

Enhancing Teacher Engagement with Online Communities of Practice



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Executive Summary

Background and Research Question

In the fall of 2021, OER Project engaged Learnovate to conduct a literature review to assess the current research on teacher engagement with online communities of practice, and how this engagement impacts teacher professional development. In this report, we set out to answer the following research question:

What are the best methods for engaging K–12 teachers with online communities of practice to support and improve their professional development experiences?

Section 1 | Communities of practice

Teacher engagement in communities of practice (CoPs) has proven to lead to transformative learning outcomes, especially when teachers engage with professional learning communities that foster critical reflection and communicative learning through collaboration, teacher-driven inquiry, and agency (Trust and Horrocks, 2017). A key finding is that regardless of the format, achieving sustainable engagement is crucial to the success of any CoP. There are many influences to consider and understand, including: the CoP's purpose, level of formality and structure, stakeholder interests and roles, leadership, group dynamics, and levels of trust.

Additionally, there is a new but relatively unexplored concept of a *blended* community of practice. This type of CoP maximizes teacher engagement in professional development learning by making it available to them on their own time, yet also affords them opportunities for face-to-face connection (which could be virtual), and relationship building. Teachers need learning opportunities that are: relevant to their work, flexible, and ongoing. Blended CoPs can offer all these features, and therefore we suggest researchers, education specialists, and practitioners consider the possibility of using a blended CoP to improve and increase community engagement.

Section 2 | Teacher engagement with CoPs

This section of the report explores how teachers engage with online learning and online communities of practice. While current scholarship provides insight into how teachers engage with online learning, there is a paucity of research that provides an understanding of how this engagement impacts teaching and professional development practice. To uncover what *is* available, several meta studies were reviewed that explore the body of empirical research on teacher engagement with CoPs over the past two decades (Lantz-Andersson, et al., 2018; Macià and García, 2016; and Vangrieken, et al., 2017).

Key findings include:

For many teachers, lack of time is a barrier to engaging in a CoP. This contributes to superficial levels of engagement characterized by behaviors that are focused on obtaining information quickly rather than through sustained professional development.

Activity within a CoP often comes from a small number of highly engaged participants.

While it is good practice for participants to take on leadership roles within a CoP, this can also lead to an unbalanced representation of discussion topics and can create barriers for others, usually those with less experience.

CoPs require sustained levels of moderation through leadership and management. However, moderation should be balanced between experienced and less-experienced participants to ensure representative discussion and engagement.

Section 3 | Teacher engagement and online professional development

Even though evidence of how professional development through online learning opportunities impacts teaching practice is somewhat scant, a number of insights were gained through this literature review. Beach's (2017) model for teachers' self-directed online learning provides a useful framework that gives insight into the conditions, strategies, and potential outcomes of teachers' self-directed learning. This perspective on teachers' online learning behaviors can serve as a guide to educators developing course materials and website content by giving teachers multiple ways to engage in self-directed learning, and by optimizing the online user experience (UX).

Lee, et al. (2018), identified individual, systemic, and environmental influences on teachers' overall engagement with online professional learning. They include:

- Technology self-efficacy
- Perceptions of the usefulness of course material for the learner
- Available supports
- Provision of time to complete professional learning

These influences offer relevant considerations and insights as we explore what levers increase engagement in CoPs when aiming to improve teachers' professional development practice and, consequently, their teaching practices. This section concludes with an overview of Trust and Horrocks (2017) study of the four domains across which teachers have described professional growth:

- Individual
- Classroom
- School
- Teacher community

The foundation for the research of this study was the very successful blended CoP of the Discovery Educator Network (DEN).

Section 4 | Best practices for a successful community of practice

This literature review also provides an overview of best practices and considerations to take into account when developing, maintaining, and improving a CoP, one in which people are motivated to engage in discussion, and where the level of reciprocal investment needed for a thriving community of practice is achieved. Stodd (2019), who views CoPs as complex social systems that require specific, socially moderated skills and behaviors, has detailed the conditions for community and how these materialize in highly functioning CoPs. Stodd emphasizes the need to focus efforts on diagnostics that allow us to learn what is really happening as opposed to blindly replicating outdated models of formal power and control.

Section 4 concludes with an overview of the elements that are critical to the success of a community of practice identified by Trust and Horrocks (2019), namely:

- Leadership roles
- Personalized learning

Guiding principles
Organizational support
Social learning
Purpose

We provide further detail on how these elements can be applied to develop and foster successful CoPs.

Recommendations

Learnovate recommends that an organization or community team interested in starting, hosting, or managing a CoP considers exploring the less-researched areas of teacher engagement with CoPs, such as exploring how teacher engagement with a CoP impacts engagement with professional development and improvement in the quality of classroom instruction.

Learnovate believes that, especially when the infrastructure (pathways into schools and districts) and research subjects (teachers who teach a specific topic or those who engage in a teacher community of practice) are at the disposal of the organization already, the basic conditions are available to undertake a larger study that explores how engagement with an online community of practice translates into deeper engagement with professional development learning opportunities and how classroom instruction is impacted as a result.

Introduction

As the COVID-19 pandemic continues to unfold, many schools and educational institutions are leaning into new ways to provide quality professional development experiences to their teachers, such as offering flexible programming and ways to engage with CoPs online. These new ways of engaging merit exploration into the best practices for providing K—12 teachers with high-quality professional development experiences. The shift from face-to-face to online or hybrid community engagement led the OER Project to evaluate their teacher community model and to conduct research into state-of-the-art or existing best practices by asking this question:

What are the best methods for engaging K—12 teachers with online communities of practice to support and improve their professional development experiences?

This has included the investigation of:

Teacher CoP models

Methods of onboarding, training, and supporting community leaders

Ways of driving engagement of community members

The OER Project believes that to ensure longevity of teacher engagement, teaching OER Project courses should be a positive, fun experience. Reducing teacher turnover in the first year of teaching the courses is vital for a successful teaching experience. Finding new and better ways to drive and sustain teacher community engagement could be a great value-add for the implementation of the OER Project products in schools, leading to better teaching practices and improved education for students. The sections of this report that follow concentrate on a review of the research studies that were relevant to answering the research question.

1. Online Communities of Practice Landscape

One of the objectives for this literature review is to uncover and understand the relationship between teacher professional development and engagement with a community of practice (CoP). Engagement is an important precursor to learning and performance, so understanding better what drives engagement in online professional learning settings such as CoPs is highly relevant to our project context.

1.1 Definition and Function of Communities of Practice

1.1.1 Definition of a community of practice

Wenger, et al. (2002), defined a community of practice (CoP) as a group of people who share a common interest, a collection of problems, a passion for a subject, and an interest in deepening their awareness and expertise in a given field by continuously engaging with the community.

CoPs have been defined in a variety of ways but in the most general sense, CoP refers to a group of people (the community) involved in practice (the social construction of knowledge).

CoPs include common features such as:

- Participants work in groups to solve authentic problems.

- Participants have shared learning goals.

- Knowledge is emergent and experts in the group are facilitators.

- Group members operate at varying levels of mastery.

- There is a commitment on the part of group members to participation in the community (Johnson, 2001; Lave and Wenger, 1991; Wenger, 1998).

1.1.2 The benefits to teachers' professional development by engaging in CoPs

Many scholars have identified the CoP characteristics described above as critical success factors for teacher learning and professional growth (Bayar, 2014; Chen and McCray, 2012; Darling-Hammond, et al., 2009; Hunzicker, 2011). Teacher engagement in communities can

lead to transformative learning outcomes, especially when teachers engage in professional learning communities that foster critical reflection and communicative learning through collaboration, teacher-driven inquiry, and agency.

In the context of teachers in school settings, CoPs provide situated learning experiences where teachers work together to solve authentic challenges in the classroom. Within CoPs, knowledge is distributed among multiple individuals with varying levels of expertise. This allows teachers to learn from the communal knowledge of the group (Lave and Wenger, 1991). Teachers engage in authentic, ongoing learning opportunities to co-construct knowledge and develop their professional practices (Brooks, 2010; Wenger, 1998).

Numerous researchers have examined teacher participation in face-to-face and online communities and have found that well-designed communities provide peer-supported opportunities for teachers to learn, grow, and make changes to their practices (Chen, et al., 2016; Duncan-Howell, 2010; Owen, 2014; Wesley, 2013). Vangrieken, et al. (2017), argue that teacher CoPs “hold promise in areas wherein traditional forms of professional development have fallen short.” Teacher CoPs provide a structure for continuous school improvement through the building of teachers’ competence for learning and change.

1.2 Teacher Communities of Practice

In their 2017 study, Vangrieken, et al. (2007), set out to provide an overview of teacher CoPs, focusing on key elements of communities: development, structure, initiators, the nature of activities, agenda, goals, group interactions, and necessary conditions for success. They investigated the types of teacher CoPs that exist, the different roles of stakeholders in a teacher CoP, and under what circumstances the CoP accomplishes its goals.

1.2.1 Types of communities

Vangrieken, et al. (2007), distinguished three main types of teacher CoP: the formal CoP, the member-oriented CoP, and the formative CoP. The characteristics of each are summarized in Table 1.

Table 1: Characteristics of different types of teacher communities (Vangrieken, et al., 2017).

	Type of Teacher CoP		
Characteristic	Formal CoP	Member-Oriented CoP	Formative CoP
Structure	Teachers and outside experts.	Focus on the teachers' needs and knowledge. Includes teachers from different schools.	Fluid: Facilitation, ownership, and leadership flow organically among participants.
Initiators	Often originate in government initiatives.	School principal, teachers, or researchers.	Born organically out of a specific need or interest.
Nature of activities	Regular, scheduled meetings.	Pre-set schedules, session formats, and pre-set objectives.	Agenda is set throughout its operation.
Goal	Achieving a specific pre-set goal to improve educational standards and practices at scale or at national level.	Enhancing teachers' professional development and offering a solution to isolation. Uses teachers' practical experience as its main resource.	There is no pre-defined goal or agenda, and their way of working is established naturally from one session to another and over time.
Group interactions	Participation is compulsory.	Participation is mostly voluntary.	Participation is voluntary; this is critical to its success.
Conditions for success	Planned to achieve a specific objective and to be of limited duration.	Community continues to exist.	Community continues to exist as educators themselves are interested in attending (for support, out of concern, to improve practice).

1.2.2 Stakeholder roles and impact

Teacher CoPs can have many stakeholders, from teachers to government officials and from policy makers to school principals, superintendents, and educational ministries. As a result, the community construct carries different interpretations and can be part of different potentially conflicting agendas (Webb, 2009). The extent of influence that these

stakeholders have can be described by a continuum ranging from top-down (a government initiative) to bottom-up (a teacher initiative). Vangrieken, et.al, conclude that a balance between top-down and bottom-up influences may be most effective for the longevity and success of the CoP.

1.2.3 Factors that determine the success of a teacher CoP

Drawing on the selected studies in their research, Vangrieken, et al. (2017), identified three key conditions that determine the success of a teacher CoP:

Leadership

Group dynamics and composition

Trust and respect

We will see these conditions repeated by other scholars in Section 4 of this report when we discuss in more detail how a successful CoP can be built.

1.2.4 Other types of teacher CoPs

In addition to the different types of teacher CoPs presented by Vangrieken, et al., we would also like to look at the different types of CoPs through the lens of the types of interaction channels, and we will provide more detail on *online* communities of practice and *blended* communities of practice as teachers increasingly connect online or in hybrid settings.

1.2.5 Online communities of practice

Online communities of practice are informal groups of individuals engaged in a common practice or interest to share ideas, exchange information, and seek advice in an online setting (Cho, 2016; Gunawardena, et al., 2009; Kumi and Sabherwal, 2018; Zhang and Watts, 2003).

An online CoP evolves out of its members' willingness to complete tasks in order to further develop their learning path, where different levels of professional expertise are simultaneously presented among members (Chung and Chen, 2018). Therefore, the successful functioning of an online CoP is impossible without the active engagement of all types of members, from beginners to experts.

It has also been generally acknowledged that these communities function as a catalyst for improving adults' engagement (O'Neill, et al., 2018) and the engagement in turn is a vital part of the learning process. However, as all education practitioners can agree, promoting adults' engagement through online CoPs is not a straightforward process. It has been proven that a sustainable level of engagement in the online community is needed if it is to be successful. The absence of engagement degrades the members' learning efficiency and the effectiveness of the process (Cheng et al., 2011; Jung and Lee, 2018; Lee and Desjardins, 2019; Shang and Wu, 2019).

From that viewpoint, it is relatively easy to argue that understanding adults' (online) engagement is critical for the success of learning strategies and the enhancement of the learning process in online CoPs. We will examine this in more detail in Section 2 of this report.

1.2.6 Blended communities of practice

Blended CoPs incorporate in-person and online interactions that complement one another and extend learning opportunities (Brooks, 2010). Members in face-to-face communities are able to continue their conversations and collaborative projects at any time and from anywhere in a virtual CoP, while members in a virtual CoP benefit from face-to-face interactions, which often facilitate deeper relationships and encourage mentoring (Brooks, 2010; Vaughan, 2004).

The term *blended community of practices* is relatively new in the field of education (Trust and Horrocks, 2017). Trust and Horrocks highlight three studies in their 2017 research paper that highlight the benefits and value of blended CoPs.

1. Allan, et al. (2006), conducted a longitudinal study of the impact of participation in a blended CoP and found that participation shaped members' identities and had a positive long-term impact on work-based performance.
2. Cesanari, et al. (2011), studied a blended CoP that supported pre-service teachers in improving their practices. They found that the community facilitated collaboration, enhanced learning, and extended opportunities for interaction beyond face-to-face meeting.

3. Vaughan and Garrison (2006) studied blended learning communities of faculty in higher education. They discovered that these communities are optimal for faculty who need ongoing support but have limited time for learning.

These three studies demonstrated the potential of blended CoPs for fostering ongoing learning and professional growth opportunities.

In the context of this literature review, Learnovate recommends considering the development of a blended CoP model, and exploring ways to maximize the opportunity for teachers to engage in professional development learning opportunities with the added benefit of requiring less time of participants while still offering the opportunity for face-to-face connection and relationship building. Teachers need learning opportunities that are flexible, situated in their work, and ongoing (Trust, et al., 2016).

A successful example of a blended online community of practice is the Discovery Education Network community, which will be discussed in more detail in Section 3 of this report.

2. Teacher Engagement with Online CoPs

To find out more about how teachers engage with online CoPs and to learn more about their behaviors and preferences, we examined two studies: Macià and García (2006); and Lantz-Andersen, et al. (2018). These researchers each published one paper and reviewed a combined total of 75 studies that focused on teacher CoPs over a 20-year period. They researched the social as well as technological aspects of participation in online CoPs.

It is interesting to note that one of the main conclusions from these meta-studies is that online teacher communities are established as part of mainstream teaching practice and are routine elements of teachers' working lives. The researchers argue that the novelty of online teacher communities has subsided over the years, which has impacted overall engagement levels.

They conclude that very little is known about how online communities of practice impact the quality of teaching and teacher professional development in the long term and encourage scholars to conduct more empirical research in this field. It would be interesting to consider leveraging existing teacher communities and resources to gain insight into if and how engagement with a CoP translates into improved professional development and in turn teaching practices.

The following sections contain some insights into how teachers have engaged with online CoPs to date.

2.1 Teacher behavior in online teacher communities

Macià and García (2016), who conducted a review of 23 studies on online CoPs, provide some valuable insights on issues around engagement, including:

The nature of sharing and support in online communities.

The initial barriers to individual teachers moving beyond peripheral participation and actively contributing to a community.

The important role of individuals who work to coordinate (and moderate) communities.

Because there is no sign of teacher online CoPs becoming any less popular, Lantz-Anderson, et al. (2018), set out to build on Macià and García's work to further advance insights on the rigor and complexity of how relationships between teachers and digital technologies are understood within the field of teacher education, which is relevant to any organization with ambitions to improve the quality of teacher professional development and practice through teacher online CoPs.

We have provided a detailed overview of the main findings of Lantz-Andersen's (2018) meta-study in Table 2. This provides great insight into what behavior teachers have displayed in the formal and informal online teacher communities and what the longer-term impact of that has been on teacher professional development and practice. This overview of formal and informal online teacher communities provides a great starting point to analyze and improve practice and process of online teacher communities.

Some of the most interesting observations from this study are:

- Online communities offer an opportunity to build professional relationships and collegiality, which can translate into face-to-face interactions and vice versa.
- Discussions on online community platforms can take the form of general encouragement and support rather than critical and in-depth specific discussions on educational problems.
- Teachers develop increased confidence in their professional capabilities and adopt teaching strategies and techniques that are endorsed and approved by the community.
- Active participation in online teacher communities requires a significant time investment. This can be a substantial barrier to teachers engaging deeply—or at all.

- Community engagements and interactions are usually driven by a small and vocal number of community members. The majority of teachers either visit the community to find an answer to a specific question or are silent participants who tend to “lurk” without actively contributing to the discussion (some research suggests this might be a result of teachers lacking the time to engage properly).
- On the other hand, some researchers, like Zuidema (2012) and Macià and García (2016), argue that lurking as a form of engagement is probably meaningful for teachers even if their internalization of the online information is not visible to the other community participants.
- While teacher professional development is increasingly facilitated through online teacher communities, the diversity of topics discussed in these communities is not as diverse as the teaching profession is, with many online communities focusing on development of technology-based teaching.
- There is a sense in the research that online communities have been supporting different—but not necessarily better—forms of professional learning practice among teachers. Both formal and informal communities tend to be used as a site for superficial sharing of information, quick exchanges and a “smash-and-grab” approach to becoming informed rather than an extensive process for individuals to develop their professional teaching practices (Lantz-Andersen, et al., 2018).
- Online communities (whether formal or informal) depend on sustained efforts of moderators and require management and leadership. Sometimes the guiding roles are criticized in terms of implying an uneven distribution of power (this also relates to the earlier point in this section on engagements being driven by a few vocal members of the community). It is, however, important to look at the impact of moderation undertaken on an informal basis by teachers who might not have the experience or understanding of best practices in community building.

Table 2: Key findings of the Lantz-Andersson, et al., meta-study (2018).

Formal Online Teacher Communities
Theoretical concepts that form the basis of <i>formal</i> online teacher communities
<p>Online CoP studies are often grounded in a small range of theoretical concepts:</p> <ul style="list-style-type: none"> ● Lave and Wenger’s Communities of Practice (1991) ● Glaser and Strauss’s Grounded Theory (1967) ● Vygotsky’s Sociocultural Learning Theory (1978)
Formally organized online teacher communities are a source of collegial support
<ul style="list-style-type: none"> ● They support a sense of relationship building and create entry points for subsequent face-to-face dialogue. They also reduce the feeling of isolation. ● While conversations in an online teacher community environment are more formal, conversations are mostly taking the form of general encouragement without addressing specific issues. ● They can lead to improved emotional engagement and reflection on teaching practice, particularly when teachers engage in asynchronous discussions.
Barriers and enablers to participation in formally organized online teacher communities
<ul style="list-style-type: none"> ● Time required to organize and engage with synchronous activities. ● Time-consuming nature of online activities for teachers who are more used to working in a face-to-face environment. ● The risk of underestimating the time required for program leaders and facilitators to moderate and nurture the community of teachers.
Longer-term outcomes of participation in formally organized online teacher communities: reported changes on teachers’ subsequent classroom practices
<p>Positive effects of online engagement:</p> <ul style="list-style-type: none"> ● Increased use of digital resources by students. ● Adoption of community-recognized teaching techniques. ● Development of conceptual pedagogical knowledge. ● Teachers’ improved confidence in their professional roles and increased enthusiasm for their work. <p>Limitations of online engagement:</p> <ul style="list-style-type: none"> ● Discussion forums were used by a limited number of participants. ● Discussions often consist of mostly top-down communication. ● Dominated by a core of teachers.
Informal Online Teacher Communities
Technology basis
<ul style="list-style-type: none"> ● Most are social-media-based communities (Twitter, Facebook). ● There is little reflection on specific technical and social configurations of the applications and platforms. ● Development of technical design is bottom-up rather than development by professional designers.
Nature of teachers’ participation
<ul style="list-style-type: none"> ● The community is seen as a source of sharing and/or acquiring new ideas. ● Leverages online communication to help teachers discern useful information from less relevant and/or helpful information.

<ul style="list-style-type: none"> ● Teachers experience a sense of emotional and professional support and encouragement that leads to decreased feelings of isolation and an increased sense of taking risks through sharing and discussion if there is a level of trust and belonging.
Barriers and enablers to participation
<ul style="list-style-type: none"> ● Reliance on community activity on the efforts of key coordinating individuals because of a need to moderate the community conversation. ● Time related issues. While participation in online community activity can help teachers with busy schedules, it can also encroach on teachers' free time or overwhelm teachers due to the flow of information.
Longer-term outcomes of participation
<ul style="list-style-type: none"> ● Potential means for teachers to increase their social capital. ● Opportunity to develop teachers' professional identities and professional practice. ● Participation allowed teachers to see themselves as change agents in their school or school district. ● Community interactions maintained a professional discourse and confined to shared norms and commonplace educational understanding, sometimes with a tendency for discussion to conform to dominant professional discourses.

2.2 The use of CoPs for teacher professional development

One of the conclusions from the meta literature review is that further research is required to develop the understanding of how online communities as a form of professional learning work in practice. They suggest that teacher education research consider addressing the following issues:

Who is participating in online professional learning? (Which leads to questions about accessibility and inclusivity.)

How are teachers engaging in online professional learning? (Which leads to questions about collegiality and collaboration.)

What are teachers doing online? (As opposed to what they say they do online; this could be done through observation or content analysis, for example.)

We need to develop research approaches that document the characteristics and configurations of the different technologies that are being used for online teacher communities. How do these technological contexts shape teachers' practices?

The analytical insights gained from research that addresses these questions, would inform where the gaps and opportunities are for providing teachers with the user experience they need to teach successfully. This could lead to improved professional development curricula and CoP platforms, leading to increased teacher engagement. Increased engagement could translate into teachers achieving their long-term ambitions for professional development and impact, especially in an increasingly blended or hybrid education landscape.

3. Teacher Engagement in Professional Development

The online learning industry is growing quickly, spurred on by technological advancements, large acquisitions, and the growth of online learning platforms like Lynda.com, Coursera, and Udacity, to name a few. There continues to be an increasing need for people to develop new skills quickly, and technological advancement and ongoing global change have resulted in more online interaction than ever.

Lee, et al. (2021), argue that with the professionalization of industries and the professionalization of teaching practice, the need for ongoing and inclusive professional learning is growing. Online learning offers the promise of being the perfect means to meet this need because the technology can be ubiquitous; people can access learning from anywhere if they have an internet connection; and because it can be individualized and agile.

However, despite the promise of online learning improving professional development, online learning often fails to be engaging and routinely seems to underdeliver. In the next sections, we look at teacher engagement in online learning in general to better understand how teachers learn from online learning experiences, what influences teachers to engage with online professional learning opportunities, and how teachers grow their professional teaching practices by reviewing a study of a successful blended teacher community of practice.

3.1 How teachers learn from online learning experiences

To understand better how teachers learn from online learning experience and how this impacts their professional development, we looked at a model for teacher self-directed online learning activity developed by Beach (2017). Beach aimed to develop a model of self-directed teacher engagement with online learning (see Figure 1) that provides an insight into the conditions, strategies, and potential outcomes of teachers navigating an online professional development resource, and looks at how they further their professional development through self-directed learning. The nine themes identified in the model offer a view into teachers’ motivation to seek out opportunities for professional development (or why they may not), the strategies teachers apply to navigate and absorb the information available to them from the professional development resource, and how teachers may act on inquiring about and processing the new information they obtained.

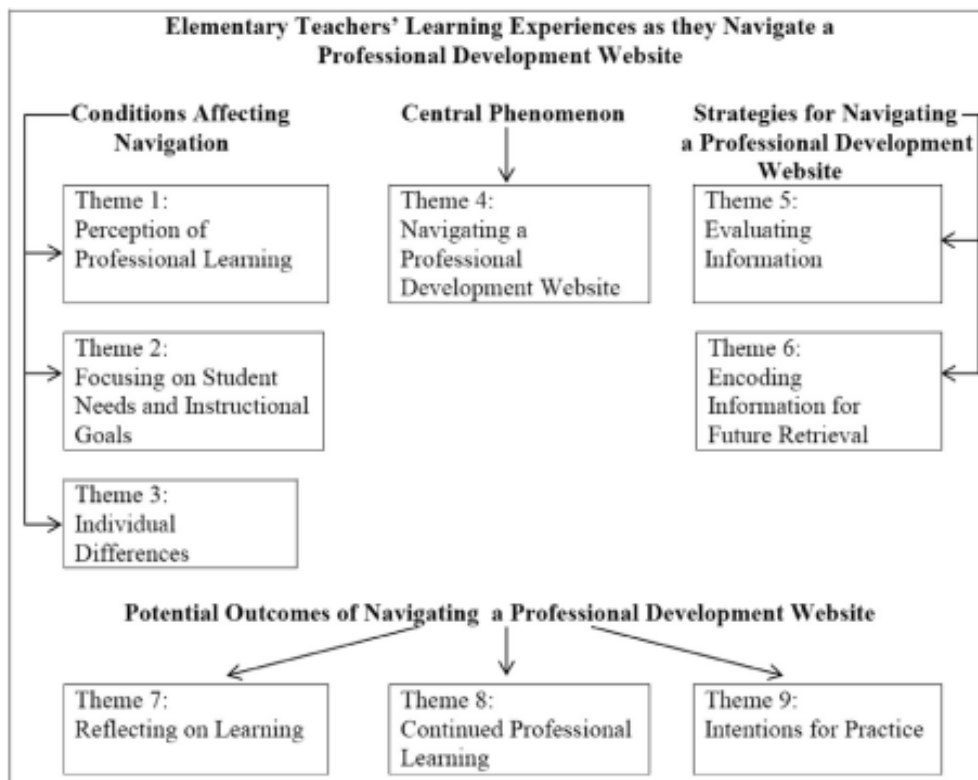


Figure 1: Theoretical model for teachers’ self-directed online learning (Beach, 2017).

According to Beach, the study of teachers’ thinking in online environments can contribute to research on teacher cognition and what teachers know, think, believe, and value. In

In addition, this study identifies key conditions, navigational strategies, and potential outcomes related to elementary teachers' use of a professional development website. These themes for deconstructing teachers' learning behaviors with online resources provides educators and website designers and developers with insights into how teachers use and learn from a professional development online resource. Beach's model can guide educators and developers in the development of course material and website content.

Learnovate believes this model offers a useful frame of reference to organizations as they continue to review and improve the online teacher learning experience in an online community of practice. By offering teachers multiple ways to engage in self-directed learning (individually or in collaboration with others), they are more likely to remain engaged with the learning and are more likely to implement new pedagogical approaches in their teaching practices.

We would also recommend for any party to use this model as the basis to develop a means to assess and review levels of accessibility and support for teachers as they navigate an online CoP in order to improve their experience with the platform. It might be interesting to conduct a study among CoP members to understand how they navigate the community platform, looking at the themes identified in Beach's model.

3.2 Influences on engagement in online professional development

Engaged learners are happy and effective learners and as more and more learning happens online, whether in online communities or through online courses or programs, it becomes increasingly important to understand what makes an engaged learner and what influences their engagement in an online environment. Engagement is the key process that translates motivation into learning (Reeve, et al., 2019) and is therefore important to understand.

Previous literature has shown clear evidence that learner engagement is associated with increased job performance (Althausser, 2015; Kim and Koo, 2017; Nipper, et al., 2018). Despite being a billion-dollar industry, research on how to engage employees in online learning is still a relatively new field.

In their study, Lee, et al. (2019), use Attfield, et al.'s, definition of engagement, which emphasizes the multidimensional nature of the construct of engagement:

“Engagement is the emotional, cognitive and behavioural connection that exists, at any point in time and possibly over time, between a user and a resource.”
 (Attfield, et al., 2011, p.2)

In a later study, Lee, et al. (2021), have provided an overview of the factors at play that influence the level of learner engagement (the learner being the teacher in the context of this report). Their study concentrates on considering online learner engagement in a multitude of contexts: individual, system, and environment. Next, they looked at how these influences impact levels of engagement: emotional, cognitive, and behavioral. This PRISMA model as it was applied for the purpose of Lee, et al.'s, study, can be seen in Figure 2.

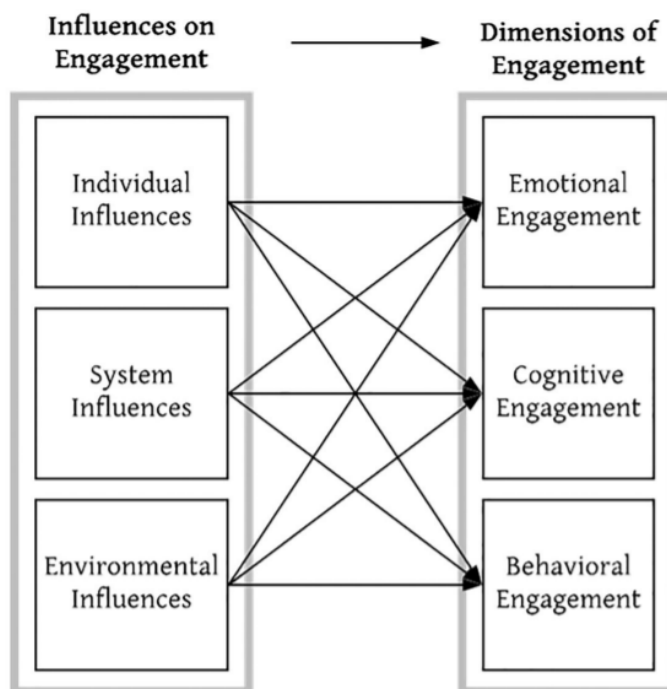


Figure 2: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram as applied by Lee, et al., 2018.

Lee, et al., identified four influences on teachers' overall engagement in online professional learning. They are:

1. Technological self-efficacy
2. Perception of the course material usefulness to the learner
3. Overall support
4. Provision of time to complete professional learning.

The overall multilevel effects model applied to Lee, et al.'s, study showed that all the influences that were identified (individual, systemic, and environmental) had a significant positive association with all measures of engagement. Table 3 below offers a summary of the influences of engagement in online professional learning, followed by a brief discussion of each. These findings offer relevant considerations and insights for CoP practitioners as they consider how to increase engagement in the teacher community and improve teacher professional development practice. It is important to note that these findings applied to engagement with online professional learning in general and that they were not specific to teachers. We are presenting those findings that we deemed relevant to online professional learning in CoPs.

Table 3: Influences on Engagement in Online Professional Learning (Lee et al., 2021)

Individual Influences	Demographic Influences	System Influences	Environmental Influences
<ul style="list-style-type: none"> ● Technological self-efficacy ● Perceived usefulness of the course ● General self-efficacy 	<ul style="list-style-type: none"> ● Age ● Education ● Sex ● Ethnicity 	<ul style="list-style-type: none"> ● Ease of use ● Course design ● System interaction 	<ul style="list-style-type: none"> ● Situational influences

3.2.1 Influences on engagement in online professional learning

Influences on individual engagement

- Learners' technological self-efficacy facilitated their overall engagement in online professional learning.
- Quality course design and the learning management system's ease of use also facilitated overall engagement.

- Environmental influences that supported overall engagement included organizational support and situational influences (being provided time to complete professional learning, access to learning support, and lower workload, for example).
- Because of the often flexible, unsupervised nature of online professional learning, engagement in these courses often favors highly self-disciplined learners. Even with rewards, busy schedules may often be a barrier to engagement or cause learners to drop out of the learning engagement. If learner interest or motivation to learn were high, it's likely learners would overcome barriers and set aside time for online professional learning.

Influences on emotional engagement

- Learners who came into a course with greater technological self-efficacy, who perceived the course as useful to their profession, and who thought the online learning platform was easy to navigate were more likely to be satisfied with the course.
- Influences that had negative associations with emotional engagement were learners' education level and the online learning system's ease of use. Learners with less education were more satisfied with the online professional learning than more-educated learners, who felt the online courses were less useful to them.

Influences on cognitive engagement

- Similar to influences on emotional engagement, cognitive engagement was positively influenced by the learners' perception of course usefulness, ease of use of the online learning platform, technological self-efficacy, and environmental support.
- Learner's age was negatively associated with cognitive engagement. Older learners reported lower intentions to adopt online learning. This could be due to heavier workloads or not seeing how participation in online professional learning would benefit them in their job.

Influences on behavioral engagement

- Behavioral engagement was the most commonly investigated form of engagement across the studies in Lee, et al.'s, research, and the types of influences were more diverse. Behavioral engagement is the most commonly investigated because it is the easiest to measure.
- All system influences and environmental influences positively affect behavioral engagement.
 - The influence of learners being offered rewards for completing online professional learning had contradictory findings.
 - Ease of use of the platform and usefulness of the course content facilitated persistence in online professional learning.
 - Having opportunities to interact with peers and the course facilitator were important in learners' persistence. Without it, learners felt isolated (Burns, 2013).
 - When learners had more time and a smaller workload, they were more likely to complete online professional learning.
- Course design and facilitating situational influences like time concerns, availability of resources, and availability of assistance significantly predicted behavioral engagement.

3.2.2 Considerations for future research

One of the key insights from this literature review is that scholars and researchers have not yet been able to provide empirical evidence on how to measure dimensions of engagement with online professional learning and engagement with online learning.

Lee, et al., argue that for future research to be more robust, a primary issue to address is validating and integrating subjective and objective measures of each dimension of engagement, where possible. This would provide a more comprehensive understanding of how the different dimensions of engagement are affected in different circumstances.

To that same effect, research in online professional learning should make better use of existing theoretical frameworks present in research on engagement in other areas of

education. Broad theories to consider include Deci and Ryan (2002); Eccles (2006); Eccles and Roesner (2009); Fredericks, et al. (2004); and Yasuzato and Katagiri (2019).

3.3 Participation in CoPs for teacher professional development

Through their analysis of the Discovery Education Network blended CoP, Trust and Horrocks (2017) identified four main domains across which participants described professional growth:

- Individual: CoP participants felt the community supported their development as individuals and reported greater levels of confidence as well as more willingness to take risks, ask for help, and accept failure. The supportive nature of the CoP seemed to encourage participants to step out of their comfort zones and take risks in their classrooms.
- Classroom: Participants supported the growth of their classrooms by incorporating new ideas and teaching strategies into their practices, connecting their students to a global audience, empowering their students as learners, and utilizing new technologies and digital tools in innovative ways. Ultimately, as the participants developed their practices, they were able to shape their students' learning and the growth of their classrooms.
- School: Participants felt the knowledge they had acquired in the blended learning opportunities offered through the CoP was knowledge that they could, and did, bring back to their schools. By sharing knowledge and supporting, training, and mentoring other teachers in their schools, the participants supported the growth of their schools.
- DEN (the DEN CoP): Participants described the reciprocal relationship with the CoP. They were able to learn and grow with support of the community while also playing a role in shaping the growth of the community. Reciprocal growth occurs because members are both learning and imparting new knowledge. However, as with so many CoPs, the growth of the community was influenced by a small number of individuals who gained most from it. To facilitate ongoing growth in the community, the community team should find ways to foster the same feeling of reciprocity among all members.

On the whole, however, participants in the CoP benefited from both the individual opportunities to learn and grow as well as the opportunities to support the growth and development of other individuals in each of the domains, and the growth of the domain as a whole. Figure 3 highlights the interconnected nature of the participants' four main areas of growth.

It is important to note that although we believe we can generalize, participants in this particular investigated community actively sought out leadership opportunities with the community of practice. Teachers can experience multiple barriers that prevent them from engaging in the CoP. These barriers include: information overload; frustration at having to explore multiple sites' platforms and tools to find relevant information; feeling overwhelmed by the activity level of the community and feeling the need to "keep up"; and limited access to some of the (mainly face-to-face) activities available. Some teachers reported that they struggled to establish a connection between their learning with the community and student learning. Others struggled to support the growth of their school communities and shared that their colleagues did not want to engage with the community. And while those teachers can act as "bridges," this might not be effective for facilitating the deep learning experienced by members of the community.

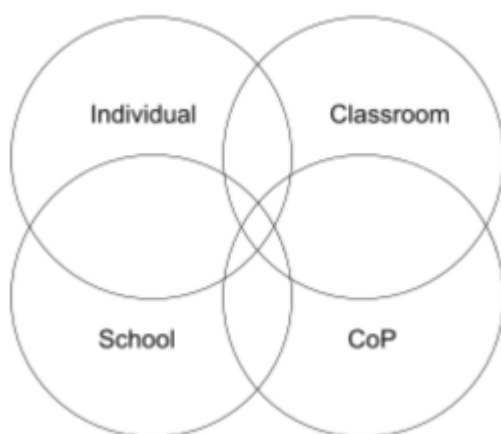


Figure 3: Four domains of professional development growth as indicated by teachers participating in the DEN blended community.

(Trust and Horrocks, 2016)

Trust and Horrocks conclude their study with the recommendation that as more and more teachers blur the boundaries between their face-to-face, formal, informal, and virtual communities, it is important for researchers and educators to continue to examine the potential of blended CoPs for transforming teaching, learning, and personal growth.

4. Effective Online Communities of Practice

In this final section of the literature review, we set out to highlight best practices and considerations for effective online communities of practice that emerged from the literature review. It brings this review back to considering the basic elements of online CoPs and reminds us of the value they bring learners and organizations.

4.1 How communities of practice add value

Stodd (2019) argues that CoPs are central to our ability to be effective in the dynamic and adaptive knowledge environment of what he refers to as the “Social Age”—the evolved ecosystem in which we live that sees the rise of collectivism beyond traditional organizational structures and that exists outside the hierarchy of any formal organizational structure or rules. “If we can better understand the ways in which people connect, and engage, to learn, and support others in their learning, and how these social structures form, and are bonded, then we can better support this process”. (Stodd, 2019).

This sentiment is echoed by researchers such as Lee, et al. (2021); Trust and Horrocks (2018); and numerous others who recognize that the internet has become the chosen medium for professional learning, including teacher professional learning. In fact, online professional learning and development has become a billion-dollar industry aiming to future-proof individuals’ livelihoods, and it offers the hope of flexible, accessible, affordable, and sustainable learning experiences (Kumar, et al., 2011; Meyer, 2014).

Stodd argues that learning communities are more than simply formal structures; they act at the intersection of knowledge and practice, and they move beyond simple transactional terms. Communities of practice are about people.

For this reason, any guidance as to how we can better form and utilize CoPs within an organizational context will inevitably need to move beyond simply looking at social collaborative technology and formal, programmatic, approaches. These learning communities are complex social systems, and to both understand them and be effective

with them will require specific, socially moderated skills and behaviors. These are capabilities that we can build for individual social leaders and for organizations themselves.

In the next paragraphs, we provide details on a number of studies that investigate the factors that influence engagement and recommendations necessary for effective CoPs. Learnovate believes these insights can prove valuable to organizations who look to continue to build, improve, and expand their CoPs.

4.2 Conditions for community

To demonstrate that community is more than technology or a space, Stodd (2019) identified some initial principles that capture the conditions for community. We have captured those conditions in Figure 4 and provided a brief description of what these conditions are in Table 4. Stodd emphasizes that this is not an exhaustive list of conditions but that these conditions support his view that communities are complex social structures and that our views towards them should be nuanced and move beyond simple control. It would be interesting to view any CoP through the lens of these conditions and assess the community according to these guidelines to uncover how a CoP might evolve further or what can be undertaken to improve its function.



Figure 4: The Conditions for Community, reproduced from Stodd, 2019.

The table below provides a brief description of each of the conditions for community depicted in Figure 4.

Table 4: Conditions for High Functioning Communities (Stodd, 2019).

➤ Social Capital	The ability to survive and thrive in collaborative social spaces.
➤ Democratized Space	Space that is not owned solely by the organization. To earn engagement, the organization must relinquish control of the space.
➤ Rules	Rules of engagement, which are ideally co-created with members of the community.
➤ Consequence	The notion that we each exist within a sphere, a bubble of consequence, part of which we project, and part of which is imposed upon us.
➤ Social Leadership	Communities don't need an abundance of formal leadership.
➤ Broad Fairness	Fairness is necessary to hear all the voices within the community.
➤ Equal Opportunity	The opportunity to engage, to be heard, and to respond.
➤ Trust	This is central to communities and focuses on building strong webs of social ties.
➤ Need	Individual and organizational needs are a condition for the emergence of community.
➤ Fluidity of Role	Role agility is necessary in community—we cannot carry our formal roles into a social space.
➤ Purpose	Social communities within an organization need a purpose.
➤ Shared Values	Shared values cannot be imposed; they must be found by the community.
➤ Segmented Utility	Communities need a broad range of skills, knowledge, and perspectives. The more segmented the community, the stronger it will be, but it must be aligned through core, shared values.

Stodd argues that complex social structures are “radically complex systems that will always flow through our fingers.” They fundamentally differ from formal structures or teams and domains with which we are more familiar. Stodd has this to say about the challenge of shaping communities into the high-performing structures they can be:

“Our best bet is to learn how communities work in our organization and to focus our efforts on diagnostics, temperature checks and sampling approaches that allow us to visualize and learn what is really happening, as opposed to blindly seeking to replicate outdated models of formal power and control.”

Stodd, 2019

4.3 CoP features that influence continual engagement and learning

Trust and Horrocks (2019) examined the features of the community of practice that influenced participants’ continual engagement and learning. They conducted a number of semi structured interviews with teachers who participated in the DEN CoP, a blended community of practice that positively impacted teacher growth.

Through this study, they identified six key elements that were critical to the success of the community of practice:

1. Leadership roles

CoP members have different roles, such as curator, collaborator, contemplator, or observer, which each influence the learning and engagement within a CoP. Leaders support and motivate members, share resources, enact governance structures, facilitate discussions, and serve as role models (Jones and Preece, 2006). Leadership roles give members agency in defining their learning experiences and shaping the growth of the CoP. Participants who take leadership roles are more likely to participate, share knowledge, and support other members and ensure that the community remains an active space for learning and connecting. They also recruit teachers in their schools or districts, which further contributes to keeping the community alive.

2. Personalized learning

Online learning activities in particular give members the opportunity to develop a professional learning network that reaches beyond their local contexts and fosters personalized learning based on their professional interests, needs, and goals. Teachers participating in the Trust and Horrocks study indicated that the difference between online or blended CoP professional development versus traditional channels was that they could drive their own learning with the support of others. Providing a wide range of learning opportunities to do so ensures that this happens.

3. Guiding principles

Guiding principles, referred to as rules, etiquette, or policies, shape how members engage in a community and interact with one another (Jones and Preece, 2006; Preece, 2001; Trust, 2015, 2017). Guiding principles can ensure that all members behave in an appropriate manner and adhere to expected norms of the community. In the example of the DEN community, members are encouraged to follow explicitly stated and implicitly understood guiding principles.

When the guiding principles are described in a positive manner, they encourage collaborative learning, teaching, and reciprocity both within and beyond the community. This aligns with Jones and Preece's (2006) finding that reciprocity, or giving back, is an essential component of healthy communities.

4. Organizational support

In the example of the DEN CoP, the supporting organization (Discovery Education) provides funding for the learning opportunities, and infrastructure and a dedicated team of staff members. It also provides the community infrastructure in the form of digital spaces and tools where members can connect, get involved, and learn. The key takeaway from this example of a successful community of practice is that the supporting team plays a very active role in supporting the community of practice.

5. Social learning

Learning within a community of practice is a social process. Participants share their expertise and are able to learn from more-knowledgeable others. A unique aspect of online CoPs is that they reduce temporal and geographical boundaries. However, in the case of DEN CoP, the hybrid model of face-to-face learning opportunities combined with online activities facilitates the type of close-knit relationships that are productive and that teachers value. In addition, a diverse membership base allows for distributed learning, where teachers don't have to know everything and instead tap into the distributed expertise.

6. Purpose

The purpose of a community plays a pivotal role in shaping member participation (Booth, 2012; Car and Chambers, 2006; Jones and Preece, 2006). It is key to a successful community that the purpose of the community is aligned to the teachers' needs. By developing a purpose, or shared vision, that aligns with members' goals, members are encouraged to actively participate.

What is particularly interesting about this study is that Trust and Horrocks have examined the inner workings of a *blended* community of practice, which is a relatively unexplored area in empirical research. Blended communities offer its participants the best of both worlds: the opportunity to make connections and build relationships face-to-face, and at the same time to benefit from the ubiquitous, instant, asynchronous nature of online learning and development.

We believe that a blended model for a CoP would be worth considering and exploring. Blended communities, if managed and supported well, could be the best approach to achieve ambitious goals around scaled engagement and moving the needle on inclusivity and accessibility of continuous professional development, regardless of the teaching context or resources of the teachers involved.

4.4 Recommendations for developing communities of practice

Trust and Horrocks (2017) conclude their study of the DEN CoP with recommendations for developing and fostering communities of practice that could be highly useful. We recommend considering an evaluation of any existing community of practice against these recommendations for a successful blended community that is considered a successful channel teacher for professional teacher learning and development.

- Provide members with opportunities to take on leadership roles.
- Give members voice and choice in what and how they learn.
- Collaboratively develop a set of guiding principles with members that sets the tone for the community.
- Provide substantial support for the community.
- Create opportunities for social learning.
- Use technology to support connected learning.
- Build a sense of community.
- Co-develop the purpose of the community with the members.

Recommendations

As a result of its literature review, Learnovate recommends that researchers and educators seek to understand more about how engagement with a CoP impacts professional development practice and in turn effective classroom instruction. We recommend achieving this by exploring the less-researched areas of teacher engagement with CoPs that we've highlighted in this report.

Learnovate believes that a larger study is possible, one that explores how engagement with an online or blended CoP translates into deeper engagement with professional development learning opportunities and how classroom instruction is impacted as a result.

Specifically, we recommend conducting a user-experience (UX) review of existing curriculum products and CoPs. This would include polling and surveying teachers engaged in teaching the curriculum (ideally not just those active in the CoP) to determine their experiences in teaching the content and engaging with the community, and to understand the influences, barriers, and behaviors related to how they manage their professional development and classroom practice.

Learnovate believes that by doing this, researchers and educators would gain invaluable insights that could then be translated into driving improvements to:

- CoPs and CoP management
- professional development practices
- instructional content
- user interface/user experience design

In addition, such a study would contribute to the body of research on effective teacher communities of practice, particularly the impact of CoP engagement on professional development and classroom instruction and practice, which has been identified as a suggested area of further research throughout the literature explored.

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