

our years ago, high school social studies teacher Amy Presley was in a rut. She wanted to do more than teach students facts about history. She wanted to create meaningful experiences they would remember forever.

Figuring out how to do this day in and day out was taxing. Every turn seemed to present a different challenge, and Presley often felt alone. She was ready to give up until she found a group of social studies educators using a Twitter hashtag as a way to share resources and discuss their craft.

"I got involved in #sschat and found a few like-minded peers to interact with," Presley said. "I just work better when I can bounce ideas off someone like myself."

Energized by the community and ideas she encoun-

tered on Twitter, Presley began to seek out other opportunities to work online and offline with educators outside her school and district. "It morphed from there into other groups, and events like EdCamp became a regular part of my routine," she said.

When Presley's family relocated, this broad network of colleagues even helped her land a job at a school near Tulsa, Oklahoma (A. Presley, personal communication, January 17, 2015).

While educators can still make connections with peers through traditional professional development channels, the rise of social media has made it increasingly common that teachers reach beyond the walls of their schools to grow in their teaching (Carpenter & Linton, 2016; Carpenter & Krutka, 2015).

One recent survey of 20,000 teachers found that 57%

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I've felt less alone and frustrated even when there is nothing to be done about the school environment/admin/district issues from the teacher level."

— Participant in survey of teacher

— Participant in survey of teachers about their professional learning networks

pants described unique combinations of people, resources, and digital tools, and they appeared to be drawn to these networks for a variety of reasons.

For example, a social studies and technology teacher defined her network in terms of a diverse assortment of educators, saying, "My PLN is made up of teachers, library media specialists, administrators, retired educators, professors of all subject areas and levels. Each person in my PLN helps me learn and grow."

Another participant noted the people, technologies, and types of interactions she experienced: "My PLN is a neighborhood of interconnected educators in Twitter, Google Plus, Vine, blogs ... who share openly ideas, issues, strategies, collaborate with students/classes on relevant topics, collaborate on project development, and 'hang out' for discussing issues or planning projects."

Although participants reported diverse conceptions of professional learning networks, a majority referenced digital tools, resources, people, or a combination of these. More than 90% of teachers mentioned resources and digital tools. These educators listed 54 unique websites, online communities, and social media platforms, the most popular being Twitter, Edmodo, blogs, Google Plus, Facebook, and the Discovery Educator Network.

However, professional learning networks are not just about technology. Seventy-one percent of participants identified one or more people in descriptions of their networks. Respondents mentioned educators they connected with through social media, colleagues in their local networks, or a combination of the two.

Participants reported growing in various ways thanks to their professional learning networks. Many teachers described instances when their networks helped them to overcome professional challenges such as isolation, stress, or burnout

For example, one participant wrote, "I've felt less alone and frustrated even when there is nothing to be done about

of respondents used technology to access educators with whom they wouldn't otherwise have been able to collaborate (Scholastic & Bill & Melinda Gates Foundation, 2014). The term "professional learning network" (Trust, 2012) describes the innovative, organic, collaborative, self-directed approach to professional learning enacted by educators like Presley.

THE BENEFITS

Unlike many traditional professional development options, educators can create professional learning networks (PLNs) tailored to their needs and interests.

We recently surveyed 732 pre-K-12 teachers to better understand their perceptions of their professional learning networks (Trust, Krutka, & Carpenter, 2016), including the impact on their teaching and student learning. Partici-

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the school environment/admin/district issues from the teacher level." Other teachers reported feeling re-energized after connecting with positive, innovative peers. Respondents also noted that their professional learning networks helped them feel more confident in taking risks and trying out new ideas.

Many also emphasized the importance of collaboration through their professional learning networks. Teachers' networks can serve as an immense, virtual faculty workroom. In particular, online spaces can attract colleagues not based simply on locality, but on shared interests in a topic.

People within such spaces often work toward continuous improvement, contributing their unique talents and skills, and taking collective responsibility for success. By overcoming typical geographic constraints, many teachers explored diverse perspectives, found new partners for collaboration, and received candid feedback via professional learning networks.

A majority of participants also credited professional learning network activities with enhancing their knowledge and skills. For some teachers, this meant learning about new ideas, resources, strategies, and digital tools. For others, it meant cultivating their intellectual skills, such as reflection and metacognition.

Almost all participants reported applying knowledge from their professional learning networks in their practice. These changes included everything from trying out a new app to implementing a radically different teaching style, such as negotiating curriculum with students. Professional learning networks also support disposition changes: One-third of respondents reported shifts in their professional identity as a result of engaging in professional learning network activities, and one-fourth stated that their professional learning networks changed how they thought about teaching.

Professional learning networks provide opportunities for teacher leadership that may not always be available at participants' schools. Given their self-organized and organic nature, professional learning networks allow teachers to make positive contributions to their profession and the professional learning of others. For example, teachers moderate some of the most popular education-focused Twitter chats, and many have used blogs as a way to find voice and an audience for sharing their experiences and innovative ideas.

Finally, most teachers in the survey reported making efforts to examine how their professional learning network activities shaped student learning. Some participants described changes in students' knowledge and skills, such as a deeper understanding of the content or improved technology skills.

Teachers also noted a positive impact on their students' attitudes, emotions, and interests. For example, respondents felt that because of their professional learning network activities, students were more engaged in and excited about learning. A math teacher said her professional learning network influenced her teaching so that her "students now are in more control of their learning. They ask better questions, they communicate in

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Albemarle County Public Schools. (n.d.). Do it yourself professional development: Recertification. Available at https://sites.google.com/a/k12albemarle.org/diy-pd/home/recertification.

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class more with their peers and myself, and they have a better understanding of what they do and do not know."

FACTORS SHAPING SUCCESS FOR TEACHERS

While the potential benefits are enticing, teachers may experience some initial challenges in establishing effective professional learning networks.

It can take time to learn how to use digital tools and interact in online spaces in order to cultivate a supportive network, and educators who do not quickly find their niche or tribe may not persist long enough to reap the potential benefits.

The quantity of people, content, ideas, and technologies that suddenly become accessible via professional learning networks can sometimes be intimidating and even overwhelming.

Teachers who use their professional learning networks to associate with like-minded educators risk creating echo chambers in which they are not challenged to consider diverse and dissenting perspectives. Other teachers may wonder about the quality or credibility of content they encounter in online professional spaces. Even educators who become enthusiastic participants in rich professional learning networks that stretch beyond school walls can sometimes experience a sense of frustration and isolation within their schools (Cook, Johnson, & Stager, 2015).

The most important step for teachers as they begin to explore professional learning networks is to become connected with other educators who will support their growth. We recommend Twitter as a means to connect initially. The widespread use of education-related hashtags and the popularity of education Twitter chats (Carpenter & Krutka, 2014) make Twitter one of the easier methods to find other educators with shared interests.

However, Twitter is not the only option. For instance, teachers already using Edmodo, Schoology, or Discovery Education products with their students can access the professional discussion forums or networks that these services support.

Some teachers may prefer to begin with just one digital tool or network and set aside time every week to connect and learn with other educators. However, every tool and network is different, so teachers may want to consider exploring different options if they feel a particular tool is not supporting their learning.

As teachers become more comfortable engaging in profes-

sional learning network activities, they can benefit from improving and modifying their networks to fit their needs. For example, teachers might make efforts to diversify their networks so as to avoid groupthink that could result in exposure to fewer new ideas.

Teachers also benefit when they push themselves to move beyond only observing and acquiring ideas. For instance, conferences or regional Edcamps (Carpenter & Linton, 2016) allow many educators to meet face-to-face with professional learning network colleagues they initially met and interacted with online. Teachers who initially connect via Twitter can move their conversations to videoconferencing tools such as Skype or Google Hangouts to allow for more extended discussions. Educators can also look for a colleague of the same content area or grade level and propose that their classes collaborate on an activity or project.

FACTORS SHAPING SUCCESS FOR ADMINISTRATORS

School administrators can support professional learning networks as one innovative aspect of a larger plan for teachers' professional growth. Leaders understandably have an interest in professional learning that is related to student curriculum, educator performance standards, and district and school strategic plans.

While the self-directed nature of much professional learning network activity could be perceived as competing with required professional development, professional learning networks can support the work of teachers to meet both personal and system goals.

Schools and districts can at times have good reasons to want groups of teachers to have shared professional development experiences and common understandings of certain topics. After all, research has emphasized the importance of professional development being coherent with ongoing initiatives and mandates (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Using their professional learning networks, teachers can import novel ideas from outside the local context that may help address district goals. A number of participants in our study considered their local professional learning communities (PLCs) as part of their overall professional learning network.

And teachers can be encouraged to connect in-school or indistrict professional development with their professional learning network activities in ways that are reciprocally beneficial (Trust, 2014). Many teachers in our study reported being invigorated by what they learned in their professional learning networks and, as a result, ultimately sought out yet more professional learning.

We agree with the assertion that "no school system can single-handedly meet the developmental needs of every teacher it employs" (Ferriter & Provenzano, 2013, pp. 20-21), and districts should welcome professional learning networks as a means to address more of those needs.

Districts might benefit from looking for ways to leverage teachers' existing professional learning network activities and increase awareness of the concept. District professional learning days could include sessions that introduce interested educators to the basics of professional learning networks.

Given the enthusiasm evident among so many of our participants, many districts likely have teachers on their staff who would willingly help their peers develop professional learning networks. In addition, the U.S. Department of Education (2014, 2016) has created resources that can support districts navigating this new terrain, such as its *Online Professional Learning Quality Checklist* and the 2016 *National Educational Technology Plan*.

However, new kinds of expertise may be necessary to facilitate the development of professional learning networks. Experience in implementing and assessing more top-down initiatives may not be instructive regarding how best to support professional learning networks. Measuring outcomes could be more complicated when teachers are pursuing personalized learning. And administrators who want to encourage professional learning networks must be careful to avoid the tendency to tie "bureaucratic, managerial knots that squeeze out autonomy and instead seek and reward compliance and uniformity" (Kennedy, 2014, p. 691).

Virginia's Albemarle County Public Schools is an example of a district that embraces professional learning networks. The district's website states that the district "encourages teachers to leverage social media and virtual learning opportunities to personalize professional learning while meeting the state's requirements."

Virginia educators can earn recertification points for eight different types of professional activities, and Albemarle County

Public Schools provides suggestions for how self-directed professional learning can fit within those categories.

For example, the district encourages teachers to gather and submit evidence of their professional learning network activities to earn points under the "education project" category. Teachers can include blog posts and screenshots of online discussions as evidence of their projects.

Becky Fisher, the district's director of end user experience and professional development, estimates that more than a quarter of district teachers have received recertification points for such professional learning (personal communication, January 20, 2016). Fisher said that she does not see these

activities as detracting from district goals and initiatives. Rather, professional learning network activities are considered part of a balanced professional learning diet, consistent with the district's goal to encourage lifelong learning among faculty.

The district's support of teachers' professional learning networks does not preclude the district from, at times, requiring certain professional development of teachers. The district has, however, also innovated in combining its more traditional professional development offerings with professional learning

Teachers already using Edmodo, Schoology, or Discovery Education products with their students can access the professional discussion forums or networks that these services support.

network activities.

For example, after participating in district-provided face-toface workshops, teachers can often earn additional recertification points through a set of supplementary, administrator-approved activities such as experimenting with ideas from the workshop and then discussing what they learned on discussion boards, their professional blogs, or Twitter chats.

MEETING TEACHERS' NEEDS

As Learning Forward Executive Director Stephanie Hirsh said, "Many people have lost confidence in the power of professional learning to improve practice and results for all students" (Hirsh, 2015, p. 6). Recent survey research suggests that the majority of teachers are not satisfied with the professional learning available, and there is frustration regarding how PLCs are implemented in many schools (Bill & Melinda Gates Foundation, 2014).

This makes the enthusiasm for professional learning networks among our respondents particularly noteworthy. Respondents credited their networks with contributing to an array of improvements in their practice and student experiences.

Professional learning networks can expand the faculty workroom to meet the specific needs of teachers and encourage innovation. However, much work remains to be done in determining how to maximize the potential of these networks to benefit students, teachers, and school systems.

Teachers must reflect on the benefits, application, and results of their professional learning network activities. For professional learning networks to have a broad impact, teachers and administrators alike may have to take risks and support one another in exploring uncharted waters. Yet these challenges are worth facing, as Amy Presley's story reminds us.

Presley is a dedicated educator. She often spends her nights chatting with fellow teachers online about how to improve education and her teaching. On many weekends, you can find her at Edcamp unconferences. She brings ideas and resources from educators around the world into her teaching to create exciting and memorable learning experiences for her students.

The responses from our participants suggest that many educators like Presley have used their professional learning networks to find what they need to thrive professionally. We believe more teachers and schools would be wise to consider how professional learning networks could become a part of their professional learning activities, too.

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