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The purpose of this study was to describe four successful collaborative action research (CAR) projects through the lens of teacher leaders who facilitated the school teams that conducted the CAR. For each CAR project described, the paper will report on the various phases of the CAR, the challenges of implementation as well as how the challenges were addressed by the teacher leaders, and results of the action research. Additionally, the study identifies several common characteristics of the widely varied CAR projects.

Review of Selected Literature

Kurt Lewin (1948), often referred to as the father of action research, defined it as "a comparative research on the conditions and effects of various forms of social action, and research leading to social action (pp. 202–203). Lewin proposed the traditional steps in the action research cycle: identify a general idea, do fact finding concerning the idea, design a tentative overall plan and the first action step, take the first action step, evaluate, revise the plan, take the second action step, and so on. Stephen Corey (1949) is often credited with introducing action research to schools. Corey described three characteristics of action research. First, its purpose is to improve practice. Second, practitioners carry it out. Third, practitioners are more likely to be influenced by their own AR than by traditional research carried out by researchers outside of the practitioners' work setting. More recently, Hines and Conner-Zachocki (2015) wrote that the current practitioner inquiry movement, which they equate with action research, "is based upon the assumption that teachers are already experts with keen knowledge of children and content matter cultivated from experience, local knowledge, and pedagogical training" (p. 348) and thus are well suited for conducting inquiry in classrooms and schools.

Challenges to Teacher Action Research

Despite the potential of teacher action research, it has faced its share of challenges. McBee (2004) points out that teachers may view action research as taking time and energy away from their teaching. Du (2009) notes that action research can go through periods of ambiguity and uncertainty as well as conflict, conditions that may cause teachers unfamiliar with the process to withdraw. Teacher action research also has been critiqued by some scholars citing inadequate training leading to invalid results, lack of administrative support, and research that cannot be generalized to other classrooms and schools (McBee, 2004). To address teacher concerns, Henderson (2017) calls for school leadership to provide teachers involved in action research time to engage in both relational and professional work. Regarding critiques of action research, McBee (2004) states:

> The proper role of teacher research is not to test and contribute to theory, nor should it attempt to generalize beyond the local context. Instead, teacher research should answer the questions that teachers themselves have concerning their daily classroom practice. (p. 57)

Collaborative Action Research

CAR has been defined both as university and school researchers partnering for action research and as a team of practitioners doing independent action research. CAR in this study follows the latter definition. Jaipal and Figg (2011) identified three types of CAR: research on (a) classroom practice within a single school, (b) classroom practices within multiple schools, and (c) school-wide issues within one school. The first and third types of CAR were examined in this study.

CAR is team research, and thus the research on team development applies. Du (2009) notes that CAR teams journey through the traditional stages of team development: forming, storming, norming, and performing. Regarding interpersonal needs, Wicks and Reason (2009) discuss inclusion, control, and intimacy stages, with each stage including emotional, task, and organizational issues. Wicks and Reason state that interpersonal needs must be addressed from the very beginning of CAR: “The success or failure of an action research venture often depends on what happens at the beginning of the inquiry process: in the way access is established, and on how participants and co-researchers are engaged early on” (p. 243).

Capobianco and Feldman (2006) describe four conditions for successful CAR, including community of practice (with the goal of improving practice), epistemic community (with the goal of creating and validating knowledge), knowledge of the nature of action research, and knowledge of research methods. According to vanOostveen (2017), successful CAR is voluntary, long-range, and assisted by an expert facilitator, with the team allowed to choose its own focus area and with a decreased workload for team members. Characteristics of successful CAR reported by Peterson et al. (2010) include a shared vision as well as respect for and acceptance of all team members. According to Adams and Townsend (2014), effective CAR is sustained, characterized by shared responsibility, job embedded, focused on local context and needs, based on team members’ curiosities and concerns, and shared with other professionals.

Teacher Leaders and CAR

Teacher leaders of CAR, according to Bruce, Jarvis, Flynn, & Brock (2011), need to fill four roles. As managers, they must assist in planning, tracking, and reporting the action research. As motivators, teacher leaders must build trust as well as encourage and challenge teachers on the CAR team. As models, they must be exemplars of both quality action research and quality instructional practice. As mediators, teacher leaders must mediate between the team and those outside the team, and among team members. Perhaps the single greatest task of the teacher leader is to develop relational trust. Edwards-Groves, Grootenboer, and Ronnerman (2016) have proposed five dimensions of relational trust in teacher leadership of CAR. These dimensions include the interpersonal (develop empathy, relationships, and respect for teachers on the team), intrapersonal (create safe spaces for communication and collaboration), intersubjective (model collegiality and learning), intellectual (exhibit professionalism and knowledge), and pragmatic (lead research that is practical, relevant, and doable).

Benefits of CAR

If done well, CAR can result in a variety of benefits. At the individual level, CAR can increase teacher self-worth, self-efficacy, and reflection. CAR can assist teachers to develop inquiry, problem solving, decision-making, and leadership skills, and to adopt new teaching practices (Adams & Townsend, 2014; Furtado & Anderson, 2012; Henderson, 2017; Hines and Conner-Zachocki, 2015; Sullivan & Glanz, 2014; vanOostveen, 2017). At the team level, CAR can foster equality, mutual support, collaboration, shared leadership, team performance, and conflict resolution (Adams & Townsend, 2014; Peterson et al., 2010; vanOostveen, 2017). At the school level, CAR can deprivatize teaching, improve the school environment, enhance the curriculum, foster democratic community and shared leadership, promote a collaborative culture, cultivate an inquiry stance, and provide a focus for school improvement (Adams & Townsend, 2014; Sullivan & Glanz, 2014; vanOostveen, 2017). Most importantly, CAR can lead to improved student learning (Adams & Townsend, 2014; Furtado & Anderson, 2012).

Context of the Study

The teacher leaders who led the CAR were part of a professional development program the year prior to their yearlong CAR. Content of the professional development included characteristics of successful CAR, needs assessment, data gathering and analysis, selecting a focus area for CAR, developing an action plan, and evaluating CAR. Teacher leaders who were invited to participate in the study were from different school districts. The teacher leaders invited small groups of teachers at their school to participate in CAR. With the facilitation of the teacher leaders, CAR teams gathered and analyzed needs assessment data, selected a focus area, and designed an action plan. The action plan included research objectives, planned activities and responsibilities, and a plan for evaluating the results of the CAR. The action plan was to be implemented during the school year following the needs assessment and planning. Although none of the principals at the four schools were extensively involved in the CAR, they all supported the CAR and provided basic resources needed for the research. The teacher leaders met with their principals on a regular basis to inform them of the progress of the CAR.

Research Methods

A case study method was used to describe the separate CAR projects, the teacher leaders' facilitation of the CAR, and the results of the CAR. The four CAR projects described in the study were selected from a larger number of CAR projects because of the success of the projects and the success of the teacher leaders' facilitation of those projects. Data sources for each case study included the CAR needs assessment data, the action plan, the teacher leader's reflective journals kept throughout the CAR, and the CAR evaluation data. Data analysis for each case included comparison of the needs assessment data to the action plan, analysis of the teacher leaders' reflective journals, comparison of the action plan to the activities recorded in the teacher leader's journal, and review of the evaluation data.

Analysis of a teacher leader's journal began with several readings of the journal to become intimately familiar with its content. Next, open line-by-line coding was carried out. Axial coding was then completed to identify categories across the teacher leader's reflections. Data displays were created to summarize the results of the journal analysis and to assist in the identification of themes concerning the teacher leader's facilitation of the action research, team members' reactions to that facilitation, phases of the CAR process, challenges faced, and progress toward CAR objectives. Analytic memos were written throughout the analysis of each type of data. Draft case studies were written, sent to the teacher leaders for member checks, and revised based on the participants' feedback. In addition to the individual case studies, a cross-case analysis was completed to identify common themes across the four cases. The cross-case analysis was aided by comparison of the data displays developed during the individual case analyses.

Results

The four cases include the following: (a) Sandra facilitated CAR intended to provide learning assistance to economically disadvantaged students at her middle school,

(b) Jennifer led a team of high-school teachers in their efforts to increase the quality of formative assessment in their classrooms (c) Fran coordinated CAR aimed at increasing the cultural responsiveness of a group of teachers at her middle school, and (d) Tanya led an elementary school CAR team that initiated a tutoring program for students struggling academically.

Action Research on Life Support

Participants in the middle school CAR led by Sandra could be represented by three concentric circles of participation, with a small group of support teachers in the inner circle, interventionists and counselors in the middle circle, and the remainder of the school faculty in the outer circle. Western Middle School (WMS) serves an affluent exurban community with a small number of economically disadvantaged (ED) students. A review of state test results showed that ED students as a group scored lower in reading, writing, and math than the school's student population as a whole.

Data gathered the year prior to the CAR included a teacher survey and classroom observations of ED students. The survey revealed that 80% of the teachers who participated believed that ED students have different needs than other students. Only 55% of the teachers reported that it was easy to build positive relationships with ED students. Many WMS students from affluent families are assisted with their learning through private tutors or other types of outside academic assistance, and 50% of the teachers who completed the survey said that before- or after-school programs were necessary to meet the academic, emotional, and social needs of the ED students who could not afford such outside assistance.

Classroom observations revealed that ED students were less vocal than other students in teacher-led discussions and less likely to raise their hand or go to the teacher if they needed assistance. ED students, on average, had fewer one-to-one conversations with their teachers. The classroom observations showed that ED students were more involved in lessons when working in collaborative groups or when the teacher initiated a one-to-one conversation.

The action plan for assisting ED students, which was to be initiated the fall following the initial data gathering, included counselors meeting with teachers to share information on ED students' needs, Sandra providing teachers with assets-based teaching strategies, regular follow-up meetings of counselors and teachers, and regular analysis of and reflection on ED students' progress in PLC meetings. Direct assistance to ED students would focus on support meetings provided Monday through Thursday from 4:00 p.m. to 6:00 p.m. The support sessions would be held in a computer lab in order to give students access to technology resources they did not have available at home. The district agreed to provide financial support to the effort and to make a bus available to transport students to their homes after the support sessions. Indicators of progress would include teacher and student reports, ED students' attendance, and ED students' academic performance in language arts, math, science, and history.

The beginning of the school year in which the action plan was to be carried out saw significant personnel changes. WMS had a new principal, two new counselors, a new interventionist, and a 25% turnover in faculty. Sandra commented, "The high turnover rate from last year is making progress difficult. A plan is hard to implement when those involved in its creation are gone." Moreover, because of revisions in the district budget, the district financial support that had been promised for the CAR the previous year was no longer available. The new principal was supportive of the CAR and suggested that, in the absence of financial support for an after-school program, ED support sessions be carried out in a 25-minute advisory period at the end of the school day.

Sandra and two other teachers who had agreed to be support teachers were concerned that 25 minutes would not be enough to provide the needed support to ED students, but they agreed to proceed with the CAR. Sandra worked to revise the student schedule so that ED students would be with one of the three support teachers during the advisory period. During grade-level meetings, strategies for assisting ED students were discussed and the planned support for ED students during advisory period was explained. All teachers were encouraged to involve counselors and interventionists whenever they became concerned about ED students' academic, social, or emotional growth. The three teachers providing support to ED students during the advisory period agreed to meet once every two weeks. The support teachers spent the

first two weeks of implementation getting to know the students and outlining expectations, and then began assistance activities intended to address ED students' needs.

Problems with the revised action plan soon began to surface. In addition to assisting ED students, the three support teachers also had to assist other students assigned to them during the advisory period. Between this reality and the shortness of the advisory period, the teachers were having difficulty providing the ED students the assistance they needed. Also, time for the support teachers to meet for reflection and planning began to be limited as they were assigned other responsibilities related to district initiatives such as the creation of common assessments. One way the CAR team addressed these problems was the initiation of peer tutoring during the advisory periods. Also, the new intervention teacher established a math intervention program during the school day that ED students needing assistance with math could attend.

Despite the new sources of support, Sandra still was concerned ED students were not receiving adequate assistance and that the support teachers would soon burn out. She referred to both the CAR and the program it was exploring as being on "life support." Sandra proposed to the principal that the school return to the original action plan for after-school assistance for ED students. The principal agreed to a six-week trial program at the beginning of the spring semester, with support to be provided to ED students Monday, Tuesday, and Wednesday mornings before school and after school on Thursdays. Sandra recruited three teachers, certified in math, science, and history, to participate in the trial effort and met with counselors to identify students who would be good candidates for the voluntary program.

During the six-weeks of before- and after-school support, Sandra observed and recorded examples of support teachers providing ED students with economic, academic, and personal assistance. One of the support teachers quickly recognized sixth-grade student Tricia's need for school supplies. Tricia was told to reach in to a school supplies box provided by the program and "took out a binder, writing utensils, and dividers, and inquired about a school calendar book to keep track of her assignments." Bonnie, an eighth-grade student, had been ill for a number of days and Sandra and one of the other support teachers assisted her to catch up with her work in math. Sandra noted in her journal, "Bonnie works hard during her time with us and we see great academic potential in this student. We are encouraged by her work ethic." Sandra wrote about an example of emotional support:

> Terry was receiving science tutoring and Ms. Smalley (a support teacher) was using a computer to access her grades. I walked over to help Kelly, who is one of my math students, and inquired about her class averages. Before she shared any of her grades, Kelly began crying. She did not want me to see her grades, because she was failing one class. I reassured her that my role was not to condemn her for her grades but rather to support her efforts in improving.

Attendance at the support meetings was often hindered by student transportation problems, but overall the feedback from both the teachers and students was positive, indicating that students had received assistance with school-supply needs, academic problems, social and emotional challenges, and personal

organization. At the conclusion of the six-week trial, the school once again had to depend on the advisory period for assisting ED students.

Although the assistance provided by the program for the remainder of the year was hindered by time limitations, progress in assisting ED students was evident. One positive aspect of the program was that small-group and one-to-one assistance made individual diagnoses possible. Two examples from Sandra's journal follow:

- Edward [a sixth-grade student] needed a lot of reteach. He struggles to understand and interpret math vocabulary. He seems to do well with procedural math, solving equations, traditional multiplication and addition, etc. Most of his struggles come from not completing work due to a lack of vocabulary comprehension.
- David [sixth-grade] understands math but lacks confidence. Unless he is 100 percent sure of his methods, he will not attempt to work a math problem. As a result, he has incomplete math homework. His struggles are more a result of a lack of confidence than a lack of knowledge. After working with David, I quickly realized his timid nature is a significant factor in his academic struggles.

The CAR continued to face challenges throughout the remainder of the spring semester. Students, including ED students, were regularly pulled from the advisory rooms to make up tests and projects, leaving less time for student support. The administration assigned the same teachers who were providing support to ED students to design a plan for preparing students for the state performance test, hindering the teachers' ability to meet as a group. Additionally, off-campus professional development commitments also interfered with team meetings. Despite these challenges, year-end data was positive. The year prior to the CAR, only 35% of teachers in the school reported they understood the needs of their ED students, and at the end of the yearlong CAR, 74% of the teachers reported such awareness. Although all of the WMS students were issued iPads by the school, the ED students also had access to a printer, Wi-Fi, and iPad charging stations during their support sessions. Attendance improved for 42% of the ED students. Most of the ED students improved their achievement in at least two of their classes, and the majority of those students improved their achievement in at least three classes.

The educators most directly involved in the CAR (support teachers, counselors, and interventionists) submitted suggestions for the following school year, including "Kid Day" meetings throughout the school year to discuss student needs, in-classroom computers in addition to iPads, and personalized placement of ED students in advisory classrooms rather than placement according to grade level. An interaction between Sandra and Gelena, an ED student in the sixth grade, represents the promise of this type of CAR and the support for ED students that it explored:

> Galena came in for support this week. . . . I asked her about her last science test. She almost earned an "A" with a score of 88. I asked her if she was happy with the results. She smiled and nodded. I told her I was proud of her and we moved on to the next science unit.

From Assessment to Action

Jennifer led a team of eleventh grade social studies teachers at Everett High School, located in a large metropolitan area, in their efforts to increase the quality of formative assessment in their classrooms. In a meeting with school administrators to discuss a focus for the CAR, Jennifer learned that the principal was interested in "student achievement" as a broad topic for improvement, and the academic director was concerned specifically about teachers' questioning strategies.

According to a teacher survey, the social studies teachers used formative assessment once a week or less, and they perceived that the main barriers to using formative assessment were a lack of time, resources, and training. The teachers believed that formative assessment consisted primarily of tests, quizzes, and end-of-week writing samples; some teachers mentioned using white boards or exit tickets as formative assessment strategies, and no teacher mentioned questioning techniques. A few teachers reported never using formative assessment and that they were not interested in learning more about it. The survey revealed that most teachers were interested in knowing their students' level of understanding and how to adjust classroom instruction but were unsure how to garner that information.

Classroom observations conducted by Jennifer revealed that the social studies teachers were not often asking direct questions to individuals, providing adequate wait time, or addressing evident learning gaps. Observation data indicated that students were most engaged when asked direct questions, yet most of the questions asked were directed to the whole class, and the same handful of students were answering those questions. A lack of student engagement was present across the observations. This observation data confirmed the teachers needed assistance using formative assessment to monitor student learning and make informed adjustments to instruction.

Student survey results showed that students were interested in reviewing their own assessment data and that formative assessment strategies were rarely used in their classrooms. Some students reported that they were asked direct questions on a regular basis and others stated that they were asked such questions less than once a week, while the majority of students responded that they were not being asked direct questions at all.

Based on the needs assessment data, the CAR team recognized a need to participate in training on formative assessment strategies and how to use that data to inform instructional decisions. The team developed an action plan to address four objectives: (a) increase understanding of formative assessment strategies, (b) increase use of formative assessment, (c) improve analysis of formative assessment data, and (d) improve students' understanding of their own learning through student reflection. The action research would be evaluated through ongoing teacher reflection on the implementation of formative assessment strategies, classroom observations, and teacher and student surveys on the perceived effectiveness of formative assessment in improving student learning.

At the start of the following school year, Jennifer provided training for the faculty on formative assessment strategies. Subsequently, a new round of observations was conducted to look for evidence of

formative assessment and the types of formative assessment being used, and to determine specific support the teachers might need in this area. Jennifer noted in her action research journal that the observations revealed that some teachers were using formative assessment many times during the lesson, while others went an entire lesson without asking students any questions. Jennifer shared some technology-based strategies the teachers could use to gather individual student data, and the teachers said they planned to use the strategies in upcoming lessons. The teachers also discussed the student reflection template they were implementing in their classes to increase student reflection, and they decided to use it with their students every three weeks, following each summative assessment.

During a review of student data, which was not as positive as the teachers had hoped, Jennifer noticed negativity from the teachers about the data. She reflected on their reaction: "I want to find a way to reframe conversations about data, so they are not shameful, but motivating . . . to see data as a benchmark to see what is working and not working, rather than as a 'gotcha.'" The CAR team worked through this problem and decided to revise the student reflection template. This experience inspired Jennifer to shift her focus from areas of weakness to teachers' strengths by adjusting the classroom observation template and fostering more conversations about strategies that were working.

Jennifer introduced new questioning strategies to the CAR team, and they discussed a system for keeping track of how students are answering formative assessment questions during lessons. Jennifer noted, "The goal is to 'catch' students who are struggling before the summative exam." In discussion about the students' response to the revised student reflection template, the team agreed it was working better but that more adult supervision was necessary to help students complete the form. Jennifer adjusted her conference time to incorporate co-teaching to assist with instruction in addition to the classroom observations she was already conducting. She also introduced participatory formative assessment (PFA) to the team, in which the student and teacher create the assessment together, and the team was again receptive and willing to try the new PFA strategies.

Based on the teachers' concerns about how students would perform on the upcoming state exam, and classroom observations that indicated there was still a lack of consistent formative assessment in lesson plans and instruction, the team formulated a plan to incorporate more formative assessment into each lesson. They modified the lesson plan template to accommodate two formative assessments per lesson. Teachers who had more than 100 students were concerned by this, so the team agreed that one of the formative assessments could be a quick check for learning, such as a whiteboard activity, that would not require grading outside of class time. The teachers had been consistently implementing the student reflection form after each benchmark assessment and agreed to continue to do so.

In a discussion about how to use formative assessment with struggling learners, the CAR team decided on a strategy that called for students to create one page of visuals, quotes, and words to help them understand a difficult concept. A few weeks later, Jennifer presented another strategy that called for teachers to ask students six assessment questions at the end of a unit. The team agreed to start using the questions to gauge student understanding and then reconvene to evaluate the effectiveness of the strategy. Eventually,

the team combined the two strategies; students began to answer the six formative assessment questions in a one-page visual document.

The CAR team continued to revise the lesson plan template to include more formative assessment. They added an overarching question to each lesson to gauge if students were making connections between units and what misconceptions students might have. The team discussed how to systematically use the formative data they were gathering, and they agreed to review the data during class and conduct a reteach either that day or the next day. Jennifer felt encouraged: "The team's conversations are moving from completing formative assessment to taking action on the formative assessment."

The team also created U.S. History intervention days and embedded formative assessment strategies into those lesson plans. Jennifer observed, "Teachers who are active in the CAR were implementing strategies with fidelity, while those who are not participating were implementing formative assessment strategies less frequently," and she viewed this observation as reinforcement that the CAR was working and that the remaining teachers in the social studies department would benefit from participation.

The CAR was evaluated at the end of the year through student and teacher surveys. Students reported that several formative assessment strategies were being used each week in class, a significant increase from the initial survey. Student responses also revealed that the students themselves were looking at assessment data and reflecting on that data at least once each six-week period.

From Jennifer's review of the teachers' lesson plans and the teacher survey, it was evident that the team had made tremendous progress toward the goal of implementing consistent formative assessment in classrooms. All lesson plans now included several preplanned formative assessments. Results of the survey included positive teacher comments concerning the effectiveness of the formative assessment strategies that were implemented, the impact those strategies had on student achievement and student reflection, and changes teachers made throughout the year to improve formative assessment. In the words of one teacher, "I have definitely become more aware of my use of formative assessment tools and their effectiveness in my classroom. I've loved having these discussions because it has allowed me to improve my instruction with my students."

Another consequence of the CAR was that the team gained a common vocabulary concerning formative assessment. The team also unanimously expressed a need to move forward to a more structured approach for analyzing data. Throughout the CAR, Jennifer learned that building trusting relationships with teachers is foundational to their willingness to try new strategies and present their student data to the group. She also realized an area of improvement for herself: a need for flexibility when things do not go according to plan.

Better a Small Success than a Big Failure

Fran led a group of teachers at suburban Granite Middle School (GMS) that explored the concept of culturally responsive teaching (CRT). The first step in this CAR was to explore the level to which teachers at GMS understood and practiced CRT. Data gathering to answer this question included a survey of school leaders, interviews of selected teachers, and a student survey. School leaders rated the school low on professional development for CRT, the use of CRT strategies, and intergroup relations. Teachers who were interviewed were initially puzzled about what the interviewer meant by CRT, and were able to describe only one or two of Gay's (2002) five elements of CRT. Most of the examples of CRT described by the teachers focused on English language learners and special education students rather than other cultural groups. Two thirds of the teachers interviewed reported that they were culturally responsive 50% of the time or less. Student survey results revealed that only 16% of the students perceived that teachers at GMS understood their cultural background, customs, and traditions, and the same percentage of students reported that teachers addressed race and ethnicity in the classroom.

Based on the results of the initial surveys and interviews, Fran and her principal decided that it would be best to start an effort toward CRT with a small group of teachers. The first year of the CAR would consist of Fran leading a group of six teachers (including herself) reading articles about CRT, engaging in dialogue about the readings, and eventually planning on how to expand efforts to increase CRT at the middle school. The immediate objectives of the CAR were to increase team members' cultural awareness, cultural responsiveness, and self-reflection. The five teachers Fran recruited for the CAR ranged in teaching experience from 10 to 24 years. Fran believed that these teachers agreed to participate in the CAR because of trusting relationships she had developed with each teacher over time. Fran planned six group sessions, with each session focused on reflective dialogue on a reading the teachers would complete prior to the meeting. Fran planned to start out with a reading on engaging in conversation and move on to readings on poverty, cultural differences, discipline, and cultural responsiveness, in that order. Fran and her principal would meet between sessions to discuss the progress of the group.

During the first session, the group discussed norms for meaningful conversations based on the reading for that session and decided to adopt those norms for their meetings. The group agreed that there is a dearth of authentic conversations in our modern world. The discussion shifted to GMS students and the inability of some students to empathize with others. One theory explored by the group was that students who have experienced hardship in their own lives are more likely than those who have not experienced suffering to show empathy toward others. One teacher said that she used current events (including visuals) rather than historical ones to foster empathy among her students. At the end of the session, the teachers agreed to allow Fran to make audio recordings of the remaining meetings. After this first session, Fran reflected on the group's first meeting in her journal: "The session was easy flowing, organic, and authentic. There was no stress to participate or to keep thoughts private. . . . Everyone was comfortable and engaged one another in conversation; the discussion was open and honest."

The second session focused on an article about the myth of the culture of poverty. A teacher told of an "aha" experience she had when reading about education not being the "great equalizer" for students who do not have quality teachers or adequate resources. The teachers discussed several myths about ED families and students as well as stereotypes they had held, which had been overcome by their personal experience with those families and students. One teacher told the story of an ED family that brings toys to sick children in the hospital during the winter holidays. Another teacher told the story of the mother of an

ED student who crocheted blankets for children in Ronald McDonald House. A third story was focused on a mother who held three jobs to support her family and quit one of those jobs in order to assist her child with homework. One more story told of a student chastised for not having his homework explaining to his teacher that he did not have access to the Internet. The teachers agreed that they should not make assumptions about students' home environment or their parents' commitment to their children's education. The group discussed some of the practices listed in the article to overcome classism.

GMS has a large population of Asian-American students, and in the third session the group discussed an article on myths about those students. The teachers reflected on myths such as that Asian Americans are more intelligent and academically superior and have fewer troubles than other cultural groups. The teachers discussed how many of their Asian American students believed they have to perform at a higher academic level than other students, which can hinder them becoming well-rounded persons. The group reflected on the problem of different student groups segregating themselves from each other. One teacher stated some student groups seem to have less self-confidence than others, and that the faculty needs to help all students to build self-confidence and become part of a community of learners. Fran wrote in her journal that the group members' rich cultural backgrounds allowed them to view situations from different perspectives and how thus far the group sessions had been reflective and engaging.

The reading for the fourth session described how school discipline practices discriminated against historically disadvantaged groups and proposed alternative strategies for prevention, including relationship building, social-emotional learning, and changes in the discipline system. One teacher expressed some resentment of the article's premise, stating that she gave referrals based on behavior, not color. Other teachers in the group admitted that cultural misunderstandings had resulted in problems between them and their students. The group agreed that teachers should not take a "cookie cutter" approach to discipline, but rather needed to be flexible. One teacher stated, "We are here to mold and shape students, not to punish them." The group agreed that educators at GMS needed to do a better job of building relationships with students and providing for their social and emotional growth. The group discussed the possibility of having teacher-student lunch groups for students who needed to discuss issues in their lives and at school.

The fifth session focused on an article presenting a multistep process for teacher reflection aimed at overcoming deficit thinking. One concern expressed in the meeting was that the process was too time consuming to be used with many students, but that it could be beneficial with selected students. The teachers did see the value of one phase of the model that called for the teacher to write out objective descriptions of incidents with students. One teacher saw two values in doing this: the teacher could use the description to process emotional reactions as well as to come up with a plan for dealing with the situation. One group member who had a negative reaction to the article said that teachers were tired of being blamed for students not succeeding and teachers should not be obligated to fix societal, school, and previous teachers' failures. Another teacher asked the group: "Do any of you feel there is a group of students that you have lower expectations for?" This question led several teachers to admit that they had possessed lower expectations for some students and parents. In the middle of this conversation, one teacher exclaimed, "I'm prejudiced!" In her meeting with the principal following this session Fran mentioned that the teachers seemed to be more stressed in recent sessions then they had been earlier in the school year. Fran noted,

> I have been listening to the recordings [of the sessions] many times and each time I find something I did not notice before. This made me reflect a lot about what the group said and what they meant. It forced me to analyze whether comments were culturally unaware, aware, or responsive.

Fran began the sixth and last group session by sharing her perception that the dynamic of the group had changed and asking the teachers why they thought this had happened. Some teachers replied that they believed it was because they were overworked and exhausted as the end of the school year approached. One teacher responded that she had become defensive after reading about teachers' deficit thinking in the more recent articles discussed by the group. Another teacher stated that it is difficult to make math and science culturally relevant.

The discussion turned to the last of the readings, concerned with critical teacher reflection and culturally relevant pedagogy. Fran asked the teachers for their thoughts on reflection. The teachers responded that they would like to have more reflection incorporated into the school's professional development and discussed ideas for doing so, such as teacher journaling, book study, and peer observation. There was agreement within the group that teachers needed to learn more about their students' cultures, using such vehicles as student journals, student reflections on their schoolwork, student advisories, and student-teacher lunch groups. Fran then asked the group to come up with a plan for systematically addressing the need for culturally responsive pedagogy, reported below in the discussion of the CAR's outcomes.

A postsurvey of the teachers in the group indicated that they had become more aware of what CRT was, realized their teaching had not been as culturally responsive as it could have been, had become more reflective about their teaching, and had committed to use more CRT practices in the future. The CAR ultimately was intended to have effects beyond the group that had been meeting, and another important outcome was an action plan for the future that included "ongoing, consistent and structured professional development centered around the theme of caring for students." Specific action items for the following year included teacher brainstorming sessions on celebrating diversity and making connections with students, implementation of restorative circles, increased teacher involvement in the community, adjustment of teaching practices in order to reach all learners, increased contact with parents, and student journaling in class for the purpose of assisting teachers to better understand students' lives.

Fran initially had envisioned beginning efforts to increase CRT with a school-wide action research project, but eventually decided to limit the initial CAR to the small group of teachers who participated in the project. Reflecting on this decision, Fran wrote, "It is better to have a small success than a big failure." Reflecting on her own learning as the leader of the CAR, Fran stated, "Mindful reflection is needed to develop culturally responsive practices. It is vital to build trust with colleagues and to have open, honest, and authentic conversations that lead to real change."

The Kids Love Working With New Teachers

Clifford Elementary School serves a small town with a diverse population, including an equal number of white and Hispanic students, who account for 80% of the overall population, with 41% of all students considered ED. The school's African American, Hispanic, limited English proficiency, and special education students typically perform well below the rest of the student population. In response to a campus-wide concern that these students were not meeting grade-level standards or prepared for state-mandated standardized testing, Tanya led CAR aimed at studying the issue and implementing targeted instructional support.

The year prior to the CAR, data was first gathered using a "parking lot" strategy, which revealed that teachers felt there was not enough time in the school day to cover all the content that needed to be retaught, and it was determined that the area most in need of improvement at Clifford was the school's after-school tutoring program and Saturday School. While some teachers believed the program benefitted students, there were many concerns: the program was viewed by some teachers as not engaging enough, lacking a process for monitoring student progress, inconsistent across grades, too focused on traditional tutoring, and not developmentally appropriate for the younger grades. Additionally, some teachers did not believe that teachers should be required to tutor and that students were having difficulty focusing on learning during after-school tutoring. Tanya wondered, "Is tutoring really going to help my students or just burn them out? And, by forcing teachers to tutor, are we providing the best quality instruction?"

To better understand the current program, the CAR team surveyed teachers to find out how each grade level was organizing tutoring in terms of structure, resources, content, student selection criteria, instructional planning, and tracking progress. The survey found that every grade had its own approach and there was little consistency across grades. Student interviews revealed that K through second-grade students were mostly positive about their tutoring experiences, while the majority of third through fifth graders did not feel tutoring was helpful and were frustrated by the extra time they had to stay at school. Observations of the Saturday program revealed that, while most teachers were actively engaged in instruction, others were assigning students worksheets and attending to noninstructional matters while their students completed seatwork.

Based on a review of and reflection on the data, Tanya and her CAR team worked with school administrators to establish four objectives for the action research to be initiated the following school year: (a) set clear, cohesive expectations for tutoring; (b) provide teachers with a basic structure for tutoring; (c) create a resource bank for tutoring materials: and (d) establish assessment standards for tutoring outcomes. The school's PLCs met to discuss expectations for tutoring, and teachers were encouraged to share resources to assist each other during the upcoming improvement efforts. The new tutoring program's effectiveness would be assessed through teacher and parent surveys, results from district common assessments, the state-mandated test, progress monitoring during each tutoring session, and student feedback.

For the school year in which the action plan was to be implemented, "intervention blocks" of time were incorporated into the school schedule to provide tutoring during the school day. The action research team created a parent survey and began developing a tutoring protocol based on the following questions, which

were already in use across the campus for planning classroom instruction: What do we want students to learn? How will we teach the skills and concepts? How will we know when a student has learned the skill/concept? How will we respond when a student struggles? What will we do when a student achieves mastery?

The campus RTI committee met with the district's RTI specialist to incorporate RTI methods into the tutoring process. To determine specific needs for each student, RTI screeners used by grade-level coaches (GLCs) to create the initial tutoring groups were analyzed along with data from the previous end-of-year assessments. The RTI screeners would be administered three times during the year to track progress. It was decided that tutoring would focus on reading and math and would occur during the school day only for the first semester of the CAR. Common assessment results would be discussed during weekly PLC meetings to reassess student needs and decide if additional after-school tutoring was necessary.

Grade-level teams used their intervention blocks to reteach in small groups. They met to discuss common assessments and used the results to restructure tutoring groups. Teachers found it most helpful to break down the data by learning standards to identify specific areas that needed to be readdressed. PLCs met to look more closely at learning targets and objectives, and the principal recommended flex grouping to ensure that intervention instruction was effectively targeting each student's individual needs. During this time, the district instituted new data collection forms for intervention, which required teacher training, and this sparked interest within Clifford's administrative team to institute a schoolwide progress monitoring form. After the first round of tutoring, teachers shared that they liked the new structures and felt students were making progress. GLCs likewise expressed appreciation for the new resources and were excited that students were enjoying the intervention lab, but they remained concerned about not having enough time to cover both math and reading during the intervention block.

Based on the 18-week common assessment data, intervention time was adjusted to focus solely on math, and rotations were created to support students in a more targeted, small-group approach. It was also decided that there was a need for after-school tutoring which would begin in February after administering a benchmark assessment. Students not meeting 70% on this assessment would need to attend after-school tutoring. Grade-level teams began creating tutoring plans. For example, third grade teachers planned to tutor on Tuesdays and Thursdays from 3:00 p.m. to 3:45 p.m., with a focus on English language arts, and provide hands-on opportunities for students to work on summary, main idea, inferences, and connections, using the new resource bank to create lessons. After-school tutoring would begin with a pre-assessment, and then data would be collected each session to track student growth. Teachers would be required to turn in lesson plans and progress monitoring data.

Tanya noticed that the many changes being implemented simultaneously at Clifford were causing stress for the teachers. She wrote in her journal, "Teachers are very overwhelmed with the new RTI process, the new PLC structure, staff meetings every week, and the current book study we are implementing. As we begin to add the new tutoring structures as well, teachers don't seem to be very enthusiastic about the changes." Tanya met with GLCs to discuss the tutoring program and found that some were open to the

new structures, but there was also resistance from teachers who did not feel additional tutoring would be beneficial for their students.

In a school-wide discussion, faculty identified the three skills that were most difficult for their students: making inferences, summarizing, and making connections while reading. Teachers would focus on hands-on, engaging lessons that would incorporate these three objectives. Tanya created a shared folder to compile resources. Teachers engaged in planning for the upcoming Saturday School, a continuation of the tutoring program designed specifically for students who were scheduled to take the state achievement test. Teachers outlined plans for the Saturday program, created a list of candidates for participation, and discussed ways to engage the students in the program.

Students seemed to enjoy the first six-week session of Saturday School for fifth graders, but only 25% of the students invited actually attended, and the teachers wanted to make the second session even more inviting and engaging. They renamed the program Saturday Camp and created a carnival theme where students could earn tickets in learning stations each week at camp and then use the tickets on the final day "playing carnival games with an academic twist." Parent survey results indicated that students seemed to like the idea of Saturday School but experienced scheduling conflicts with other after-school activities. Parents also noted that students loved the snack and light lunch that were provided.

During the second six-week session of Saturday Camp for third and fourth graders, attendance tripled. Students enjoyed learning with games, and every student in attendance made progress on his/her learning objective for that week. Teacher morale shifted as well. Tanya noted, "As I walked in and out of classrooms, every teacher was up, engaged in the lesson, and monitoring student progress. Teachers were using technology, games, and hands-on activities to reteach curriculum." On the following Monday at school, students who had attended Saturday Camp shared their excitement about the program with friends who then requested to attend the next session. Several students even talked about specific strategies they had learned and how they looked forward to sharing their new learning with their homeroom teachers. Tanya wrote, "One of the biggest successes so far has been having different teachers teach students who are not their regular students. The kids love working with new teachers, and vice versa." One parent sent positive feedback in an email stating that her daughter, who tends to be very shy, had such a positive experience at camp that she was looking forward to coming back. In addition, her daughter scored an 80 on a math fact quiz the following week, an improvement from past scores. To maintain this positive trend, Tanya asked teachers to start eliciting student feedback about the program at the end of each week.

A teacher survey regarding after-school tutoring showed that at the start of the year, 20% of teachers were interested in tutoring and felt it was beneficial. By April, when the survey was re-administered, that number increased to 58%. The teachers were pleased by this change and planned to continue growing the resource bank and increasing consistency throughout the program. They also were interested in enhancing parent involvement by sending home progress reports after each tutoring session.

Student survey results from Saturday Camp indicated that students benefited from the experience. Many students raved about a computer game for learning multiplication facts, and others were equally enthusiastic about creating their own anchor charts to demonstrate learning. Students' suggestions included more computer time and more opportunities to collaborate with peers. Some students were already asking to come back the next year. The CAR team planned to review survey data from students, teachers, and parents as they planned for the following year's program.

At the end of the implementation year, fifth graders' STAAR scores improved significantly, and third and fourth graders' campus and district assessment scores also improved. The tutoring program was successful in many ways. The CAR evaluation report stated:

> Students were more motivated to attend tutoring, parent support increased, teachers utilized more hands-on approaches, and student achievement improved. Students' level of excitement about tutoring increased from 41% in the fall to 78% in the spring, largely due to the new Saturday School structures. Also, there was an increase in communication from school to home. At the beginning of the year, only 50% of parents felt they were receiving academic communication regularly. By the end of the year, this percentage increased to 96%.

As part of the new tutoring protocol, teachers now were regularly collecting, analyzing, and communicating about student performance data, further contributing to teaching and learning at Clifford Elementary.

Discussion

Given the differences among the schools where the CAR projects took place (elementary, middle, and high schools serving exurban, urban, suburban, and small-town communities), there were a striking number of similarities across the cases beyond the relative success of each project. First, all four teacher leaders who coordinated CAR had positive relationships with the teachers who joined the CAR teams. These relationships helped the teacher leaders to recruit volunteers for their teams and assisted them in working with team members to address problems that arose in each of the CAR projects.

All four projects began with the gathering of a variety of needs assessment data. Data gathering and analysis varied from school to school, with frequently tapped data sources including demographic data, student achievement data, students themselves, teachers, administrators, and classroom interactions. Typical data collection methods included mining of archival data, interviews, surveys, and classroom observations. The needs assessment data was used for a variety of reasons, including the identifying a specific focus area for the CAR, finding out more about the focus area and how to address it, and in some cases, developing premeasures for later comparison to postmeasures.

All of the CAR projects were focused on the improvement of teaching and learning, and three of the four were centered on assisting the learning of students placed at risk. All of the projects included the development of a specific action plan for addressing the focus area, although all of the action plans eventually had to be revised during implementation. The four teacher leaders carried out a variety of leadership activities throughout the CAR projects. Examples include facilitation of team meetings, data analysis, delivery of professional development, and individual consultation with CAR team members, and for some projects, classroom observations and team teaching.

All four of the projects involved job-embedded professional development: sharing of research-based strategies and support meetings on working with ED students, staff development sessions and coaching on formative assessment, readings and discussions on culturally responsive teaching, and modeling the use of a tutoring protocol and lesson plan template as well as the provision of a resource bank for tutoring. Opportunities for participant reflection were built into all of the projects: PLC time to reflect on working with ED students; three-week cycles of learning about, implementing, and reflecting on formative assessment; reflection on how to apply readings on culturally responsive teaching; and reflection on tutoring and student achievement in PLC meetings.

Provisions for ongoing feedback from stakeholders were built into all of the CAR projects. Examples include periodic surveys of teachers, students, and in some cases parents, and in three of the cases, classroom observations and ongoing analysis of student achievement. In addition to structured feedback, the teacher leaders continuously sought informal feedback from the CAR team and other stakeholders, continuously monitored teacher participation and the progress of CAR activities, and modified CAR structures and processes accordingly.

Each of the teacher leaders encountered barriers to the CAR that they had to deal with. Sandra had to navigate personnel changes, a cut in promised district financial support, inadequate time for support teachers to work with ED students, and school and district priorities that conflicted with the CAR priorities. Jennifer had to deal with the problem of negative teacher reactions to student reflections that were part of the formative assessment. Fran had to respond to negative teacher responses to some of the ideas in the articles on cultural responsiveness. And Tanya needed to address teachers' concerns about not having enough time to tutor students in both math and science in the intervention blocks. Such barriers sometimes led to teacher stress and concern about the viability of continuing the CAR, but in each case, the teacher leader responded to these problems by displaying flexibility and working with team members to adjust the CAR so it could continue.

Each CAR project included gathering a variety of outcome data toward the end of the school year. Sandra's team utilized teacher surveys, data on technology support made available to ED students, attendance of ED students, and student grades across four subjects. Jennifer's group reviewed teacher and student surveys and teacher lesson plans to assess use of formative assessment. Fran's team engaged in an open discussion about the value of the CAR and completed a survey for assessing the group's progress. Tanya's group surveyed students, teachers, and parents and reviewed results of state, district, and campus achievement tests to assess the value of the tutoring program they had implemented.

As we described in the case studies, all of the CAR projects led to positive outcomes. Sandra's team documented an increase in teacher awareness of ED students and ED students' achievement. Teachers in the study led by Jennifer were incorporating formative assessment into their lesson plans and reported that formative assessment had improved their instruction and their students' learning. Members on Fran's small team stated they realized they had been less responsive to different cultural groups than they could have been, were more reflective about their teaching, and were committed to culturally responsive practices in the future. At the end of the first year of the CAR led by Tanya, teachers who engaged in tutoring reported that were using more hands-on activities in their tutoring, and the number of teachers who believed that tutoring benefitted students had nearly tripled. Almost all of the parents of children being tutored now reported regular communication with teachers, and student academic achievement improved from third through fifth grade.

One indication of the success of CAR that runs across a school year is a commitment of the CAR team for continuation or expansion of the research the following year, and this indicator was present in all four cases. Sandra's team proposed regular school-wide discussions of student needs, increased availability of technology, and personalized placement of ED students in student advisories. Jennifer's team committed to developing a more structured approach to the analysis of formative assessment data. Fran's long-term goal was to move the work on culturally responsive teaching beyond the small CAR team she had assembled, and her team developed an action plan calling for school-wide, ongoing, and multifaceted professional development in cultural responsiveness. Teachers who worked with Tanya planned to expand the tutoring resource bank, increase consistency across the tutoring program, and foster more parent involvement in the program.

This study has several implications for CAR in general and teacher leaders' facilitation of CAR in particular. First, although the preparation of teacher leaders for the coordination of action research was not part of the study, professional development for that purpose had been provided to all four teacher leaders, and it seems clear that one prerequisite for successful leadership of CAR is such professional development, including topics such as communication, collaboration, group process, data gathering, data analysis, and planning skills. We doubt that the teacher leaders in this study would have been as effective as they were at leading CAR if they had not participated in such training the year prior to full-scale implementation of the CAR. Another prerequisite for successful CAR is the support of the school principal. Although none of the principals were heavily involved in the CAR and thus were not a primary focus of our case studies, they all supported the initiation and continuation of CAR, and the teacher leaders kept them informed of each phase of the action research and consulted with the principals whenever problems arose or modifications were necessary. As with the professional development for teacher leaders, it is hard to imagine that these CAR projects would have been successful without principal support. More direct implications of the case studies include the following:

- Positive interpersonal relationships between the teacher leader and teachers involved in the CAR are essential, both in terms of recruiting teachers to be part of a voluntary CAR project and in navigating the hills and valleys of the CAR journey.

- Data gathering and analysis need to be embedded throughout the CAR: first to help the team decide on a focus area, establish objectives, and develop an action plan; then to gather feedback on the progress of the CAR and stakeholder concerns about the CAR; and then to determine outcomes and develop plans for continuation. Moreover, it seems that *multiple data sources and data gathering methods* best serve the teacher leader and CAR team as they make a steady stream of data-informed decisions throughout the CAR process.
- Teachers seem to respond most positively to CAR that is focused on classroom practice, and that leads to concrete application of new knowledge and skills for the improvement of their teaching and their students' learning.
- Teachers engaging in action research are often involved in bringing about some type of classroom, team, or school-wide change, thus job-embedded professional development focused on the desired change usually should be a component of the CAR.
- Teacher leaders facilitating CAR can expect that barriers to successful implementation of the initial action plan will arise. The keys to successfully addressing such problems appear to be close monitoring of the CAR process, a willingness to listen to stakeholders' concerns, and modification of the action plan as needed. Flexibility, creative problem solving, and perseverance were displayed by all four of the teacher leaders in this study.
- CAR projects that result in meaningful change are long-term affairs. Even after year-long projects at the four schools, the CAR teams did not believe they had fully reached their objectives, and they all planned to continue the action research the following year. Every CAR team engaged in long-term action research must make decisions at the end of the school year based at least in part on data gathered on CAR outcomes to that point. The team can end the CAR, continue it with minor modifications, or revise the CAR significantly in order to address problems with implementation, expand the scope of improvement efforts, or broaden participation.

Although the research on action research in general and CAR in particular has expanded greatly over the last several years, we have a dearth of research on the intersection of teacher leadership and CAR. Topics for additional research might include the personal and professional characteristics of teacher leaders that successfully facilitate CAR, professional development for teacher leaders tapped to facilitate CAR, the relationship between teacher leaders and school administrators in CAR, the relationship between teacher leaders and teachers in CAR, and examination of teacher leadership of CAR in different educational contexts. Case study, we believe, is a highly appropriate method for exploring teacher leaders and CAR. As more case studies are completed and compared over time, an increasingly detailed picture of successful teacher leadership of CAR will emerge.

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