Professional development during a crisis and beyond: Lessons learned during COVID

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Abstract
This article reviews a virtual professional development program for STEM faculty conducted in 2020 in which, due to COVID, faculty participants had to adjust their teaching practices. The study found that the program’s structure, focus, and ability to foster community helped sustain faculty members. Participants shared lessons learned through virtual workshops they led for others on their campuses.

This volume of New Directions for Community Colleges (NDCC) underscores the contributions made by community college researchers, practitioners, and leaders on community college campuses and provides an important contribution to the literature on teaching and learning. Four-year institutions have long dominated the research literature in this area, as well as instructional improvement initiatives (e.g., the Center for Integration of Research, Teaching and Learning (CIRTL) network—https://www.cirtl.net/) in higher education. What the articles in this issue of NDCC illustrate is the myriad of ways community college faculty, staff, and leaders follow a mission-driven focus on student learning and hold teaching as a valued activity for faculty, and how research on these activities is growing in scope and quality. The articles amplify the exemplary practices in place in community colleges, provide a resource for those dedicated to enhancing teaching and learning outcomes, and hopefully represent a resurgence in research activity on teaching in two-year institutions. Our concluding article provides an example of the dedication that community college faculty have to improving their teaching and, in particular, what it means to stay engaged in professional development to improve student learning while the nation faced one of the most disruptive crises in its history. Because higher education faces change on an ongoing basis (Kezar, 2013; Kezar & Eckel, 2002), the lessons learned from this most recent crisis underscore the historical nimbleness of community colleges in reacting to change (Gumport, 2003). Our findings can serve as an exemplar framework for professional development (PD) in community colleges.

The COVID-19 crisis illuminated the need to support faculty in their teaching as campuses scrambled to pull together resources and tutorials to help faculty members who were teaching remotely for the first time (Lederman, 2020). Yet, the field soon discovered that keeping quality teaching and learning front and center involves more than just online tools and technological fixes. It also requires attention to ongoing faculty development. Instead
of conceptualizing of PD as mere skill acquisition with a singular focus on techniques, it is critical to think more systemically about the process of supporting faculty development and the role of context on PD (Beach, Sorcinelli, Austin, & Rivard, 2016). The dominance of research on teaching and learning in research university contexts ignores the lived experiences of community college students, faculty, and institutional context. Our research highlights how the influence of the community college environment is pivotal to approaching PD and requires a reconceptualization of the role of the learning space that acknowledges the differences between research universities and community colleges. Higher teaching loads, academic preparation of students, instructional resources, and a central focus on teaching versus research all contribute to recognizing the critical role this system of practice plays (Hora & Ferrare, 2013).

Just as the pandemic unfolded in early 2020, we were leading a virtual professional development program with a cohort of 48 community college STEM faculty in 17 institution-based teams from around the country. This professional development focused on strategies to support students’ academic success, broaden student participation in geoscience and other STEM fields, and build more robust career and transfer pathways for students. Given the chaos in teaching during spring 2020, we fully anticipated broad-scale attrition from our year-long PD program. Yet, of the 48 faculty who started in January, 45 remained involved at the final workshop in December, including two who took a short pause and later re-engaged. Why did the faculty stick with this optional, additional work during a time of professional and personal challenge? How could the virtual professional development model we used offer insights to others? Answering these questions is the focus of this article.

FACULTY DEVELOPMENT IN COMMUNITY COLLEGES

Faculty professional development became more formalized in the 1970s and 1980s, with community colleges focusing primarily on programming to help faculty do their jobs better (Murray, 2002). Helping faculty members understand the mission of community colleges and the demographics of the student body was central to early PD programs (Brawer, 1990). In his review of the literature at the time, Murray concluded that

- Few community colleges made the effort to tie their faculty development programs to the mission of the college.
- Few community colleges attempted to evaluate the success of faculty development programs.
- Faculty participation in most PD activities at community colleges was often minimal, and often those most in need did not participate. (p. 91)

More recently, Beach et al. (2016) noted that directors of teaching centers at community colleges identified two signature services: (1) support for new faculty and (2) resources and programming on active, inquiry-based, or problem-based learning (p. 39). They also found that services supporting assessment of student learning and mentoring programs for underrepresented faculty were noted more frequently in community colleges than by directors leading centers in other institutional types. Thus, over time, the commitment to working with faculty in ways to support students remains central in PD offered by teaching centers at community colleges (Beach et al., 2016).

Providing faculty with strong PD has an outsized effect on student success as community colleges enroll nearly 40% of the nation’s undergraduates. Our study found that virtual
PD is a powerful approach for helping faculty make changes that better support student learning and ultimately help amplify institutional change efforts.

PD that is virtual opens options for wider participation by faculty who are pressed for time and lack support for travel. Community college faculty, particularly adjunct faculty, often receive scant opportunities to participate in discipline-based professional development (Maier, Rowell, & Macdonald, 2021). McConnell et al. (2012) found that a virtual learning community provided participants with a similar experience to face-to-face (f2f) meetings and had the advantage of connecting participants for a longer period. The ease of access for participants and facilitators removed barriers to access, as no travel was required. An example of virtual PD is found in the Mississippi Virtual Community College (MVCC). In 2013, 1000 of the 1400 faculty at MVCC had participated in the virtual PD program the MVCC established (Pruett & Pollard, 2013). The program initially encountered several challenges (e.g., optional faculty enrollment versus requiring the program, technology problems, poor contingency plans), but these challenges were overcome by “persistence and openness” (p. 65).

Our virtual PD project is part of a National Science Foundation (NSF) project, SAGE 2YC: Faculty as Change Agents, focused on geoscience and other STEM community college faculty. (See Chapter 14 for another example from the program.) Our success with this project suggests why faculty PD, especially with participants who work in the same institutional context (community colleges) and have a shared disciplinary emphasis, is so important for student success (Maier et al., 2021). The goals of the project were to build a national network of community college faculty who use evidence-based practices to improve student success, broaden student participation in STEM, and facilitate students’ professional pathways in the STEM workforce (Macdonald et al., 2019). Our virtual PD format provides a series of asynchronous and synchronous activities, workshops, and other virtual activities to engage faculty in learning about evidence-based strategies that can help accomplish these objectives. Each team, consisting of faculty from the same institution, also developed an action plan to strengthen their courses and their program/department, applying the new strategies they are learning. A component of the PD was that each team would also develop and lead an on-campus workshop to share with other faculty what they are learning in the PD sessions, providing a way to accelerate evidence-based changes in practice (Macdonald et al., 2019).

PROJECT BACKGROUND

The virtual PD program was part of a 5-year NSF-funded professional development project to support community college geoscience faculty working to improve success for all students, broaden student participation in STEM, and build multiple pathways to STEM careers and transfer. An additional component of the virtual PD focused on cultivating faculty leadership skills, with faculty learning how to better connect their projects to college-wide initiatives. (See more on SAGE 2YC here: https://serc.carleton.edu/sage2yc/index.html). Our work involved three cohorts of faculty: Cohort 1 participated for 4 years with both f2f and virtual programming; Cohort 2 was involved for 2 years through virtual sessions and one culminating f2f workshop and expanded the focus beyond geoscience to include other STEM disciplines; Cohort 3 participated in a 1-year, all-virtual program that built on lessons learned from the earlier cohorts. Cohort 3 included both full-time and adjunct STEM faculty from 17 community colleges across the country who represent a range of diverse colleges—small and large, urban and rural. Here we focus on the experiences of Cohort 3 because this group took part in a virtual-only PD program, and they participated in this program during a pandemic that altered typical faculty
teaching obligations. Cohort 3 began with 48 community college faculty on 17 teams across the country.

The Spring 2020 workshops for Cohort 3 involved 12 virtual activities. Topics of these sessions employed evidence-based teaching strategies including active learning and metacognition (McGuire, 2015) and development of students’ science identity (Stets, Brenner, Burke, & Serpe, 2017), including use of scientist spotlights (Schinske, Perkins, Snyder, & Wyer, 2016). Other strategies to promote equity and inclusion, and various approaches to support students on their personal pathways (e.g., careers and transfer to 4-year institutions), occurred as well. The PD also included work on course-level outcomes data, development of a team action plan to strengthen their programs and departments, and strategies for working within the institutional context with support from administrators and other campus supporters—all toward improving student success. Throughout, the participants worked with team members from their college, interacted with other participants from across the country and project leaders, and shared information via a project listserv, website, and discussion boards.

The virtual delivery of the PD included both asynchronous and synchronous delivery of material. Asynchronously delivered readings, videos, and discussion boards provided faculty participants with research-based strategies and opportunities to share insights, questions, and examples; synchronous sessions engaged participants in various group configurations to discuss what they were learning with other participants. Because the faculty in Cohort 3 had been involved in the virtual PD for several weeks before massive shifts to remote teaching occurred, even those without prior online teaching experience were able to pivot to remote teaching more quickly and easily. They were familiar with Zoom features including breakout rooms and chat, had experience with both synchronous and asynchronous teaching approaches including discussion boards; and had experienced active learning strategies in a virtual environment. Faculty who had limited experience teaching online reported that our program helped them in making the sudden shift to remote teaching as well as inspiring them to find creative ways to design their own virtual PD workshops that were originally planned to have been offered in person.

Faculty participants

The mix of participants in Cohort 3 reflects the broad landscape of community colleges in the United States. The 17 college teams ranged in size from 3000 to over 80,000 students (12-month unduplicated headcount). Six are Hispanic-Serving Institutions (HSIs), four would qualify as Asian American, Native American, Pacific Islander Serving Institutions (AANAPISI), and fewer than half of the colleges were majority white. The 48 faculty participants included 38 who were full-time permanent faculty and 10 were adjunct faculty teaching at one or more colleges. Nearly two-thirds were geoscience faculty; the others were faculty in biology, chemistry, mathematics, physics, and other sciences. Teams ranged from two to five faculty per team, with most teams including two or three faculty. Because each team hosted campus workshops, the professional development was diffused beyond the Cohort 3 participants.

Virtual PD model

Our model builds on active learning about evidence-based strategies to support student success, which faculty teams then use to develop action plans for their program or department on campus. Our prior work with earlier cohorts helped fine-tune the specific
content topics and structure of the virtual PD. Sessions addressed tools for institutional change, use of course-level data to identify opportunities to serve students better, and strategies for designing and leading workshops. The project leaders also met individually with teams to provide feedback, and 13 participants from earlier cohorts served as peer leaders who supported the program in a variety of ways and led small group PD activities in a June workshop and in fall 2020. Faculty worked for change in their own teaching practice and at the program and department level, and then led workshops to engage other faculty on campus. Critical to faculty learning is building a community to support their collaborative learning (Ormand, 2020). The PD structure provided multiple opportunities for discussion and sharing of participants’ experience and expertise, and the teamwork on their action plan and the campus workshops they led in the fall provided opportunities for community building around shared issues.

Using both asynchronous and synchronous delivery of material provided multiple points of engagement with learning materials for the participants. The advanced time with asynchronous resources provided a context for deeper engagement during synchronous meetings. Faculty discussions provided an opportunity for authentic learning experiences and topics related to applying what they were learning to their own teaching. Central to the structure of the PD was the modeling of strategies by the project leaders. For example, the project leaders used active learning in the workshops they conducted for the participants (e.g., gallery walks, jigsaws, reflections), and this modeling provided participants a means to understand better how to incorporate active learning in a classroom, including those taught remotely. The same type of modeling occurred for inclusive practices. As highlighted in other articles in this volume (see chapters 1, 8, and 13 for example), it is important for those leading PD efforts in community college settings to understand the lives and workplaces of the faculty members working in these institutions.

This model of delivering professional development highlights that virtual PD takes on heightened relevance given that f2f workshops could not occur during the pandemic. It is a different way for faculty to access PD given time and travel constraints, high numbers of adjuncts with competing demands, and other challenges in reaching faculty in person. The length of the program, different from single, one-off PD workshops or conference sessions, also provided an opportunity for participants to iterate changes in their classrooms, use feedback to adjust and assess outcomes over a longer span of time. This model builds skills and networks that can support improved teaching practices not only in a time of rapid change due to COVID-19, but beyond.

**Data collection and analysis**

We collected data throughout the project. After each workshop session, end-of-workshop evaluations were conducted to determine what the participants found most valuable in the session and how they would apply what they learned in their teaching and in their program or department. Pre- and post-project surveys were conducted to learn more about changes in the faculty participants’ perspectives. After the teams conducted their institutional workshops, all of which were delivered in virtual formats, they submitted a report summarizing the activity and reflected on what they would do differently the next time. The teams also presented a final summary of their year-long work in the program in a capstone workshop in December 2020. Part of this presentation targeted specific changes in actions due to COVID-19. For this article, we focus on the participants’ responses at the end of the project to understand better what they found most valuable about the overall PD, the specific benefits of the PD being virtual, how they responded to the shift to remote work, and what lessons they learned.
FINDINGS

Our experiences highlight not only the importance of PD but also several lessons about how to support professional development virtually. Faculty told us that the PD provided stability and structure in the midst of the pandemic, newly acquired teaching strategies that could be immediately applied to their work and, notably, a sense of community as they worked from home. If done well, PD also offers benefits that extend beyond the faculty participants to department and campus leaders, state system leaders, and disciplinary associations.

Here we present four specific findings that contribute to successful virtual PD. First, the participants identified several content and structural elements of the program that helped support their learning. Second, the context of engaging with other community college faculty working in a shared disciplinary focus (i.e., STEM) provided authentic learning opportunities, especially in response to the changes due to COVID-19. This shared environment positively influenced the participants’ experience. Third, the participants reported on their newfound confidence and sense of empowerment, and identified ways in which they now recognize their role as faculty leaders on campus. Finally, the role of community and the power of an expanded network emerged as the most valuable element of the project as reported by the participants.

Content and structure are important

The PD included a spring workshop of five asynchronous sessions and seven synchronous 1-hour meetings (each offered four times in the designated week), followed by a June workshop with multiple sessions, then in the fall, a choice from a menu of book discussions, journal clubs, and implementation groups. Clear goals and an organized structure for faculty participants are critical, just as in f2f PD. Over 70% of the participants commented on how the content, structure, and resources of the program contributed to their learning. Several specific content topics were highlighted as particularly salient for the participants, including active learning strategies, metacognition, sense of belonging and inclusive teaching practices, course-level data analysis, and science identity, all of which were relevant to their teaching in their setting. As one participant reflected, “I feel I’ve gained a much more detailed understanding of what effective teaching looks like.” The tools provided in the program and the ability to discuss the strategies with other faculty supported faculty learning. They appreciated the opportunity through the discussion boards and breakout rooms to share examples, strategies, and assignments that worked. Participants could immediately apply their new learning to their teaching, and had an opportunity to reflect on how the new strategies worked with their SAGE 2YC peers. The program also generated a set of research-based curated resources to support the virtual PD that were accessible to the participants after the workshop and the project finished (https://serc.carleton.edu/sage2yc/index.html).

Without a doubt, faculty faced many challenges during the pandemic, which constrained how some participants could engage with the program. Yet, the short meeting structure of the synchronous sessions, which modeled effective pedagogy based on research on learning, helped provide a refuge (see for example design strategies from the On the Cutting Edge PD program https://serc.carleton.edu/NAGTWorkshops/about/design_history.html). One participant offered how the program helped build “a geoscience teaching toolbox to rely on during COVID-19 times.” The intentional structural elements
of the SAGE 2YC program helped support faculty learning. As one team summarized at the end of the program:

The most valuable part of the program was the format. The content matter was great and necessary, but having the meetings and assignments supported an environment that was more than just about information. Actually, working through the learning activities and consulting with colleagues helped to reinforce the information and provide a great starting point needed to incorporate into the classroom.

The structure of the program required engagement in asynchronous work before meeting together in real time, which gave faculty a chance to reflect on new content before discussing applications with others. Setting deadlines for asynchronous discussion posts and articulating expectations for both individual and teamwork proved critical to generating more robust synchronous conversations. When asked what helped support learning best in the program, a participant offered, “Clear guidelines of what was expected and a welcoming community to share ideas with.” Another added, “The leaders always kept us on track before, during, and after meetings.” The synchronous sessions used breakout rooms to support discussion among peers and provided a space to test-drive new thinking. As one participant indicated what best supported their learning, “Breakout sessions! These provided effective brainstorming on a focused topic.”

The intentional approach in the structure of the program helped the faculty members replicate this scaffolding in workshops for their campus and in their classrooms. Faculty participants learned instructional strategies from observing the SAGE 2YC program structure, process, and modeling by the project leaders. As one participant commented, “I so appreciated that workshop facilitators not only presented amazing content, but that they modeled good teaching practice along the way.” Observing the modeling of new strategies in the delivery of the content helped participants learn how to apply new approaches to their own practice. Feedback from other participants also contributed to the participants’ thinking about teaching and leading change on campus. The fact that the PD occurred over an entire year provided more opportunities for engagement and reflection, as one team commented, “The usual conference or workshop does not allow for the same deep, long-term connections that have been made through this program.” The virtual nature of the program allowed for multiple touchpoints of engagement, which involved project leaders, peers on campus, and colleagues across the country. Strong content delivered in an intentional, organized way over an extended period contributed to the success of this virtual PD workshop.

Context matters

The context of the program built on the faculty participants’ shared experiences in a community college setting and their disciplinary focus (STEM), each of which positively influenced the participants’ experience. Participants appreciated being in a program with other faculty who understood the institutional setting of community colleges, including their mission, student body, and culture. Collaborating with other community college faculty in STEM-related fields provided a chance to share experiences and strategies that are more specific to their work and use their emerging knowledge to apply to their own teaching. This authentic application of what they learned through their participation in the PD
helped them respond to their campus needs and reinforced what they just learned. For example, one team linked to campus needs in the following manner:

We recognized that our campus is currently reworking assessment as a mandate from an accreditation visit. We leveraged that knowledge to help us get our course level data, and will actually be sharing our results from that data mining to help the administration in its assessment work.

Participants were able to relate their personal and team goals to the local context of their community college, adjusting what they learned in the program to their campus realities.

The emergence of the COVID-19 pandemic dramatically affected the context of the work of the participating faculty and highlighted how some of the structural elements of the program had a heightened role. As one participant summarized, “The SAGE 2YCs use of the Zoom format enabled familiarity and short learning curve for employing a zoom synchronous teaching format in March 2020.” Having familiarity with Zoom prior to the pivot to remote teaching gave the participants more experience than many of their peers, and many were able to act as a resource for others on campus. One team added, “The pandemic brought our classes online either synchronously or asynchronously. We looked forward to participating in the SAGE 2YC workshops because we could apply what we learned immediately in our classes.” The move to remote teaching affected students, and faculty sought out resources to help support them. As one team commented “The switch to online learning was coincident with our observation of dramatically lower success rates (for all students) in online classes. Knowing this really heightened the need to reach out to other faculty and provide easy-to-implement resources.” Learning strategies to support student success assumed amplified importance during the pandemic. Faculty participating in the project were also able to be a resource for their colleagues on campus, and could implement strategies to help support their students.

Beyond the advantage of having a head start on the use of technology, substantive outcomes occurred. One team summarized:

2020 was a year of great turbulence and an awakening to the huge racial and ethnic inequalities that exist in our country and around the world. The timing was really ripe for our work on inclusion, equity, and advancement of STEM concepts.

In addition to this outcome for the team, they also encountered changes on their campus that the project prepared them to address: “This summer the STEM unit merged with another unit and got a new dean. This project prepared us to better communicate with our new dean, and to stand out a bit as team players in our new unit.” Organizational reporting structures often change in response to improving resource allocation and the ability to pair departments in functional units to improve efficiencies, and the change in top-level administrators is ubiquitous in community colleges (Alfred, Shults, & Seybert, 2007). Preparing faculty to deal with these changes, specific to their context, is important.

The program requirement for the participating teams to conduct on-campus workshops emerged differently than anticipated due to the pandemic. All final workshops led by participants were in a virtual format; participants offered positive feedback on this process:

- “Having virtual workshops allowed us to recruit participants from other departments on campus.”
- “Presenting our workshops virtually allowed us to demonstrate active learning strategies (e.g. via Zoom) that our participants can implement in their own online classrooms.”
• “The pandemic actually helped us to get participants from the other two campuses who we may not have seen if they were required to drive the 45 minutes to our campus.”
• “We were able to make our workshops timely and relevant by focusing them on student success in online classrooms specifically.”

The diffusion of new teaching strategies to colleagues on campus, either informally or through the PD workshops led by participants for their campus, expanded the reach of the program. The virtual format of the PD led to an easier transition for the participating teams to conduct their workshops virtually.

Confidence advances faculty leadership

Becoming more effective in their teaching provided faculty participants with more confidence in sharing their expertise with others. When asked about one or two key takeaways from the project, 43% of the participants noted an increase in confidence. Phrases used to convey an increase in confidence included “empowered,” “inspired,” “motivated,” “legitimacy,” to name a few. As one faculty member summarized what they learned, “Confidence/legitimacy - this program was the cure for imposter syndrome!” An outcome identified by many of the participants was the ability to see oneself as an expert with something to share with others.

The program offered several workshop sessions on leadership, and participants described what they learned about themselves as leaders. One participant offered:

The program supported my ability to catalyze change by legitimizing my role as a thought leader in that respect, and by providing the tools and framework for bringing my knowledge to others. Being encouraged to build relationships with administrators to successfully work “from the middle” in our institutions.

Participants stated that they now recognized that leadership roles can be informal. They expressed that they felt empowered to share ideas with colleagues, have the confidence to make changes to their classrooms to support student success and to encourage others to do so as well, and can engage in collaborations for change on campus and in larger STEM disciplinary networks. As one participant summarized, “I also feel like I have a voice in working with like-minded and some change-averse individuals to do better by our students.” Faculty participants recognized they had a role in influencing change on campus—in their classrooms, in their divisions, and in the larger institution.

Increased confidence affected how participants saw themselves as leaders. One faculty stated,

SAGE always brings us back to our core values: supporting student success. Keeping this perspective at the forefront helped me to coach faculty as a faculty consultant during the rapid transition online (I helped STEM faculty). SAGE also helped me to see myself as a leader even though I’m new to [the college]!

Another new faculty member commented on how they too felt empowered, noting how the program pushed them out of their comfort zone a bit and required them to think about change at the institutional level: “I don’t know if I would have otherwise done these things and at this stage of my career.” The faculty members new to campus reflected on how the program helped give them tools and connected them with colleagues on their team and on campus, which allowed them to build their confidence and leadership.
As the faculty participants reflected on the workshops, they noted how leading campus workshops helped them see themselves as leaders. One participant commented:

Leading a workshop gave me an opportunity to connect with other Math and Science faculty members that I normally wouldn’t have run into on campus. It allowed me to display and refine my soft skills such as leadership, attention to detail and organization.

Having to teach strategies they learned in the SAGE 2YC PD sessions to colleagues helped strengthen their understanding and commitment to using evidence-based teaching approaches. The comfort of working in a Zoom platform helped contribute to their confidence in both their instruction and in leading their workshop at their institution.

**Community and networks count**

Faculty crave meaningful discussions with their colleagues and can learn a lot from each other. Virtual PD can promote learning together, in both synchronous and asynchronous formats. When participants were asked to provide one or two key takeaways at the end of the project, 40% identified the formation of a nationwide network and community they can access. For example, one faculty member reflected, “We learned a lot from each other about how to approach our mainly common needs.” Faculty built networks with others in the cohort from around the country. As well, they enhanced the relationships they had with their colleagues on campus. One team reported, “As some of us were new to [the college], this experience allowed us to get to know each other’s strengths and weaknesses and build a strong foundation as a team.” Another team commented on crossing disciplinary boundaries and the meeting restrictions in place due to COVID-19: “Interdisciplinary collaboration would not have been possible outside of the SAGE environment, especially under social distancing conditions where personal interactions are unlikely to happen on campus.” A faculty who was new to their position added, “I think one of my big takeaways from SAGE was that other educators are dealing with many of the same problems. It’s easy to sit at my computer and feel frustrated or that I am doing something wrong, especially when we are all siloed away in our own homes during the pandemic.” The built-in networking in the program provided participants a way to hear from other faculty across the country, which helped calibrate issues on campus that are common to participants at different colleges. Community building also occurred within the teams, in particular when faculty had the opportunity to work with others that they had not in the past.

Once faculty have a foundation of exemplary teaching practices, the ability to learn collaboratively and being accountable to others contributes to building a faculty network and community that lasts beyond the project. Networking provided a means of connection during the lock-down period of COVID-19. As one participant reflected, the program “Provided a support system to talk about shortcomings/best practices. It is a lot easier to make a change when you know it will be successful because others have gone before you.” The network built during the program can sustain beyond the end of the program. This potential for sustained collaboration was noted by one participant who offered that the SAGE 2YC program “enabled opportunities for networking with other STEM educators … which in turn will provide me a network of collaborators for future endeavors.” Having a feeling of connection, especially during the shift to remote learning during the pandemic, helped support the participants.

Participants also contributed their relevant expertise, and the program provided opportunities to share that expertise. This outcome was noted by a participant at the end of the
program: “There’s a lot I can still learn, even though I’ve been teaching for twenty years, but I also have a lot to share with colleagues based on my experiences.” Offering opportunities for small groups of participants to exchange ideas, sometimes in groups that are team based and others that include a mix of participants from different colleges, fosters learning together and building of community. In these groups, faculty can discuss the strategies presented in the virtual PD and their campus-based team action plans that address a department/program challenge. These built-in interactions provided the basis for expanding the learning community in STEM beyond a single college and helped counteract the isolation felt by many community college faculty. This learning community was especially important during the COVID-19 pandemic. The interactions among the participants from multiple teams fostered the development of a national network of community college colleagues to access in the future.

DISCUSSION

Conducting virtual PD during 2020 provided support and access to faculty participants at a time when travel was out of the question, and when strained institutional budgets focused on delivery of mission-critical activities to support student learning. Similar to results of McConnell et al. (2012) for a different virtual PD project, SAGE 2YC participants valued the community built during their year-long participation in the project. Our findings also highlight the benefit of longer-term engagement. The longer time of engagement contributed to community building and establishment of a national network of faculty. Participation in an expanded network builds connections that can last in the future. Pointedly, the network that emerged was both right on campus as well as across the nation.

The SAGE 2YC program addressed several of the shortcomings Murray (2002) noted that are typical of PD in community colleges. First, the program was intentional in presenting participants with sessions on how to tie their individual projects to the larger college campus initiatives. The teams met with their administrators to update them on progress and conducted workshops on campus that helped support the mission of the college—notably in supporting the successes of all students and broadening student participation. Second, there were multiple points of evaluation and feedback. Each session conducted an end-of-session evaluation, and the project also conducted periodic surveys of participants. Finally, in contrast to Murray’s (2002) findings, participation throughout the program was high, with 94% of the group completing the year-long program. True, the participants volunteered to participate, and had internal motivation as a result; however, they applied to and began the program before the upheaval due to COVID-19 and yet continued. What made this happen?

The participants’ feedback highlights how the organization and structure of the program was critical to their active participation. Lattuca and Stark (2011) outline an academic planning model consisting of eight parts: (1) purpose; (2) content; (3) sequence or organization of subject material; (4) learners; (5) instructional processes or activities; (6) instructional resources; (7) evaluation; and (8) adjustment. Each of these elements was evident in our program, and the prior work the leadership team had with other cohorts of faculty participants provided the opportunity to make changes based on the earlier PD. Clear, too, the programming valued the participants’ experiences and intentionally tied in the team action plans to the contexts in which the faculty worked. Understanding how to connect to adult learners helped build authentic learning opportunities for the participants (Knowles, 1980; Lombardi & Oblinger, 2007).

As campuses look to improve student completion, address workforce needs, and build community partnerships, faculty members take on pivotal roles, and it is imperative to
provide them with leadership opportunities on campus. Campus leaders can leverage the talents and expertise of all faculty to meet institutional goals. Because of cost-cutting measures community colleges took due to COVID-19, large numbers of adjunct faculty positions were eliminated (Pettit, 2020). This shrinking of the faculty ranks puts increased pressure on remaining full-time faculty members. Our study shows that involved faculty members can become advocates for change among their peers, affect classroom improvements, and share expertise with others on campus and in the region. Too much is at stake; we need to give faculty opportunities, especially in times of crises like the pandemic, to develop as agents of change on campus.

**IMPLICATIONS FOR CAMPUS LEADERS**

Our research underscores the importance of faculty development in general, and the need to support faculty, including adjunct faculty, in a crisis in particular. Central elements contributing to the success of the virtual PD during a crisis included: (1) building program structure that allows for repeated opportunities for participants to talk with each other and learn together about things that matter to them; (2) modeling good practice; (3) providing hands-on application of learning; (4) building community that fosters a lasting network. Because many community college campuses lack standalone teaching and learning centers, it is important to consider how to establish support systems for faculty without this structure in place. Chief Academic Officers and other campus leaders could provide this support without a center by taking the following actions.

- Partnering with other regional campuses or with a central system office to leverage resources.
- Providing virtual professional development access to both full-time and adjunct faculty members to enhance teaching practices, and encouraging participation through ties to annual review, promotion, or access to additional resources.
- Tapping faculty members on campus to lead workshops on evidence-based teaching practices that can build buy-in and help develop leadership skills in the faculty presenters.
- Building faculty professional learning communities on campus to foster networks that allow for learning about and sharing information on teaching and learning.
- Encouraging and facilitating faculty analysis of data on student outcomes paired with support for addressing equity gaps or other opportunities for improvement.

**CONCLUSION**

Especially important during times of change and crisis, virtual professional development offers increased access and support for faculty to learn how to improve teaching. The opportunity for faculty across the country to tap into a larger community through the SAGE 2YC program provided support during COVID-19, support that was enhanced by the shared context of teaching STEM-related courses at community colleges. This community that emerged as part of our virtual PD provided support in helping to address faculty isolation, offered an array of teaching resources, and presented a PD structure that the participants could replicate on their own campuses, thus increasing the reach of the project. Including both asynchronous and synchronous portions, with time between sessions for reflection and application, provided scaffolding for faculty learning. Workshops on
leadership empowered faculty by giving them a glimpse of the wider operations on campus and tools to work more effectively with administrators and other staff to support students.

Supporting faculty members is critical to help improve student success, and particularly so as the nation faced the COVID-19 crisis. As one faculty participant summarized, “Participating in the program was a bright spot of structure and fulfilling work during a time when both of those things were in short supply.” The development of a broader community helped illustrate that faculty in different colleges face similar challenges and that issues are not unique to a single campus. By sharing evidence-based practices to tackle challenges, faculty enhanced their teaching toolkits, and by sharing their expertise, they not only improved learning for others but also improved their confidence and leadership skills. The skills developed in this PD workshop will serve them beyond the COVID-19 crisis as they deal with future challenges and changes.

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