inquiry, we are referring to a type of applied research in education that is entirely about the practitioner and her desire and need to study her own practice. We are not talking about university professors and researchers or staff from a national research firm going into schools and conducting research on topics that they are interested in studying. Applied research *is* educational research that is focused on solving a specific problem. Teacher inquiry could be considered the *epitome* of applied educational research (Mertler, 2013, 2020a).

The Nature of 'Problems of Practice' and the Appropriateness of Teacher Inquiry

When we talk about topics appropriate for teacher inquiry, we often refer to them as *problems of practice*. A problem of practice is just that—a problem faced by a practitioner in her professional practice. Further, it is a problem that she wants to try to resolve through the application of a strategic, systematic, and scientific approach. Oftentimes, educators mistakenly equate *educational problems* with *problems of practice* (Mertler, 2020a). As we all know, problems are extremely abundant in educational settings. However, the difficulty here is that problems—in and of themselves—are not directly "solvable." For example, in speaking with a classroom teacher, you might become aware of the following problem in a school or district: "there is clearly an achievement gap in our district." By definition, this would not be considered a problem of practice because it is simply too large and too complex to be investigated and solved. Henriksen, Richardson, and Mehta (2017) have described a "problem of practice" as follows:

> The term 'problem of practice' is common in education, but it has no single, common scholarly definition… We suggest that a problem of practice is: a complex and sizeable, yet still actionable, problem which exists within a professional's sphere of work. Such problems connect with broad or common educational issues but are also personal and uniquely tied to an educational context and its variables; thus, they must be navigated by knowledgeable practitioners. (p. 142)

Note several important features of their definition. First, the problem of practice must be complex and sizable, but must still be actionable. In other words, it must be solvable, to some degree. Second, they clearly note that the problem of practice should exist within a professional's sphere of work and must be specific to a particular context, setting, group of students, etc. Simply put, this means that the practitioner must have control over the entity under investigation. She must be able to change her practice, to try something new, to assess how well it works, and then to make changes in an effort to move her practice forward.

There may literally be no better or more appropriate way to investigate specific problems of practice than to do so through the process of teacher inquiry (Mertler, 2020a). The application of action research *by* practitioners in their *own* settings investigating their *own* problems of practice is the most appropriate way to address those problems (Mertler, 2013). It could be argued that literally no one else has the insight and levels of experience necessary to understand and to solve a particular context-specific problem of practice than the practitioners who are involved in that setting and with that problem on a daily basis (Mertler, 2013). Mertler continues by stating that problems of practice are so inextricably context-specific that outsiders would have a difficult time fully understanding and grasping the

impact of the problem and any potential solution. The specificity may center around a specific teacher's style of instruction, a mix of student personalities in a classroom, a particular curriculum that is used only in that district, or perhaps even the cultural makeup of the local community. The types of experiential knowledge requisite to study a particular problem of practice should not be overlooked or diminished when we talk about teacher inquiry as an applied approach to conducting research in educational settings.

In turn, this helps to establish one of the most critical ways in which teacher inquiry and action research are important to the broader field of educational research. Specifically, teacher inquiry gives voice to the professional educator, allowing that educator to identify and investigate problems with which she has first-hand knowledge. In essence, the broader result of this process is that teachers have the capacity to become what Dana and Yendol-Hoppey (2019) refer to as "knowledge generators." Teachers have been historically seen as "dispensers of knowledge," as opposed to "generators of knowledge." Teacher inquiry is the systematic process that allows educators to create original knowledge about educational practice. It could be argued that, from an historical perspective, educational research has relied on outsiders who are studying PK-12 classrooms to generate that knowledge. The collective voice, experiences, and knowledge of the professionals "on the ground"—immersed in that particular setting each and every day—were typically not considered. The knowledge that can be generated by considering and valuing the perspectives of educational practitioners through the application of teacher inquiry has the potential to alter that landscape.

Overview of Action Research

Since it has been alluded to earlier, an overview of action research is warranted. Action research is any sort of systematic inquiry conducted by those with a direct, vested interest in the teaching and learning process in a particular setting; by definition, it is truly systematic inquiry into one's own practice (Johnson, 2008). In educational settings, it is a process that "allows teachers to study their own classrooms…in order to better understand them and to be able to improve their quality or effectiveness" (Mertler, 2020a, p. 6). Action research provides a structured process for customizing research findings, enabling educators to address specific questions, concerns, or problems within their own classrooms, schools, or districts. The best way to know if something will work with your students or in your classroom is to try it out, collect and analyze data to assess its effectiveness, and then make a decision about your next steps based on your direct experience. It is arguably the most effective and practical approach to solving contextualized organizational problems and answering related questions (Mertler, 2020b).

Action research is conducted *by* practitioners *for* themselves; their problems and unanswered questions provide the impetus for situated and contextualized action research. Action research occurs in a manner completely opposite to more traditional forms of educational research, where it is typical to have the focus of some sort of research imposed upon educators by another individual or a team of researchers. Of course, this also means that the onus for developing those ideas for action research rest with the practitioners, as well.

It is important to note that action research is not a haphazard trial-and-error exercise or "stabs in the dark." Like any other approach to conducting research, action research is a scientific and systematic process consisting of a set of procedures designed to help professionals and other practitioners—or groups of practitioners—identify a problem, design and implement an intervention or other innovative approach to the problem, assess the effectiveness of the proposed solution, and then develop a plan for where to proceed next.

Applications and Benefits of Action Research

Mertler (2020a) cited six ways in which action research and teacher inquiry are critical to the teaching profession. Key among these are (1) the improvement of educational practice, (2) professional growth, and (3) teacher empowerment (Vaughan & Mertler, 2020). First, professional inquiry of this type can directly lead to the improvement of educational practice. During this process, educators are studying their own practice by reflectively and critically examining their own problems of practice, as they are situated within their specific context. This includes the identification of specific problems (i.e., the aforementioned "problems of practice") to which they seek answers, the collection of observational and other key data, and finally, engagement in a process that facilitates meaningful, data-

informed, and practical decision making. Action research and teacher inquiry provide a process that affords professional educators opportunities to seek out and actually find those answers that they know will work in *their* schools and classrooms and with *their* students.

Second, action research and teacher inquiry have been shown to lead to highly effective professional growth (Vaughan et al., 2019; Mertler, 2013). For decades, the approach to professional development in education has been a "one-size-fits-all" model. The basic logic behind this approach is that every professional educator can *somehow* benefit from professional development on the *same* topic. This simply is not the case. Since the early 1980s (Oliver, 1980), action research has been promoted as a meaningful alternative to more "typical" professional development opportunities for educators. Oliver (1980) argued that the major benefit of action research as inservice training for educators is that it promotes a continuing process of professional development in a climate where professional educators not only pose the research questions, but also test their own solutions, as well. More "enlightened" forms of professional learning (McNiff, 2002) operate on the assumption that educators already possess a good deal of professional knowledge, and are highly capable of furthering their own learning by focusing on specific aspects of their practice that they want to improve. These types of professional learning capitalize on a more appropriate form of support to help educators celebrate what they already know, but also encourage them to develop new knowledge. Action research and teacher inquiry lend themselves very nicely to this process, in that they require educators to evaluate what they are doing and further to assess how effectively they are doing so.

Third, teacher inquiry serves as an extremely effective and efficient means for teachers to experience professional empowerment. In an educational climate that is growing more and more data-driven all the time, and when teachers assume responsibility for collecting their own data—and making subsequent decisions from those data—they tend to experience a higher level of professional empowerment. This allows educators to bring their own expertise, talents, creativity, and innovations into their schools and classrooms. They then can design and implement instructional programs, lessons, and activities that will best meet the needs of their students (Mertler, 2020a). In addition, this type of empowerment allows—and, in fact, *promotes*—a sense of professional risk-taking, provided the goal is based in the improvement of educational practice.

The true benefit of action research and teacher inquiry is that educators can focus and direct their own professional growth and development in specific areas that *they* want to target, as opposed to having professional development topics thrust upon them. This allows for the emergence of professional development activities that are *customizable* in order to fit the needs of an individual educator, or perhaps even collaborative teams of educators (e.g., teachers of the students in the same grade, or teachers of the same content area). Specific areas identified and targeted for improvement can serve as the focus of the personalized and customized professional growth and development through action research (Mertler, 2013).

To extrapolate this notion a bit, if we accept the premise that action research can serve as a basis for meaningful professional development, then it would make sense that it could be part of a system of annual teacher evaluation (Mertler, 2013). For example, educators could begin an academic year by developing specific professional development goals for themselves that they would pursue through a systematic teacher inquiry approach. If educators were permitted—perhaps, even *encouraged*—to develop their own professional development goals, and to systematically collect data and investigate their own practice, and provided they were held accountable for the degree of their successes (or at least for what they learn because of reflection on the engagement in such a process), systems of teacher evaluation could see the addition of this critical piece of teaching effectiveness and its impact on student learning—from the perspective of the educator, herself. Incorporating teacher inquiry into teacher evaluation processes would add to teachers' sense of empowerment, and to a general sense of ownership over their own teacher evaluation processes (Mertler, 2013).

The Process of Action Research

Action research is typically described as a cyclical process, whereby a complete cycle of research (i.e., one actual research study) builds on and extends any cycles of action research into the same or closely-related problem that preceded it. A single cycle, then, consist of four stages of research activities. Those stages are:

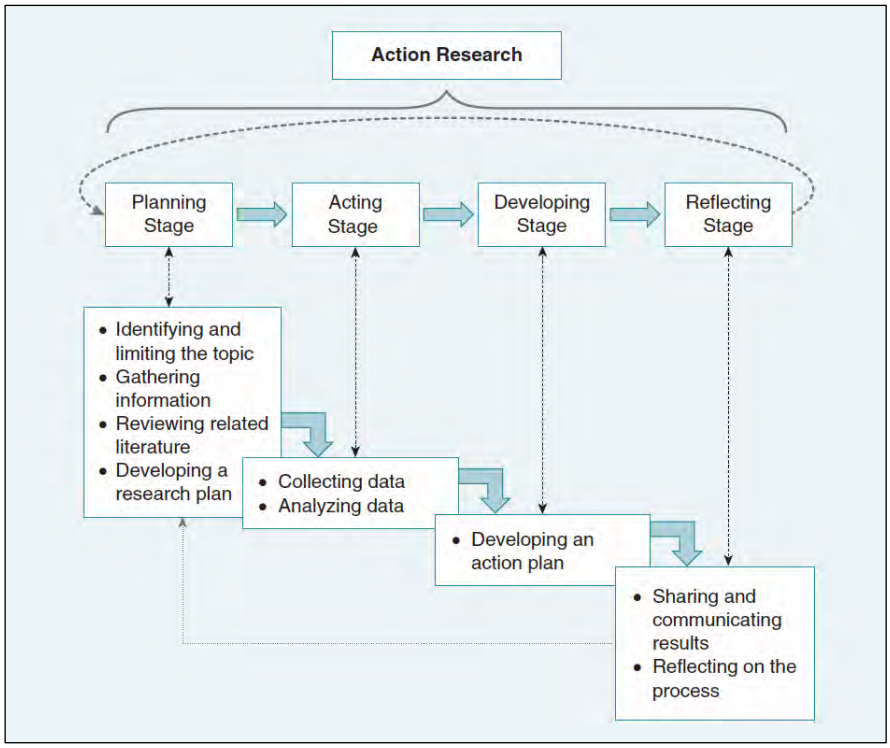
- The planning stage,
- The acting stage,
- The developing stage, and
- The reflecting stage.

The four stages of the action research cycle—along with specific research activities to be carried out in each stage—are depicted in Figure 1.

The first of these stages—the *planning stage*—consists of preliminary activities related to the development and implementation of an action research study. During this stage, the educational practitioner begins by initially identifying a topic. Oftentimes, the topic must be limited or expanded, depending on the initial scope of the potential problem under investigation. The practitioner also gathers information related to the topic. This related information would obviously include a small-scale review of related literature to discover what existing research work may have already been done on the problem of interest.

However, the search for this related information should *not* be limited to just published research. Since action research is practitioner-focused, related information that is both practical and experiential can also be extremely important in guiding the development of an action research study. This means that educators can look to colleagues—both internal and external to their own organizations—for guidance and practical suggestions for approaches, interventions, or innovative approaches to solving the problem that they may have tried and with which they may have experienced some degree of success. Both formal and informal sources of information related to the identified problem can be important in terms of helping to guide the development and structure of an action research study.

Figure 1. *The Four Stages and Specific Activities of a Single Cycle of Action Research*



Note. From "Overview of the Action Research Process," in *Action Research: Improving Schools and Empowering Educators* (6th ed.), by C. A. Mertler, 2020, p. 37, SAGE Publications.

Also important during this stage of the action research cycle is the statement of formal research questions that will serve to guide the conduct of the action research, as well as the development of a specific research plan for the study. Action research can use any design or approach to implementing an innovative approach, collecting data, and analyzing those data that may be used in more formal qualitative, quantitative, or mixed-methods research studies. Therefore, it is common to see approaches for data collection including, but not limited to, interviews, observations, focus groups, surveys, questionnaires, assessments, pretest-posttest measures, as well as any combination of the preceding.

The second stage—the *acting stage*—is where the actual conduct of the study occurs. This is the point in the action research process where the practitioner physically collects and analyzes all data to be used in attempts to provide answers to the guiding research questions. Once again, all strategies or approaches to data collection and analysis are appropriate at this stage of the action research process. That being said, however, it is probably most typical that practitioners rely on the use of thematic analysis and coding for the analysis of any qualitative data and descriptive statistics—and, possibly, *t*-tests or analysis of variance—for the analysis of quantitative data.

As mentioned above, virtually any strategy or approach to data collection and analysis are appropriate in an action research study. The key is alignment between the data (and subsequent analyses) and the guiding research questions. The practitioner-researcher must ensure that the data and associated analyses will provide answers to those questions. In cases where the research questions call for open-ended, non-structured narrative data—in the form of perceptions, beliefs, or feelings—then qualitative data would be the most appropriate form of data for answering the research questions. Alternatively, in situations where the research questions might require participants to rate their perceptions on a predetermined response scale, quantitative data and analyses would be the appropriate strategy. However, many researchers tend to see the best alignment with the process and goals of action research to be a mixed-methods approach to inquiry (Creswell, 2005; Mertler, 2020b). The belief here is that the combination qualitative and quantitative data will enable the practitioner-researcher to answer the guiding research questions in the most comprehensive and thorough manner.

The third stage of the process—the *developing stage*—is comprised of the development of an action plan for moving forward in the process of conducting action research. The action plan is the ultimate goal of any action research study—it is the *action* part of action research (Mertler, 2020a). This typically consists of two different aspects: an action plan for *practice* and an action plan for *future cycles* of action research. Since this action research is being conducted by practitioners, it is of utmost importance that the practitioner-researcher use the results and conclusions from a cycle of action research to impact and change current and future practice. After all, this is the main reason that a practicing educator makes a conscious and professional decision to use action research as a means of solving various educational problems. Secondly, it is important to develop plans for the continuation and exploration of the problem using an action research approach. The logic here is that seldom is a problem *solved* after a single cycle of action research. Aspects of the problem may experience improvement, but in all likelihood, there is still more improvement and change that could and should occur.

The final stage of the action research process—the *reflecting stage*—provides the opportunity to reflect not only on the context and results of the action research study at hand, but also on the action research process as a whole. Since, at its core, action research is about critical examination of one's own professional practice, reflection on the process of conducting action research is a critical step in the process. It is important to note that the act of professional reflection often leads directly into the next cycle of action research, by providing the foundation for the nature of the next stages of investigating the same problem or, perhaps, the next problem to be investigated. This is the basis for the way in which one cycle of action research logically and practically leads into the next cycle.

It is also crucial to note that, although this final stage of the process is labeled the "reflecting" stage and the expectation is that a teacher would use this opportunity to reflect on the overall process, reflection is an integral part of the action research process. Critical, professional reflection must span the *entire* action research process. In other words, professional

educators who engage in the action research process in the form of teacher inquiry are engaging in critical reflection during *each* of the four stages of the process shown in Figure 1. For example, to accurately frame the problem of practice during the planning stage, teachers would need to reflect on their past experiences and struggles that they may have had with that specific problem. They would also reflect on approaches that they may have tried in the past, to identify aspects of them which may have been beneficial and that they would want to continue. During the acting stage, they might reflect on previous data that they have collected, or strategies for analysis with which they are most comfortable. During the developing stage, they would want to reflect on the knowledge that they had gained up to this point in the cyclical process, since that knowledge would be used to develop a plan for their next steps in trying to resolve their identified problem with practice.

Research of any kind involves systematic and scientific investigation, and quality research must meet standards of sound practice (Mertler, 2022). Action research is no exception to this rule of thumb. The basis for establishing the quality of traditional research lies in the concepts of validity and reliability. Action research typically relies on a different set of standards for determining quality and credibility (Stringer, 2013). Because action research adheres to the standards of quality and credibility rather than validity and reliability, it has sometimes been criticized for being an inferior approach to research as well as for being of lesser quality. Rather than being considered lesser or inferior, action research should be viewed as being *different* from traditional research. Nevertheless, it is critical for action researchers to ensure that their research is sound (Mertler, 2022).

The extent to which action research reaches an acceptable standard of quality is directly related to the usefulness of the research findings for the intended audience (Mertler, 2022). This general level of quality in action research is referred to as *rigor*—the quality, validity, accuracy, and credibility of action research and its findings. Rigor is typically associated with the terms *validity* and *reliability* in quantitative studies—referring to the accuracy of instruments, data, and research findings—and with *accuracy*, *credibility*, and *dependability* in qualitative studies (Melrose, 2001). Melrose (2001) has suggested that the term *rigor* be used in a broader sense, encompassing the entire research process, and not just aspects of data collection, analysis, and findings.

Rigor in action research is typically based on procedures used to ensure that the procedures and analyses of the action research project are not biased, or reflective of only a very limited view from the researcher's perspective (Stringer, 2013). There are numerous techniques that can be used to help provide evidence of rigor within the parameters of practitioner-led action research studies (Melrose, 2001; Stringer, 2013). Among these techniques are:

- *Repeating the cycle*. Most action researchers tend to believe that one cycle of action research is simply not enough. Rigor can be enhanced by engaging in a number of cycles of action research into the same problem or question, where the earlier cycles help to inform how to conduct later cycles, as well as specific sources of data that should be considered. In theory, with each subsequent cycle of action research, more is learned, and greater credibility is added to the findings.
- *Prolonged engagement and persistent observation*. For participants to fully understand the outcomes of an action research inquiry and process, the researcher should provide them with extended opportunities to explore and express their experiences within the study (Stringer, 2013) as it relates specifically to the problem under investigation. However, it is important to note that simply spending more time in the setting is not enough. It is not about the quantity of time spent in the setting, but rather it is about the quality of the time spent.
- *Experience with the action research process*. As with virtually any type of research, experience with the process is invaluable. Rigor, itself, can be highly dependent on the experiences of the action researcher. If a professional educator had conducted previous action research studies—or even previous cycles within the same study—he or she can perform more confidently and have greater credibility with respective audiences (Melrose, 2001).
- *Triangulating the data.* Rigor can also be enhanced during the action research process

by including multiple sources of data and other information. Using multiple sources of data allow the action researcher to verify the accuracy of the overall data and clarify meanings or misconceptions held by those participating in the study (Stringer, 2013). Accuracy of data and credibility of findings go hand in hand (Mertler, 2022). In addition, this is another good reason for using a mixed-methods approach to data collection an analysis in action research.

- *Member checking*. Depending on the purposes of the study, participants should be provided with the opportunity to review raw data, analyses, and final reports resulting from the action research process (Stringer, 2013). This process can be very influential in terms of validating the findings resulting from any action research study (although, it is important to note that this procedure may not be appropriate in all action research projects). Rigor is enhanced by allowing participants to verify that various aspects of the research process have adequately and accurately represent their beliefs and perspectives. It also gives them the opportunity to further explain or expand on information previously provided.

- *Participant debriefing*. Similar to member checking, debriefing provides another opportunity to participants to provide insight into the conduct of the action research study. In contrast to member checking, the focus of debriefing is on their emotions and feelings, as opposed to factual information they may have provided.

Educator Perspectives on Teacher Inquiry

Admittedly, it is one thing to promote the idea of teacher inquiry in schools and classrooms, but professional educators who have been involved in the process of conducting their own teacher inquiry have experienced a sense of professionalism that they might not have realized other word otherwise, had they not participated in teacher inquiry and action research in their own settings (Vaughan & Mertler, 2020). Vaughan and Mertler provided a summary of the perceptions held by many educators who have participated in the teacher inquiry process. Included in their summary was the fact that, for many practitioner-researchers, gaining an understanding of research afforded them opportunities to make connections with and to name their practice as research. This, in turn, bolstered their self-perceptions as professional educators, as well as researchers. Educators often discussed the fact that involvement in the teacher inquiry process helped them to redefine their own practice in new ways. It gave them fresh perspectives on what it meant to teach, and it also demystified the research process.

Once they had been exposed to the action research process, many teachers felt that they had been doing action research all along as part of their daily work; respectfully, this was likely not the case (Vaughan & Mertler, 2020). While teachers routinely use data to help guide decisions that they make in their classrooms, many do not engage in a systematic, step-by-step process such as action research to reflect on their practice, consider alternative approaches to address problems they face, develop and implement some sort of an innovative approach, collect and analyze data, develop a plan for next steps, all the while engaging in critical professional reflection. However, it does serve to reinforce the idea that the work that teachers often engage in daily can be a wonderful "launching-off point" to get them started in the formal conduct of teacher inquiry in their classrooms. This will lead them to a systematic process, whereby the decisions that they make in their daily practice will truly become researched-based decisions, thus helping to foster the develop of educational "knowledge generators."

Oftentimes in educational settings, research has power in decision making and those who have access to research typically have more power than those who do not (Vaughan & Mertler, 2020). Being involved in and having some sense of ownership over the research process into their own problems of practice provided teachers with the language necessary to discuss research and to become integral players in the decision-making processes in their schools. This, then, often lead teachers to experience greater confidence when trying to be innovative in their classrooms, and also

fostered their enthusiasm to share their research practices with colleagues in meaningful and influential ways. Teachers have often commented that engaging in teacher inquiry on a regular basis each academic year has helped them to learn and grow as professional educators (Mertler & Hartley, 2017).

Teacher Inquiry During a Global Pandemic

If becoming immersed in the global COVID-19 pandemic has taught us nothing else—at least from an educational perspective—we have learned just how *professional* teachers can be (Vaughan & Mertler, 2020). Through professional as well as personal experiences, we have seen teachers who never received training in how to deliver instruction virtually, let alone offer emotional and social support to students and families in their charge. Across our country, as well as around the world, we saw professional educators rise to an occasion that they had no way of anticipating. Certainly, there were naysayers, but most teachers around the world stepped up when they knew they needed to do so (Vaughan & Mertler, 2020). Virtually all of them were trying new things, experimenting with activities, implementing new ways of trying to keep first graders, teenagers, and young adults engaged in the teaching and learning process. Although many of them were likely unaware of it at the time, it could be argued that a vast majority of them were engaging in the process of teacher inquiry without realizing it. They were trying to solve problems that were being thrown at them. They were constantly assessing how well those strategies worked and then how to proceed moving forward. It is very likely that many of them created strategies that they might very well continue to use once schooling returns to normal and students are once again in their classroom seats.

My sincere hope for the educational community is that this process created meaning and value for professional educators everywhere. Exposure to and involvement in the process of conducting contextualized teacher inquiry is something that will likely have a lasting impact on their collective professional practice. While it is incredibly unfortunate that it took a global pandemic for many professional educators to realize their potential when it comes to teacher inquiry and the process of solving their own problems of practice, there is a silver lining associated with it. Professional educators now could continue to move their practice forward in incredibly meaningful and insightful ways by engaging in the process of teacher inquiry, either individually or collaboratively in teams. Doing so will undoubtedly help them grow as professional educators, provide opportunities to experience levels of professional empowerment that they may not have experienced up to this point in their careers, and provide for themselves a data-informed "voice at the table" when it comes to research-based educational decision making.

A Brief Example of Teacher Inquiry during the COVID-19 Global Pandemic

Ashlene is a sixth-grade teacher who was in the middle of her eighth year of teaching when the COVID-19 pandemic hit. During the 2019-2020 school year, she had 24 students in her class. In the spring of 2020, when all instruction moved to an online format, things started out okay, but Ashlene soon found herself struggling to keep all her students actively engaged in their virtual classroom environment. Trying to manage 24 participants in a virtual video meeting proved to be quite challenging. She tried a couple of large-group activities with her entire class, but they still were not working. As she reflected on her own teaching practices, she decided to do a little searching online and came across a handful of journal articles that talked about small group learning and peer feedback in a virtual environment. Initially, she liked the idea, so she asked a couple of her colleagues if they had ever tried anything like that. Only one had ever tried it and was currently doing it with her students. She shared with Ashlene that it was fairly successful in terms of helping with the issue of a lack of student engagement.

Even though Ashlene knew that she would have to hold many more virtual class sessions that she had been since she wasn't working with her entire class at a given time, she wanted to try this approach to see if it helped, not only with student engagement but also with student learning. She divided her class of 24 into four groups of six students each. She knew this meant that she would now have four times as many virtual class meetings as she had been doing previously, but she felt it was something that she needed to try. Additionally, she decided to pose the following

questions that she would attempt to answer with her inquiry approach to her classroom problem:

- *To what extent are my students more engaged in the virtual learning process when I use small-group instruction and peer feedback?*
- *To what degree do small-group instruction and peer feedback impact my students' academic performance?*

She tried this approach in her virtual classroom for three weeks and she began to notice a difference in how students were behaving and interacting with each other online. However, she knew that this was purely anecdotal information, and she needed some additional, formal data to guide where she would go next. She decided to create a small survey for students consisting of eight questions, asking their opinions of the smaller groups and peer feedback process, what they liked and didn't like about it, and if they would want to keep doing it. She also took a close look at the student work that had been submitted to her over the last three weeks.

To Ashlene's surprise, the student survey data were overwhelmingly positive. The students seemed to like the smaller groups, felt that they had more of an opportunity to speak during class sessions, and liked the fact that they got to work closer with a smaller number of their classmates. They did suggest, however, that in the future, they be allowed to pick the members of their small groups. Ashlene was very happy with her data, but also knew that she would have to take the responsibility for placing students into their smaller groups. She was also very pleased with student work. They had been doing a unit on plants and the environment and had been required to prepare a short research paper, for which Ashlene used an analytic rubric to evaluate their work. Over the last few years, she had noticed that students struggled on a couple of the criteria addressed by the rubric. However, student performance in those areas over the last three weeks had improved quite a bit. She attributed this, at least in part, to the peer feedback aspect that she had incorporated into her virtual instruction, along with the fact that students were preparing drafts of their papers using Google Docs and could share them with the other members of their small groups. Ashlene decided that she would continue to use this approach for the remainder of the school year and then spend some time during the summer break re-evaluating what she had done and deciding what changes she would want to make for next year.

When the 2020-2021 school year arrived and instruction was continuing to take place virtually, Ashlene was very excited because she knew that she would have an opportunity to implement her new teaching strategies with a different set of students to continue to assess how well they were working. She decided to make a few minor changes to her peer feedback model, including a more thorough introduction to it for her students, which she believed she had not taken the time to do during the previous school year. Toward the end of the first half of the school year, she collected data like those she had collected the previous year. She was not surprised to find that the results were quite similar. After two cycles of implementing her innovative strategy, she was quite happy with the results and planned to continue with these strategies moving forward.

In fact, when late winter of 2021 arrived, and her school's instruction returned to an in-person format, she felt so confident in her new strategies that she continued to use small groups and peer feedback within her physical classroom space and face-to-face instruction. Students had been informally letting her know that they really liked working with their small groups and they liked being able to use the technology to help them with their work and the feedback they were providing to their classmates.

Ashlene was so pleased with the results of her three cycles of teacher inquiry that she decided to share what she had done with her building principal. Her principal was equally impressed and asked her if she would be willing to share her inquiry process with the other teachers in their school at an upcoming faculty meeting. The principal felt that there was a great deal of potential for other teachers in the school to grow and develop professionally by implementing continuing cycles of teacher inquiry.

Conclusions

Action research is admittedly not a new approach to applied research and solving context-specific problems. However, many professional educators lack familiarity with action research and teacher inquiry as a process. The concept of research is often so foreign to

them that they feel believe that it is not something that they are capable of doing (Mertler, 2013). In contrast to those opinions, many teachers are well versed in processes that involve trial and error. The difference between trial-and-error efforts and the systematic process of teacher inquiry is the fact that action research and teacher inquiry are more structured, more systematic, and more sequential. The four-step process to conducting applied inquiry studies as presented in this paper can provide a great deal of guidance and structure to these efforts undertaken by professional educators in their settings. In addition, the idea that one cycle feeds into and informs subsequent cycles—all of which are built upon continual and critical professional reflection—strongly supports the idea of career-long learning and professional growth for educators everywhere.

It is important to note that undertaking these kind of initiatives in school settings—while straightforward and systematic—are not necessarily nor inherently easy. One requisite criterion that should be in place is some sort of collegial or supervisory support in school settings (Mertler 2013). Whether it be a mentorship relationship or a collegially-supportive relationship, professional educators need to know that their efforts in implementing teacher inquiry do not go unnoticed. In addition, it is sometimes reasonable to expect that the process of teacher inquiry may oftentimes lead those who conduct it to come up against hurdles or unanticipated consequences of their work. Mentoring and supportive relationships can go a long way to help professional educators brainstorm, problem solve, and continue their forward momentum in efforts to improve their practice. Action research in the form of teacher inquiry is a process that can facilitate the realization of those types of professional goals by giving teachers voice and by helping to create "knowledge generators."

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