



Policy Brief: Teacher Learning through Collaboration and System Innovation

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Citation: Lemke, C., & Lesley, B. (2009). Advance 21st century innovation in schools through smart, informed state policy.



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The Challenge Before Us

Are today's students graduating from American schools ready to thrive in today's complex, fast-paced, high tech global economy? With an eye on current challenges to U.S. economic competitiveness, many U.S. policymakers are currently answering that high school graduate readiness question with a resounding "No." Results from international exams are mixed. Results in mathematics and reading for 4th and 8th graders show relative increases for the U.S. from 2003 to 2006/2007. However, in the PISA 2006 exam, 23 of 29 participating countries' 15-year-olds (nearly 80%) outperformed U.S. 15-year-olds in problem solving.¹

As a result, policymakers are now calling for a redesign of K12 schools into systems that fully engage students in high-quality, authentic, deep learning—augmented by 21st Century, Web 2.0 technologies.^{2,3} This is evidenced by the innovative Race to the Top programs initiated in 2009 by the U.S. Department of Education,² and the call for 21st Century Skills by the Partnership for 21st Century Skills.

The rhetoric among educators advocating for such change is evident today in nearly every school district across the country. Encouraged by business, industry, government, and community groups, education leaders are now publicly acknowledging the need to align schools to the 21st Century. The economic crisis in the U.S. has policymakers realizing that schools must be transformed into systems that embrace 21st Century technologies, research on how people learn, and a spirit of innovation and entrepreneurship. Such a redesign is a monumental undertaking. The sheer volume of professional development that will be required to prepare teachers and administrators for the job ahead is staggering. The National Education Association's response to this call for reform provides recommendations for "What Works," from their 40 years of experience, *"Investments in teachers' and leaders' knowledge and skills are essential to all other reforms, and pay off in higher achievement. Strong preparation, mentoring, and professional development, as well as collaborative learning and planning time in schools, are the building blocks of any successful reform."*⁴

What is not yet clear is the theory of change that will catalyze such rhetoric into action. With the daunting task of effecting change in the majority of elementary and secondary schools across the country, what is clear is that the old models of change cannot be scaled up to the volume required to meet the challenge. Instead, K-12 education needs new, smart, innovation approaches to building the capacity of the education system to redesign learning for the 21st Century.

The irony is that a critical element to that smart, innovative solution lies in the very thing many school administrators are now banning from schools—interactive Web 2.0 tools (e.g., wikis, blogs, tweets, Diigo, Del.icio.us, RSS feeds, social networking, chat rooms, online gaming, etc.). Teachers and students need to work smarter, not harder. These Web 2.0 tools, in combination with systems thinking and collaborative, innovative leadership, have the potential to enable teachers to tap into multiple professional learning communities (PLCs), thus enabling them to embed meaningful professional development into every day of their professional lives.

For example, a PLC is hosted by Brown University as a yearlong, online professional learning experience for middle school and high school teachers of math, science, social studies, and English/language arts. It begins with a face-to-face institute and continues throughout the year with online learning activities that bring educators together to collaborate on their work. It focuses the work on a shared commitment by participants to create knowledge together as they experiment with and reflect on new instructional strategies over the course of a year. Key to the success of this hybrid model is long-term collaboration among, involvement of teachers in solving problems directly related to their

Web 2.0 Definition

Web 2.0 is defined here to be an online application that uses the World Wide Web (www) as a platform and allows for participatory involvement, collaboration, and interactions among users. Web 2.0 is characterized by the creation and sharing of intellectual and social resources by end users.

—CoSN (2009)

Definition

A professional learning community (PLC) is composed of collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all.

Web 2.0 and the Professional Learning Community

practice, a curricular focus, and hands-on opportunities to apply learning.⁵ In essence, this PLC serves as a think tank and piloting for how innovative, research-based instructional strategies can be moved from research to practice in the classroom.

Orchestrated effectively, PLCs—in combination with Web 2.0 tools—may be just the ticket to the massive, rapid change needed in our K-12 education system. It took radio 36 years, television 16 years, the Internet 4 years and Facebook just 9 months to reach 50,000 users. Take a look at the rapid shifts most people have made over the last few years in the ways in which they communicate, access information, purchase products, navigate, entertain, think, and learn. Web 2.0 has played a role in the dramatic shifts in the world's economy, societal norms, cultures, and politics. Why wouldn't we expect that it would also shift education paradigms?

The reality is that these Web 2.0 tools will catalyze change in the K-12 education system regardless of the actions of educators. The real question is whether the transformation will be inside or outside the current system. It remains to be seen if education leaders can engage in Web 2.0 thinking, collaboration, and innovation in ways that enable the current public institution to evolve into the education system today's generation of youth requires for the 21st Century. As in business and industry, the solution lies in openness to innovation.

The good news is that innovation teaching and learning is on the rise among Web 2.0 pioneering educators.

Back to the *theory of change*. The premise of this policy brief is that the *theory of change* for the transformation of education described above must be vested in Web 2.0-enabled PLCs for teachers, administrators, and other key stakeholder communities. The world is shifting to a participatory society. Through social networking, collaborative thinking, and open, public networking, people of all ages, 2 to 102, are socializing, sharing, exchanging, debating, collaborating, negotiating, and learning. The year 2009 saw the 4-billionth connection of mobile devices,⁶ postings in over 900,000 blogs daily,⁷ and 2.6 giga minutes of time devoted to Facebook every day from across the globe. The Web has become central to daily life in this century.⁷ Young people are coming of age in this participatory, 24/7, interactive world. Schools must do the same.

The very definition of learning is evolving as the democratization of knowledge extends to the masses through the Web. Three specific types of learning are identified by Kai Hakkarainen⁸ and colleagues as critical for teachers in this knowledge society:

- Learning as acquisition of knowledge by the individual.
- Learning through participation in a social community
- Learning as collaborative knowledge creation⁹

A quiet convergence of perspective on teacher learning and teacher professional development has emerged during the last decade. Whether it is called knowledge of practice, communities of practice, lesson study, peer review, inquiry stance, knowledge creation, high-quality teaching, or yet another term, a commonality among most current approaches to teacher learning is collaboration.^{8,10-13}

For the purposes of this paper, collaboration is defined as “the mutual engagement of participants in coordinated, synchronous activity in a continued attempt to construct and maintain a shared conception of a problem.”¹⁴ Unlike coordination, when results in the delegation of work to various individuals or team who complete their tasks and

then combine them into a final work, collaboration requires ongoing interaction among members who work together continuously to find a solution. A 2000 report from the National Center for Educational Statistics¹³ contends that high-quality teachers must be lifelong learners in order to adapt to the complexity and challenges of today's classrooms. In that publication, the authors reported on the results from a national survey on teacher collaboration. The most frequently cited types of collaboration were joint work with other teachers (e.g., team teaching) at 69%; and networking with teachers outside their school and teacher networks (e.g., school-to-school and school-university partnerships) at 62%. These were followed by: sharing a common planning period, and collaborative research on a topic of professional interest each at 52%. Teachers reported less activity as a mentor (26%) or mentee (23%).

These three types of learning listed above align quite well to the Web 2.0 tools in combination with online professional learning communities, and collaboration.

Collaboration is an integral component of the professional learning community (PLC), which is composed of collaborative teams whose members work interdependently to achieve common goals linked to the purpose of learning for all.¹⁵ According to Rick Dufour, the PLC is where the focus is on learning rather than teaching, members work collaboratively, and members hold themselves accountable for results.

Linda Darling-Hammond suggests that professional learning communities provide opportunities for teacher development of knowledge for practice, knowledge in practice, and knowledge of practice.

- *Knowledge for practice* represents the individual educators' acquisition of the body of knowledge related to content, pedagogy, curriculum instruction, assessment, and other research-based theories of learning.
- The *knowledge in practice* represents the notion that the knowledge of the accomplished teacher is highly situated, practical, and acquired through the lens of classroom implementation.
- The third area of *knowledge of practice* is the acknowledgment, that to teach well, the teacher's practice must emanate from theory and research, teacher expertise, and collaborative cultures of learning established within the school district and school.

In both of the above constructs, the third category from each of the researchers, (i.e., Hakkarainen's collaborative knowledge creation, and Darling-Hammond's knowledge of practice), focus on the collaboration among participants in the construction of a shared understanding of how knowledge, theory, and research should be applied in the learning environment.

Figure 1: Web 2.0 Alignment to the Three Types of Learning

Web 2.0 Tools	Types of Learning		
	Acquisition by Individual	Through participation in a social community	Through collaborative knowledge creation
Social Networking	In the acquisition type of learning, the individual typically joins sites to acquire information, but rarely interacts, and usually does not contribute.	In participatory type of learning, the individual joins sites of interest, but has fairly loose connections to fellow participants. Participation in such online communities, includes sharing of files, commenting on others' work, threaded discussions, etc.	In the collaborative type of learning, the individual joins a specific online group, committing to shared goals. He/she works iteratively toward a deeper shared group understanding that will lead toward those goals, most often associated with increased learning by students in participants' schools/ classrooms. Note: The group is typically comprised on teachers in a single school, a subcommittee of a professional organization, a district committee, etc.
Social Bookmarking, Blogs, Wikis, and Tweets	The individual typically searches, browses, reads, downloads, but rarely contributes.	The individual participates in developing and sharing their own work, or commenting on others' work. Typically the group he/she interacts with differs each time the Web 2.0 tool is accessed. The individual may become a professional colleague of persons he encounters on the sites, but there is typically no "group goals" except to advance the knowledge of individuals on the site.	These communication tools serve to advance the collective learning of the group. The tools are used to contribute ideas, comment on others' work, iteratively discuss or debate issues, and check perceptions across the group and beyond. Typically, he/she is interacting with colleagues, rather than strangers.

Examples

1. Online Learning Communities for *Classroom Instruction That Works*.¹⁶ The Mid-continental Regional Educational Laboratory (McREL) uses their popular publication, *Classroom Instruction That Works*, as the focus of a yearlong, online professional development series. Each month an instructional strategy is introduced at one online session, then, at a second session teachers' questions are addressed and they are introduced to methods for enhancing the instructional strategy through technology. Between sessions participants and McREL instructors interact collegially online through a customized Website to discuss issues, and exchange successes, and talk about lessons learned.¹⁶
2. The English Companion Ning: where English teachers meet to help each other. (Note: Ning is an online platform for people to create their own social networks). The English Companion was created by Jim Burke, a high school English teacher. The site has over 6,944 members (as of 8/27/09). Members are invited to join various

groups such as Poetry Corner (225 members), Teaching Writing (738), Teaching with Technology (690), New Teachers (329), and Free Tools for English Teachers (403). The site and/or groups host book studies, discussions around topics introduced by participants, file exchanges, and advice and counsel among members (<http://englishcompanion.ning.com>).¹⁷

While the purpose and usefulness of each type of learning in advancing the change agenda in schools varies considerably, all types will be necessary to orchestrate the tremendous change needed in America K-12 schools.

Research on Teacher Collaboration

While the theoretical research base for professional learning communities and collaboration among educators is well documented in the literature, the experimental/ quasi-experimental studies on the impact of teacher collaboration on student achievement is somewhat limited. A review of that literature finds that researchers typically discuss the impact of teacher collaboration (i.e., professional learning communities) on system changes in the district, school, instructional pedagogy, or classroom practices rather than on student learning. For example, a 1999 quasi-experimental design study compared classrooms of teachers who worked as part of teaching teams with other teachers who worked independently. Those working in teams had higher levels of: skill variety in their work, knowledge of students, growth satisfaction, professional commitment, work group effectiveness, internal work motivation, and teacher efficacy.¹⁸ The few studies that do link teacher collaboration to student outcomes indicate a positive correlation.^{18,19} An analysis of comprehensive school reforms reported that those reforms of the past which included strong professional communities did result in increased student learning.¹⁹⁻²² Researchers from the University of Wisconsin systematically reviewed school reforms by the School restructuring Study (SRS), an examination of 24 significantly restructured schools; the National Educational Longitudinal Study of 1988 (NELLS: 88), a representative sample of over 10,000 students from grades 8 -12; the Study of Chicago School Reform, an analysis of survey data from 8,000 teachers and principals in 400 elementary and 40 high schools; and the Longitudinal Study of School Restructuring, 4-year case studies of 8 schools.¹⁹ They came to the conclusion that professional communities were the key to increased learning by students, *“the quality of education for children depends ultimately not on specific techniques, practices or structures, but on more basic human and social resources in a school, especially on the commitment and competence of educators and on students’ efforts to learn.”*

Innovation through Professional Learning Communities

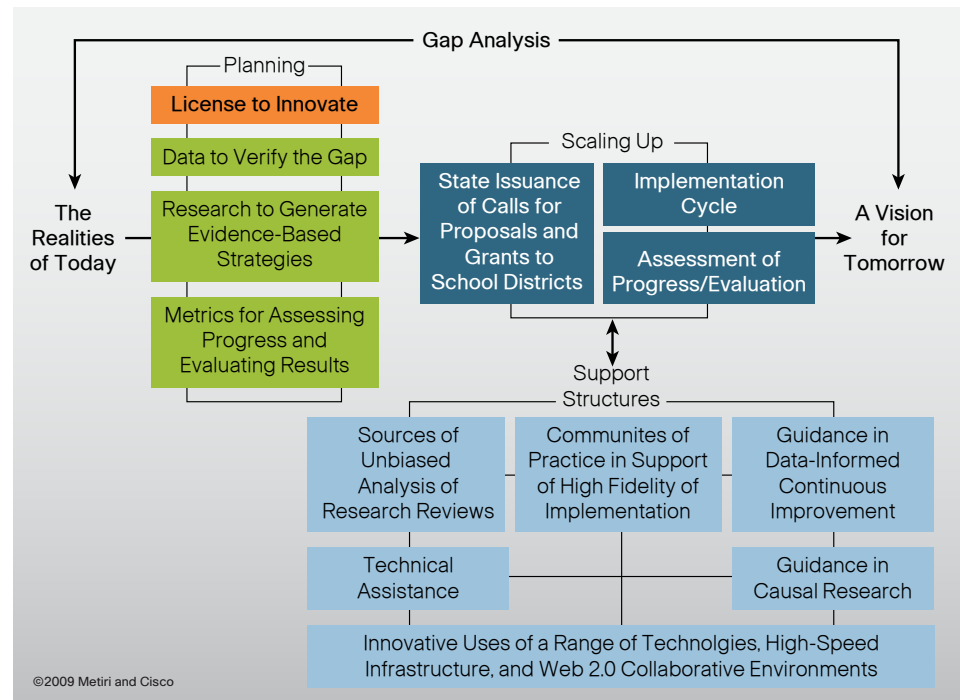
So how does a state education agency, school district, or school establish effective professional learning communities? Halverson,²⁰ a researcher from the University of Wisconsin, Madison, further defines professional community as social capital, (i.e., the accumulations of social values such as trustworthiness and respect as a result of participation in interactive social networks). Halverson argues that a school district can increase its social capital by establishing structural networks among teachers.

There is considerable research indicating that the characteristics of schools with effective professional learning communities include:

- A clear sense of shared purpose and collective responsibility for student learning
- Professional inquiry among staff to achieve that purpose, including opportunities for sustained collaboration and reflection on practice
- Deprivatization of teaching practice
- Norms of collegiality among teachers and leaders
- Opportunities for staff to influence school activities and policies.

The state education agency charged with establishing and implementing 21st Century Learning in K-12 schools might consider the logic model below as it implements state and federal policy. The model addresses how teacher learning can be accomplished through professional learning communities in combination with Web 2.0 tools.

Figure 2: Logic Model for Effecting Change through Web 2.0 and Professional Learning Communities



Each of the topics and subtopics is discussed below with a specific focus on the role of professional learning communities in the change process.

The logic model is provided for SEAs charged with the responsibility of translating policy into school programs that meet legislative intent. The six key principles outlined on previous pages are embedded in the design. Brief descriptions of each of the four elements of the logic model follow: I. Gap Analysis; II. Planning; III. Scaling Up; and IV. Support Structures.

Four Elements of the Logic Model

I. Gap Analysis

The SEA reviews the legislation, budgetary language, and associated legislative testimony in order to identify the legislative intent, the stated purpose or goal(s), the identified needs to be addressed, and any required programs or strategies. Based on that review, the SEA clearly defines the goals; determines if there is a need for action; and identifies the gap(s) between what is occurring and what should be occurring through the new (or continued) programs.

PLC Considerations: The program requirements and/or restrictions on program elements related to professional development should be reviewed and identified.

II. Planning

The SEA's next steps are to work with colleagues within the agency and educators from LEAs to provide background, definition, context, and direction for their legislatively mandated programs. To do so requires the SEA to investigate the following:

- *License to Innovate.* To innovate is to launch a new idea in a system that gains sufficient momentum so as to cause ripples of change in that system. The SEA can nurture innovation by fostering K-12 think tanks, bring "what works" into facilitated discussions on how to move from ideas to practice, fund innovative projects, and foster partnerships with innovative companies. The "license to innovate" is accomplished as the state calls for innovative ideas in its request for proposals.

PLC Considerations: One of the key elements the SEA could include in its RFP is the commitment of all awardees to participate fully in the professional learning community that the SEA establishes, and require that the LEA submit a plan to establish its own professional learning community with the authority to innovate at the classroom level.

- *Data.* The SEA identifies and reviews any available datasets that might inform the work, including data related to eligibility factors; characteristics and performance data on eligible schools, districts, or subgroups; etc.

PLC Considerations: The LEA should submit plans that put data at the fingertips of the PLC.

- *Research.* Once a research basis had been established, the SEA identifies evidence-based, promising practices that have the highest probability of advancing the goals specified in the legislation. This can be scaffolded by the SEA through commissioned research briefs and associated policy forums.

PLC Considerations: The SEA should plan to continuously work with the professional learning communities within the project to provide appropriate research reviews.

- *Metrics.* The SEA then establishes the metrics for measuring advancement of the goals. These could include primary indicators of success, typically related to student outcomes, such as achievement, 21st Century skills, or engagement. The metrics could also include leading indicators of progress, typically related to changes in classroom practices, such as teacher proficiency, pedagogy, learning strategies, classroom culture, curricula, choice, intellectual safety, authenticity, etc.

PLC Considerations: The quality of the PLC experience should be included as a leading indicator, as should indicators for innovative change that results from the work of the PLC.

Based on this work, a plan is developed to carry out the functions of the enacted legislation. This would include the determination of the process by which the funds would be allocated to LEAs typically identified in the legislation (e.g., competitive grants, formula grants, targeted subgroups, equity in geographic distribution, etc.). One of the elements for determining the allocation of the funds would be the quality of the PLC plan submitted within the LEA proposal.

III. Scaling Up

To maximize the return on investment, states often will identify successful programs that are working in some schools and then put a process in place to replicate them elsewhere.

- *State Issuance of Call for Proposals.* Based on the aforementioned planning stage, the state makes a determination as to the nature of the call for proposals. In some cases, the state decides to focus the call on a specific evidence-based strategy or intervention. In other cases, the specific strategy or intervention is left to be proposed by the LEA, guided by specified criteria and/or priorities within the Call for Proposals. In an effort to build the capacity of LEAs to respond in an informed manner, the state might offer

orientation or information sessions prior to the release of the Call for Proposals. The expected outcomes, measures of success, and/or interim progress indicators should be clearly identified in the Call.

PLC Considerations: The SEA call for proposals should include specific requirement that the LEA proposal include a commitment to the state's PLC activities for the program, and a plan for local PLCs that embed professional development into the teachers' daily practice. The call for proposals should also include background information on PLCs.

- *State Awards of Grants.* The SEA determines the awards of grants to LEAs based on the eligibility criteria and the competitive or formulaic process identified in the Call for Proposals.

PLC Considerations: Criteria for inclusion of high quality PLC plans in the eligibility and scoring process.

- *Implementation Cycle.* The implementation cycle should be sufficiently long to allow for the full cycle of change in schools. If allowed by the enacted legislation, that cycle should be at least 2 to 3 years. The multi-year grant period is instrumental in gaining the commitment of teachers and administrators to the change process. The awardees should be required to plan their implementation schedule with the intent of meeting milestones that would advance their attainment of the goals.

PLC Considerations: SEA facilitated Professional Learning Communities should be facilitated.

- *Assessment of Progress/Evaluation.* This area of assessment of progress and evaluation is often a challenge to the SEAs, in part due to restrictions on the percentage of funds available for evaluation. The ease of conducting a state level evaluation of all the LEA awardees' programs is dependent on the determination of core outcomes of the local programs by the state.

States often approach the evaluation from both the formative and summative perspectives by requiring a combination of state level and local evaluation. In many cases the state level evaluation concentrates on the systematic collection of interim progress indicators that can be reported by school, but also aggregated at the state level, showing trend data over time (e.g., changes in classroom practices, changes in pedagogy, changes in teacher proficiencies, etc.). Such data can also be used for formative purposes at both levels. At the same time, the SEA will often require that the LEAs conduct a local evaluation where the focus is on student outcomes. In most cases, those local evaluations are then aggregated into a state level report. Most states find that, without strong evaluation support, most LEAs do not have the in-house capacity to conduct high-quality evaluations on the impact of their programs.

PLC Considerations: The metrics for assessing progress of the grantees should include the full participation of the LEAs in the state-supported PLCs as well as the establishment of effective local PLCs aligned to the goals for the grant program.

IV. Support Structures

Support structures are critical to the success of the grant programs.

- *Professional Learning Communities (PLCs) in support of innovation & high fidelity implementation*

With the advent of Web.2.0 tools has come what the Harvard professor Henry Jenkins calls a participatory culture. The state can tap into that opportunity by establishing virtual environments in which teachers and other education professionals involved in their programs can share experiences, collectively identify and address barriers, celebrate successes, identify and interpret research, and generally discuss all aspects of their experiences within the state's programs.

PLC Considerations: The state should establish appropriate PLCs for the grant program across district grantees and should facilitate activities within those PLCs. The state should document the work of the PLCs and publish their work.

- *Sources of unbiased analyses or research.* Educators often do not have the time, resources, access, or experience to identify and digest the body of research related to new learning approaches. The state can be extremely helpful to educators by commissioning and publishing that work, making it available to educators electronically, and providing unbiased analyses of related research studies.

PLC Considerations: The state should provide needed resources, experts, and research for the PLCs.

- *Guidance in data-informed continuous improvement.* The state's program outcomes, indicators of success, and associated metrics, can be critical elements of formative assessment and continuous improvement throughout the life of the program. The state should not only collect and analysis state level data using established metrics, it should disaggregate that data for use by LEAs. In addition, it should provide training in the analysis of the disaggregated data in setting incremental targets and strategies to reach those targets in efforts to ensure continuous improvement.

PLC Considerations: The state-supported and locally supported PLCs should have access to data that the state collects. In addition, the LEA plans should include provision of data access for the local PLCs.

- *Technical assistance.* Technical assistance is responsiveness to individual and collective needs of program participants. The state should provide avenues for program participants to identify needs, and then to respond accordingly to needs as resources allow.

PLC Considerations: The focus and type of PLCs should emerge based on participant needs.

- *Guidance in causal research.* The state role in this area is two-fold. First, where possible, the state should plan and execute experimental or quasi-experimental research studies that document causal effects of the program. Second, the state, where possible should help educators understand the difference between causal, correlational, and qualitative studies, to ensure informed decision making.

PLC Considerations: Where appropriate, causal research studies could focus on the impact of PLCs.

- *Innovative uses of technologies, high-speed infrastructure, and Web 2.0 collaborative environments.* The state should facilitate low-cost high-speed, high bandwidth access to the Internet for all students and educators.

PLC Considerations: The state should provide a Web 2.0 platform for the school district program grantees to initiate and participate in Web 2.0 collaborative activities in support of the PLCs.

State support structures often include grantee meetings, professional development, access to resources and expertise, formal opportunities for collegial exchanges with other grantees, online communities of practice, evaluation guidance, access to analyses of research reviews, and, in some cases, opportunities to participate in research studies. They also include the technological foundations the state should provide including low-cost access to a high-speed network and a range of technology devices for student and teacher access, provisions for technical support, maintenance and repair, and periodic updates and redesigns within the system.

Summary

The elements of the logic model together form a systemic approach to bringing innovation in 21st Century Learning to schools. Professional Learning Communities are a critical element of that work.

The essence of the new theory of change lies in the interdependence of three new critical elements of teacher growth:

- A recognition that the lines between formal and informal learning are blurring
- The new paradigm for professional development for teachers lies in collaborative, participatory communities that enable teachers to learn and grow professionally, together
- The empowerment of school-based communities of education professionals to continuously improve learning environments guided by basic principles of learning¹⁹

The emphasis in teacher learning must shift from the acquisition of knowledge and the practice of the isolated teacher, to the collaborative work of teachers and other educators in serious examinations of student work, teaching practices, learning environments, and patterns of learning. One of the drivers in this shift is the recognition that teachers—and schools/society at large—are facing increasingly complex issues in this 21st Century.

“Fundamental to this conception of teacher learning is the idea that teachers learn collaboratively, primarily in inquiry communities and/or networks where participants struggle along with others to construct meaningful local knowledge and where inquiry is regarded as part of larger efforts to transform teaching, learning, and schooling.”²³

—Marilyn Cochran-Smith and Susan Lytle (1999)

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