

Implementing Action Research and Professional Learning Communities in a Professional Development School Setting to Support Teacher Candidate Learning

Joyce Shanks, University of Wisconsin-La Crosse

ABSTRACT: The paper reviews teacher candidates' use of action research and the Professional Learning Community (PLC) concept to support their work in their pre-student teaching field experience. In this research study, teacher candidates are involved in a professional development school relationship that uses action research and PLCs to support candidate growth as teachers. The candidates use action research and PLCs to improve their lesson planning, classroom instruction, and assessment. The action research and PLCs are helpful avenues for teacher candidates to prosper under the high pressure of their teaching responsibilities and learn more about their practice.

NAPDS Essentials Addressed: #2/A school–university culture committed to the preparation of future educators that embraces their active engagement in the school community; #3/Ongoing and reciprocal professional development for all participants guided by need; #4/A shared commitment to innovative and reflective practice by all participants

Introduction

The paper reviews teacher candidates' use of action research and the Professional Learning Community (PLC) concept to support their work in their pre-student teaching field experience. In this research study, teacher candidates are involved in a professional development school relationship that uses action research and PLCs to support candidate growth as teachers. The candidates use action research and PLCs to help them improve their lesson planning, classroom instruction, and assessment. The action research and PLCs are helpful avenues for teacher candidates to prosper amidst the intense pressure of their teaching responsibilities and their ongoing learning about their practice.

Background to the Professional Development School

The 36 preservice teacher candidates in this research setting are all learning to be language teachers. Some of the candidates are elementary teachers with an added certification in a foreign language. Other candidates are foreign language teachers who will be certified to teach the language from birth through age 21. The candidates are all placed in a field experience at a local elementary school because experience teaching elementary students is mandatory for licensure in this subject.

During the spring of 2005, administrators from the local district met with the Director of the School of Education from its nearby university to discuss a new professional development school partnership. The school district administrators wanted to make one of their elementary schools into an international school. One goal of the international school was that all elementary students would learn to speak Spanish. The school already had several teachers who could speak Spanish and were

certified to teach Spanish; however, they did not have enough teachers to teach all elementary students the Spanish language. As a result, they looked to the local university to provide teacher candidates who could speak Spanish. This model allowed teacher candidates to gain their field experience, and the school community would benefit by having the staff to teach Spanish to all of the elementary students in their building.

The international school opened its doors to students in the fall of 2005, the same year it became a professional development school (PDS). The school district and university formalized the PDS relationship to support the international agendas for the school and the preparation of preservice teachers. The goals of a professional development school (PDS) incorporated the PDS Nine Essentials and included the following

- building a mission that extends beyond the mission of either partner
- preparing future teachers for their roles in PK-12 schools
- supporting professional development, supporting reflective practice
- engaging in sharing results of research, developing agreements on the roles of all involved in the PDS,
- developing a supportive structure that supports all involved,
- having PK-16 faculty work together, and sharing resources. (NAPDS, 2008)

The teachers, administrators, candidates, and university personnel assigned to the school all work together to implement the international school goals, including teaching Spanish, internationalizing the curriculum, and integrating international concepts across multiple areas of study.

Organization of the Experience

After approximately two weeks of observation in the school, the teacher candidates take over responsibility for Spanish instruction. The candidates do all of the planning, implementation, instruction, and assessment of Spanish in their assigned classrooms. They teach in classes where the cooperating teachers are not necessarily Spanish speakers, so the candidates assume complete control for the Spanish instruction and its inclusion across the curriculum.

Taking ownership of classroom instruction is a new and sometimes daunting responsibility for teacher candidates, as many of them have limited prior experience. For most candidates, this is only their second experience working in formal school settings. While many candidates have tutored and worked with a variety of students, most have only completed one field experience where they were expected to teach formal lessons. Most of the candidates have also not experienced teaching consecutive lessons. As the semester progresses, candidates become more familiar with their routine and become more comfortable with their lessons. They also begin to hone in on their classroom management strategies. The candidates spend twelve weeks teaching Spanish and other subject areas. They teach a minimum of two lessons a week, though most candidates teach an average of up to six lessons a week. The candidates seek to find as much support as possible since they assume such a large responsibility in their assigned classrooms.

Teacher Candidate Learning in a Professional Development School Setting

The state in which these teacher candidates are licensed requires teachers to complete professional development plans as part of the process to be relicensed. Therefore, teacher candidates learn to do professional development plans (PDPs) in their teacher preparation program to prepare them for their future licensing expectations. As part of their field experience, teacher candidates develop professional goals for their own improvement as teachers. They must develop goals that focus on their developing knowledge, skills, and dispositions based on the state teacher standards. After developing their goals, teacher candidates make action plans on how to improve and monitor their goals throughout their field experience.

Action Research

Background for action research use. The class in which teacher candidates are enrolled during the field experience teaches the action research process. This helps teacher candidates collect data for their professional development plan and supports their personal reflection. Teacher candidates learn about the action research process starting with the planning, implementation, and reflection stages of the action research cycle (Arhar, Holly, & Kasten, 2001; Mills, 2003; Phillips & Carr, 2014; Ross-Fisher, 2008). Candidates practice the action research process by

developing action research questions and discussing how they might start to gather data based on their particular questions. The instructor supports candidates as they work through a variety of possibilities. This helps candidates consider the broad options of action research. The candidates are encouraged to think about questions related to their role as the teacher in lesson planning, the effects of lesson planning, instructional strategies and the effects of those strategies on students, questioning strategies, classroom management, and assessments. In addition to topics addressing the entire class, the candidates are encouraged to think about questions focused on particular students including which students may be engaged in off-task behaviors and when.

After practicing possible action research questions, the teacher candidates start to make the connection of possible action research to their work at the school. They try to use their PDP goals as the foundation for their action research goals. By doing so, the candidates start to see the connection of teaching standards to their possible action research focuses. For example, if they are interested in focusing on the classroom management standard, then they start to consider how they could structure a question around that topic and how they could collect research data. Sometimes they observe one another teach to collect action research data. At other times they have their instructor or cooperating teacher collect action research data. The candidates report that they start to feel a bit more comfortable with the process when other educators help support them with data collection.

Clinical supervision to support action research data collection. During the same time as action research data is collected, the teacher candidates receive ongoing supervision from their university supervisor. Every two to three weeks, the teacher candidates meet with their supervisor for a supervision cycle. Each cycle consists of a pre-observation conference, an observation, and a post-observation conference (Acheson & Gall, 2003). The first step is the pre-observation conference. At this conference the teacher candidate shares what s/he is doing in the classroom that day. The teacher candidate also discusses what particular skills s/he is working on as a teacher. The supervisor helps the teacher candidate pinpoint a particular concern regarding the lesson and this becomes the focus of the observation.

The next step is the lesson observation. During the lesson, the observer collects data on the focus(es) discussed during the pre-observation conference. The goal for the data is to be as factual as possible. At this time, the observer shares the observation notes with the teacher candidate. When the notes are fact based, the candidate has valuable data for examining and studying what happened during the lesson in relationship to what the focus of the lesson is. The fact-based data provides a focus for the post-observation conference where the observer and teacher candidate can discuss what actually happened during the lesson and what was important about that data. The process provides the teacher candidate with an objective

representation of the data that the teacher candidate wants to examine (Acheson & Gall, 2003).

At times, the supervisor is the action research data recorder. At other times the supervisor and another action research observer may work together to collect observation data. Therefore, the supervisor and observer(s) try to help the candidates build connections between their observation focuses over any one lesson to the larger issue of their action research focus. When this happens, the supervision cycle complements the action research cycle. The supervision process helps to inform candidates on their action research focuses and then on their PDPs. The objective data from the supervision cycles helps candidates complete their action research projects, work on their PDPs, reflect on their teaching, reflect on how to improve on their teaching, and understand the teaching process.

Professional Learning Communities

Soon after learning how to implement action research, the candidates learn about professional learning communities (PLCs), a popular initiative in PK-12 schools. (Wiseman, Arroyo, Richter, 2013) PLCs can be defined as “an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve” (DuFour, Dufour, Eaker, & Many, 2006, p. 11). A key goal for the PLC is to focus on student learning. The PLC concept is not just to have meetings or another program for a school to implement. Instead, they are a process for a school community to work together under a common vision to support a common goal. PLCs provide a forum for teachers to work collaboratively as they answer the important questions of what are students learning, how will educators know students are learning, and what will educators do when students do not learn.

PLC researchers describe six characteristics of PLCs (DuFour, DuFour, Eaker, 2008). Participants must share a common mission, vision, and values. They must work in a collaborative culture. They must work together to study good teaching practices. They must work to take action on what data they gather. They must commit to continuous improvement. They must also make sure to focus on results of their work, not just on the intentions to improve (DuFour, DuFour, Eaker, 2008, p. 15-17).

The PLC process is being implemented in the district in which these teacher candidates are assigned. The teacher candidates have an opportunity to observe their cooperating teachers' PLCs. Their participation in these school-wide PLCs is limited. The teacher candidates do, however, meet in their own PLC teams based on their grade level placement. All of the candidates meet during their university class in their PLCs to discuss their student assessment data and their action research data. They use that data to make plans on how to improve their instruction. They adjust the speed of their lessons and how

much new information to include or not include based on the data.

Data Collection

Data collection came from multiple ethnographic research sources over the course of four semesters. The thirty-six teacher candidates involved in the research collected data on their instruction and on student performance. This included data that their cooperating teachers, university supervisor, and PLC partners collected during classroom observations. The PLC partners reviewed the data in their PLC meetings and used the data to analyze their teaching performance and plans for improvement. The preservice teachers used that data to write their formal professional development plans as an assignment for their university coursework. The preservice teachers used student assessment data that they collected informally to inform their work in their PLCs. The student assessment data was for informal use only. The student data was not formalized or systematized by the preservice teachers so was not a form of data for this research study.

The researcher collected data on teacher candidates' opinions and use of both action research and PLCs. Each teacher candidate completed Likert scale questionnaires to assess their attitude toward PLCs and toward using action research to collect PLC data. The researcher formally interviewed the preservice teachers as to their involvement and use of action research and PLCs during their semester field experience. The researcher observed and took meeting notes of the preservice teachers during their PLC discussion time to gather additional qualitative data on how the PLCs functioned. The researcher also collected classroom observation data during the teacher candidates' classroom instruction using selective verbatim, verbal flow, on-task analyses, classroom traffic, and interaction analysis to use to analyze teachers' work in the classroom (Acheson & Gall, 2003). This data was compared to preservice teachers' action research/observation data on their classroom performance. Data was triangulated from all of these sources to provide the following analysis. The researcher then used data from professional learning communities and leadership theory to explain and interpret the data.

Cooperating teachers were involved in their own grade-level PLCs. The preservice teachers observed some of these PLCs. For this research, however, the preservice teachers' involvement and research on PLCs was done in the learning communities formed by the teams of the teacher candidates. They met independently of their cooperating teachers during these meetings.

Researchers did not collect data on student performance beyond what the preservice teachers collected to use in future lesson planning and to monitor their success as teachers. The fact that the preservice teachers taught Spanish only two times a week for one-half hour lessons did not provide the depth of instruction to collect valuable student performance assessment data.

Analysis

Participant Feedback - Action Research

Teacher candidates found the action research process to be of particular help to them during their field experience. One candidate commented:

One of the most beneficial practices that I completed during my second field experience was action research. Although the process of action research seemed daunting at first, I understood the importance and benefits of conducting such research after the first phase. By having a colleague observe my teaching during a particular lesson, in which I asked her to observe the students' participation during the lesson, I was able to evaluate my students and instruction. . . Observing another pre-service teacher was also beneficial and served as an important factor to action research. Once I was able to collect data for another teacher candidate by observing the participation levels of her students, I was then able to recognize which instructional strategies she used and whether such strategies would be successful in my own classroom.

Action research focuses. Most of the teacher candidates structured their action research topics based on what they had identified as part of their professional development plan. Having documented classroom data gave the candidates more to focus on in their reflections. The most commonly implemented action research topics included, in order of popularity, differentiation, classroom management, and student assessment. Common data collection and discussion focuses included monitoring how individual students did in lessons based on the differentiation plans. As one candidate stated, using the data helped the TCs to "seek ways to tailor instruction based on [students'] needs." Another candidate commented, "I did my action research on differentiation. I think that this helped me quite a bit because I was able to keep track of the different types of lessons that I taught, and what did and did not work."

Many teachers also collected data regarding what worked well for students in large groups, what students did well in small groups, and what students did well working individually. Candidates compared what students did well with differing types of activities. They also collected data on students' time on task. One candidate commented,

The action research process allowed me to improve my teaching to better reach all of my students. I chose to have my peer observe which of my students were participating during my lessons. As my peer observed me, she made tallies as the students participated; she also made notes about what the students were doing who were not participating. After reviewing her notes, I decided to focus my next

cycle of the action research process on three particular students.

After continued discussion on what she did to facilitate every one of these students in their schoolwork, this same candidate concluded, "I do feel that I found the information gained from this experience to be very valuable to me as a teacher."

Value of action research data. Having actual data helped the teacher candidates to have a focus for their discussions about their teaching. As a result, the action research process helped the candidates reflect well on their teaching. One candidate reported:

Through the different cycles I have experienced in my action research project, I discovered the benefits of reflective teaching. I discovered my strengths as a teacher and how to take full advantage of them. I believe I have gained quite a bit of experience in transitioning from one activity to another, since this was key to maintaining classroom management. Also, assessment of my students' progress has become the guide to my lesson plans because it serves as a mark to what has been acquired and what requires more time. While this is an ongoing process, I am able to create a balance between review of learned subject matter and an introduction of new material. This balance ensures my students are not feeling overwhelmed at the pace of my classroom but are not becoming bored by it either.

Overall, the candidates responded positively to the use of action research. "My action research really helped me analyze a specific part of my teaching. The entire process taught me how to collect data as a teacher in the classroom setting. I will implement action research in my future." They felt the use of action research helped them develop as teachers:

I feel like I have learned a lot about myself as a teacher. I really felt nervous and lost at first because I had never taught little kids before, and it was not going as smoothly as I had thought. However, I learned that with my determined personality, I was able to completely turn my teaching around and make it productive and manageable. I learned that I can work well with other teachers and professionals because if I had not been able to, I probably would not have been able to learn the proper strategies in order to manage and teach younger children. I learned that I possess the proper Spanish skills to be able to teach the language, which was demonstrated based off of informal and formal assessment.

Participant Feedback - Professional Learning Communities

The teacher candidates used action research throughout the semester at their school site. When the class members set up their PLCs, beginning discussions tended to be focused more on

teacher candidates' action research data on themselves than on their student assessment data. This occurred for several reasons. One, the candidates started collecting action research early in the semester and tied the process to their professional development plans required in their course work. Two, the candidates started teaching in their third week of the semester, but they started to focus more seriously on assessment data a little later in the semester. Three, the teacher candidates also took time to learn how to actually use the student assessment data to analyze their teaching and to plan future lessons. This important step and realization came as they worked more in their PLCs and shared their ideas with their co-workers.

Value of time spent in PLCs. Preservice teachers found the PLC process to be very helpful. Eighty percent of the teacher candidates felt that co-planning lessons and collaborating in their PLCs helped to improve their lesson plan quality very much, though all candidates reported that they found the process helpful. They admitted that the process took time to learn, but once they discovered the value of the PLC process, they became more excited by the possibilities for learning and improvement.

Many of the candidates stated that they held their formal PLCs during their official meeting times, but they found themselves continuing the discussions at other times to help them work through teaching issues. One candidate stated, "My PLC was very helpful and provided me encouragement and suggestions throughout my time. I also met with my PLC outside of class and it allowed me to be supported by colleagues." Others stated that they continued their conversations in other classes and on the Internet. The teacher candidates discussed positives and negatives that occurred in class and learned from that process. As one candidate stated, the PLCs "helped for collaborating on strategies and ideas then trying them in the classroom."

The use of action research in PLCs. This action research data ended up helping out the PLC meetings because the teacher candidates had actual data to analyze versus opinions of what might have happened in the classroom. Ninety percent of the candidates felt that using action research in their PLCs helped them quite a bit to understand their abilities as teachers. Ninety-two percent also stated that using action research as part of their PLCs greatly helped them to improve their teaching within their classrooms. Topics discussed in PLCs included lesson planning, lesson strategies, student assessment, and classroom management issues. Comments included that the PLC participants were always happy to give ideas and offer support. They could discuss possible ideas on what to try or not attempt based on the data. Their reports showed that by discussing their lesson plans in groups, they were able to change and improve their lessons. Candidates stated that by discussing assessment data they were able to plan better lessons.

All of the participants felt that the PLC process provided a positive support network for them as future teachers. The candidates seemed to appreciate having the PLC process with classmates of similar educational experiences. Of particular

importance in the PLC process was the use of action research and teacher candidates observing other candidates and taking data about their teaching during their lessons. As one candidate commented, "it was nice to have a second set of eyes in the classroom to catch the things I don't notice."

Though candidates said that working in PLCs and doing action research helped them improve their teaching, only 77% of the candidates said that the PLC process actually helped them a lot to use student data to inform their practice. This lack of consistency, though all participants said the process was helpful to understanding the use of student assessment data to inform their instruction, shows the need to spend time on how to use the data to inform their practice. They need additional support in understanding how to change future lessons based on the data. Candidates appeared to find using action research to analyze their teaching a bit easier than using student assessment data. Part of the reason for that is because the TCs were not asked to consistently collect student assessment data and, as a result, did not always have concrete assessment data to use during the PLC discussions. They did, however, have action research data to use consistently throughout the semester.

Seventy-five percent of the teacher candidates stated that using PLCs on their own significantly helped them to understand possible future uses in schools. All candidates agreed that participating in the PLC process helped them to understand the use of PLCs. "Using the PLC helped me to learn what it will be like to communicate with the other teachers when I find a teaching job. Before this experience I had not communicated in this way and I think it helped me to be more reflective."

Partnering Action Research with Professional Learning Communities

Cochran-Smith and Lytle (1993) argue that the two paradigms that have dominated teaching over the years are models that one, support a linear view of teaching where teacher behaviors influence students and two, a qualitative model that examines the complexity of teaching. The two models view teaching and education differently, but educators may learn from both models. Cochran-Smith and Lytle argue that these two models are too limiting in their views of teaching and as a result can work to limit the understanding of teachers' roles. Therefore, they recommend expanding the possible uses of educational research to better understand the complexity of teachers' roles. Cochran-Smith and Lytle honor many forms of data collection for teacher research. They argue that when teachers start to do their own classroom research and analyze what works or does not work in their classrooms, they start to realize that that they can be the experts at understanding their classrooms. Teachers can become experts at researching and working to improve their classroom practice and student success. Teachers may always read research and learn more about education. A key issue to consider, however, is who can know and understand an

individual classroom and its dynamics better than the teacher who works in it every day.

The power of action research. Teachers may read and study education literature, but by doing action research they can also collect research data about their classrooms. This data can help teachers to dissect the research and books they study. Then the teachers can reflect not only on their own data but also on what other research actually means for their classrooms. The action research process gives credibility to their own research while making what they read more tangible, understandable, and applicable (Gardner & Hannett, 2014; Phillips & Carr, 2014). The added step of having a research team to help and support this data collection process makes it all the stronger. As one teacher candidate commented:

Once my action research partner and I completed phase one of action research, we met with our mentor teacher to discuss the progress of our students. During our PLC meeting, we discussed ways to improve our teaching as well as how to implement assessment techniques. I believe discussing topics such as assessment, classroom management, and overall teaching techniques, are very important not only to enhance student learning but also provide support for fellow teachers and colleagues.

The tie in of action research to professional learning communities worked in complement to support the preservice teachers in their reflections. One teacher candidate commented on the value of PLCs and action research as follows:

In class we were able to form PLCs with peers in similar grades. This was helpful for both activity and vocabulary brainstorming, but also brought me an action research partner. I was able to use my peer as an extra eye in my classroom. She took note of which students asked questions, and what each student was doing during my lesson. I was able to use this information to determine which students I wasn't fully reaching. Once I knew who my students were I was able to use their interests and personalities to make my lessons more interesting for everyone.

PLCs and the use of research data. The professional learning communities concept requires that educators look at student assessment data to help analyze their instruction with the long-term goal of improving student learning (DuFour, R., DuFour, R., Eaker, R., & Many, T, 2006; Ford & Haar, 2013). Action research requires that teachers collect and study data about their own practice in order to understand their teaching context better and improving their practice (Arhar, Holly, & Kasten, 2001; Mills, 2003; Phillips & Carr, 2014). Both processes focus on data and using data to improve the educational environment. Using PLCs and incorporating action research to support the PLC work can positively influence teachers.

In this research project, as teacher candidates became more comfortable with their PLC groups, they started to integrate action research data into the process. In addition to their teaching responsibilities, candidates also observed one another teach and helped their peers collect action research data. The combination of using action research data and PLC data helped support teacher reflection more than either could do on its own. When candidates combined the two data sources, they started to consider how their instruction, based on the action research data, might influence the student achievement data that they also collected. The PLC format provided candidates with an opportunity to begin making connections as to how teaching strategies and performance in the classroom influences students' performance. Rather than examining formal and informal assessments results in isolation, the security of a PLC gave candidates an opportunity to reflect on their teaching in a supportive group.

Building strong relationships. A key goal for a PLC is to help educators work together for a common goal. This process fits with the traditional goals of preservice educators very well. Preservice educators are used to working and learning together about education. They spend several years studying together on campus, learning to share and discuss ideas. When they are finally assigned to schools and have the opportunity to work with students, the teacher candidates tend to reach out to their other preservice teachers for support and discussion to help traverse the new terrain. They are usually comfortable with one another, based on the fact that they know one another and have worked with one another in their teacher education program. They are also novices, having in common a lack of experience as teachers. They are then placed in schools with other, often times, very experienced teachers with whom they work. An individual may find it is easier to share and take risks with a peer teacher candidate, rather than admit possible mistakes and lack of experience with a seasoned educator such as a cooperating teacher.

An important factor here is the building of a trusting and collaborative relationship to help support teachers. This process of reflecting on objective data in a supportive group helps to build a trusting relationship based on common work with peers (Acheson & Gall, 2003; DuFour, DuFour, Eaker, & Many, 2006). The process gives candidates the data to start to consider how both the curriculum and a teacher's performance work together to influence student achievement in the classroom. One of the PLC participants commented, "talking to other teachers and using feedback from others my age with the same experience helps me to improve my teaching and get new ideas." This trust-building process and experience will help the preservice teachers as they enter the public schools. They have experienced that using data, reflecting, and working as a team are all part of the natural work of teachers. The experience leads them well into performing in a professional learning community that demands trust, commitment, and a safe space for teachers' work (Ballack, 2009, p. 43-44).

Engaging in reflective work. The preservice teachers also learn that reflectivity is natural as part of the work of teachers and they

learn to see its benefits. This reflectivity helps them focus on the content of their teaching, the students and their learning, and the contexts in which they teach (Zeichner & Liston, 1996; Zwozdiak-Myers, 2012). A teacher candidate summarized the value of combining PLCs and action research, along with their professional development plans, to help candidates monitor their growth as teachers:

Creating a professional development plan, going through cycles of action research, and working in professional learning communities greatly contributed to my understanding of a new side to teaching. These tasks also caused me to review my progress as a teacher and to be constantly reflecting on my performance. I learned ways to adjust lessons, classroom management, and better ways to reach different students.

For professional learning communities to grow teachers must engage in reflective, collaborative, intellectual work. The process demands social participation, responsibility for others, and good social skills (Foord & Haar, 2013; Grossman, Wineburg, & Woolworth, 2001; Wiseman, Arroyo, Richter, 2013). The process will also require collaboration, action learning, and peer observation (Aubusson, Steele, Dinham, & Brady, 2007). The time spent in this process will lead to intellectual renewal as well as teaching improvement through inquiry, data analysis, examining student work, examining instruction, and assessing students (Thessin & Starr, 2011). These are important steps in developing a cycle of continuous improvement and a focus on improving student learning.

Using Action Research and Professional Learning Communities to Build Future Change Agents

In 1990, the Holmes Group laid out principles for professional development schools. The principles emphasized teaching and learning for understanding, creating a learning community, teaching and learning for all children, continuous learning, thoughtful inquiry into teaching and learning, and inventing a new institution. These goals fit well with the concept of professional learning communities. Both emphasize teacher and student learning, improving instruction based on good teaching practices, and doing so in a strong learning community.

Goodlad (1994) describes centers of pedagogy as exemplars for showcasing collaboration and teamwork in the preparation of teachers. The partnership between education faculty, content faculty, and school personnel is key. Preservice teachers must be part of these collaborative teams and understand the value of working together to improve their practice and their students' learning. They need to experience this while in their teacher education programs and when they are in schools.

Combining action research with professional learning communities builds teacher reflection, a key step toward independence and continual improvement as a teacher. The

two steps together also builds a sense of empowerment for teachers. Michael Fullan (1993) described four core capacities needed for change in education. Educators need to personally develop their own visions of teaching, they need to be involved in inquiry, they need learn to master their skills, and they need to learn to collaborate. By putting educators in charge of improving their practice they are learning needed skills to become change agents in their own classrooms and skills (Fullan, 1993; Fullan & Hargeaves, 2013).

Educators need to learn how to support change in education. Professional learning communities help educators learn that change cannot be a blueprint that is easy to follow and employ (Fullan, 1993). Instead, educators see that change must be based on data that is collected on all students to amend their practices for what students need. Teachers need to also see that their practices influence the students' success and classroom environment and tie those realizations into plans for improvement. They need to see that problems can indeed, as Fullan argues, be their friends. Instead of viewing problems as a negative, problems can be an opportunity to explore and investigate new possibilities. This value will be difficult to internalize in educators who have not had the experience of questioning opportunities for change in a supportive atmosphere from the beginning of their teaching careers. In this field experience, the preservice teachers viewed themselves without the pressure of expecting to see success in each and every lesson. Instead, they learned to obtain feedback, discuss the feedback with their colleagues, and reflect on what change the data told them to make. Problems were opportunities for discovery. The preservice teachers discovered for themselves how important combining theories on education and good teaching are to connecting theories of change via their professional learning communities (Fullan, 1999; Gardner & Hammett, 2014).

Fullan also argues that a key aspect for supporting change is that individualism and collectivism must have equal power. Action research and professional learning communities support this view. Teachers reflect on their own teaching, using data, but do so with help from their colleagues as needed. They learn that every person can be a change agent. They learn to accept that "change is too important to leave to the experts" (Fullan, 1993, p. 39).

For organizations to change, participants must unlearn organizationally defensive routines (Argyris, 1993). They must be willing to seek out new opportunities and possibilities for change. Argyris argues that for organizations to change, participants must learn how to obtain valid information, have informed choices, and carefully monitor what is happening with the change process. This concept is particularly important now in education. Education is under siege with government, businesses, and members of the community challenging schools and educators as to how to improve education for all students. As teachers have increased pressure on them for improved test scores, it can be easy for them to start to rely more on standardized curriculum packages, on standardized tests and assessments to define student learning and teacher quality, and

on teaching to tests versus teaching for understanding. Therefore, an atmosphere of reflectivity and collaborative learning supported by action research and professional learning communities is important to cultivate an attitude that can combat the defensive routines likely to occur in this current age of school accountability.

An important disposition for preservice teachers to learn is that they can be change agents for school improvement. They need to experience how their manner of behavior is a powerful influence in their own classrooms. They need to experience the classroom research process for themselves and experience how to work in groups to improve classroom practice. The use of and experience with action research and professional learning communities can be the tools that preservice teachers need to learn these dispositions as change agents able to support all students' learning.

If teacher education program faculty want to improve the work of future teachers, prepare preservice teachers for the realities occurring in schools, and focus on ensuring all students' learning, then they need to consider options on how to help teacher candidates experience these during the teacher education programs (Gardner & Hammett, 2014). Gone should be the days when teachers, alone, go into their classrooms and solve all of their problems within the four walls of that classroom. Teachers must move away from the traditional norm of isolation; teachers need to learn the skills of and accept the dispositions of collegiality and how to work with and learn from one another.

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Joyce Shanks is an associate professor at the University of Wisconsin-La Crosse. She has been involved in professional development school relationships for eleven years.