



Teachers as Drivers of Their Professional Learning Through Design Teams, Communities, and Networks

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Abstract

Engaging teachers in cooperative and collaborative processes through which they learn from each other is fundamental in rethinking professional development as being ‘done’ to teachers compared with teachers ‘doing’ or driving their professional learning. This rethinking is underpinned by opportunities that have arisen not only through social networks and the pervasiveness of online media but also from the shift in valuing the exploration of individual interests and needs as well as in the pedagogical reform process. The tenets of effective professional learning, namely, active engagement, teacher voice, creation and collaboration, inquiry and reflection, will be explored in this chapter through two modes of discourse. First, a reckoning of what counts as professional learning activities is proposed to establish the driving force or purpose for teacher learning. This is then developed further in the second part of this chapter where we discuss the various approaches to professional learning with a theoretical analysis of teacher collaboration, teacher teams, communities of practice, and broader social networks.

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Understanding the genesis, development, and purpose of professional engagement and interaction is key to supporting teachers as the ‘deliverers’ of educational reform who are those tasked with transforming education through ICT.

Keywords

Professional learning · Professional Development · Social Networking · Teacher Teams · Communities of Practice

Teachers are in a critical position as those responsible for *delivering* educational reforms, innovations in pedagogies, and curriculum change. With Information and Communications Technologies (ICT) as a driver, a deliverable, and a determinant, teachers are expressing the need for effective professional development that will enable them to create new visions, teaching practices, and dynamically flexible learning spaces that are technologically enhanced (Goldman and Lucas 2012; Tsiotakis and Jimoyiannis 2016). In response, some schools offer teachers professional training in specific technologies. They may also have in place opportunities for teachers to individually or collaboratively design curriculum units with an expert ICT teacher or have this teacher take the lessons. Additionally, there may be a school-wide approach to the adoption of a specific device such as tablets or iPads paired with specific training focusing on one flagship class/year level, the more competent teachers, or to meet the needs of a specific target group (e.g., extension group). Such school-based approaches have been found to be limiting as they do not cater to the highly diverse needs of *all* teachers and often replicate historical and cultural practices in schools (Phelps et al. 2011). In addition, teachers are seeking their own learning opportunities by completing targeted workshops on robotics or participating in a Massive Open Online Course, using Facebook to follow and extend their own teacher networks and/or listen to expert podcasts to further their knowledge and skill in ICT integration. With the permeation of the Internet in personal and professional life as well as the opportunities it brings for social networking, teachers have the opportunity now to add to their professional learning repertoire by taking part in such activities. This chapter will explore a few different aspects of professional development and professional learning associated with enabling teachers to harness the transformative potential of ICT in their classrooms.

Fundamentally, professional development is more about change in classroom appropriation of an ICT than access to, or competency with, a new tool or resource. Change is considered a reformation of both mindset, the philosophical disposition a teacher holds, and the pedagogical content knowledge that informs and therefore actions new teaching processes. Professional learning is not about replication of existing practice or the assimilation of ICT into existing teaching approaches. For too long, we have been satisfied with what Lankshear and Bigum (1999, p. 456) described as “technologizing” traditional teaching, which Bigum (2002) more resolutely confirmed as meaning that teachers are still ‘domesticating’ the computer in classrooms. This domestication of ICT is still evident today, with studies into classroom practice finding that teachers are still appropriating ICT as supplementary

or as an augmentation to existing practices (Ertmer et al. 2012; Prestridge 2012, 2016, 2017). An outcome of effective professional engagement is for teachers to ‘re’shape, ‘re’think, and ‘re’conceive ICT-infused pedagogies that effectively impact student learning.

Professional development and professional learning will be explored in the first section of this chapter to provide foundational understandings of the driving force or purpose to a professional activity. The difference between professional development and professional learning will be examined as these terms are often used interchangeably and that can affect the assumptions that drive and shape teachers’ engagement in these professional endeavors. Building on this in the second section of this chapter, we discuss the various approaches to professional learning with a theoretical analysis of teacher collaboration, teacher teams, communities of practice (CoPs), and broader social networks. These modes of professional engagement and interaction may be manifested at local sites or via online media and contribute significantly to supporting teachers as the ‘*deliverer*’ of educational reform.

Foundational Understandings About Professional Development and Professional Learning

When teachers are involved in trialing iPads in their classroom, would it be called professional development or professional learning? When teachers are involved in training on new software or following a hashtag on Twitter[®], is it professional development or professional learning? In educational theory, policy, and curriculum documentation, these terms are interchangeable. To help us understand the difference, if any, clarification of these terms is required as both have roles in the context of enabling teachers to improve their professional practice that positively influences student learning.

Teacher professional development has been defined as “activities that develop an individual’s skills, knowledge, expertise and other characteristics as a teacher” (OECD 2009, p. 49), which encapsulates most school-based staff development, in-service, and training events educators have come to associate historically with traditional structured professional development. This definition has been perpetuated over time and is still closely linked with a top-down training model of in-service based on the assumption that “teachers need direct instruction about how to improve their skills and master new strategies” (Lieberman and Miller 2014, p. 7). These and various other authors critique such assumptions that professional development is ‘*done*’ to teachers (Little 1993, 1999; McLaughlin 1994). Little, in her early work in the 1990s on the role of professional development in educational reform, proposed that the validity of professional development should be evident in its capacity to equip teachers to act as shapers, promoters, and well-informed critics of reform. Rather than being ‘*done*’ to teachers, professional development positions teachers as pedagogical experts who engage in the pursuit of genuine problems over time with a broader professional community that affects change in beliefs, attitudes, and

practice. The longstanding dissonance of professional development being ‘done’ to teachers compared to teachers ‘doing’ or driving their learning remains.

Professional learning, on the other hand, is more self-directed based on professional needs or interests. It has been explained as learning that is not formally planned or provided as part of the school strategic direction but considered as part of the serendipitous or natural study work that teachers undertake daily in their classrooms (Day and Sachs 2004). More so, it is considered to involve changes in a teacher’s capacity for practice associated with shifts in professional knowledge, attitudes, beliefs, and/or mindsets. These types of attributes are more complex barriers to the integration of ICT (Ertmer 2005) than barriers such as hardware or access, and have been found to be much more difficult to shift but have greater potential for enabling effective appropriation of ICT (Prestridge 2017).

Accordingly, then, professional learning orientates an internalized goal-centric model of learning that Raphael et al. (2014) explain as “ownership over compliance, conversation over transmission, deep understanding over enacting rules and routines, and goal-directed activity over content coverage” (p. 147). Essentially, professional learning is a ‘*growth in practice*’ model that values active engagement, teacher voice, creation and collaboration, inquiry and reflection. This type of learning can occur through professional learning communities within and beyond schools, through teachers’ personal networks, or organized special interest groups that exist in local school communities or online. This will be explored further in section “[Approaches to Professional Learning](#)” of this chapter.

One nuance associated with professional learning that differentiates it from professional development is in what Raphael et al. (2014) alluded to in their explanation, that is, “goal-directed activity over content coverage.” In traditional professional development, a program of activity is consumed by teachers with expectations that new knowledge is gained and therefore transmitted by the teacher to ‘better’ or ‘more informed’ classroom practice. This would be considered by Raphael et al. as content coverage. Whereas, with respect to professional learning, the focus for what is considered ‘learning’ moves from product to process. This shift has been conceptualized by Evans (2014) as encompassing behavioral development – processual, procedural, productive, and competential change; attitudinal development – perceptual, evaluative, and motivational change; and intellectual development – epistemological, rationalistic; comprehensive and analytical change. These processes as goal-directed activity direct the outcome of professional learning as teachers becoming conscious of their pedagogical changes with the development of professional learning capabilities. Self-realization and learner autonomy have been identified as educational outcomes of online professional engagement (Prestridge and Tondeur 2015). Finally, some of the key findings of professional learning indicate that it is a messy unpredictable process that can be an unconscious incidental event (Smylie 1995), unanticipated through social activity (Adger et al. 2004), implicit (Eraut 2007), contributing to making conscious ‘knowledge-of-practice’ (Cochran-Smith and Lytle 2001), but usually situated (Hoekstra et al. 2007) and more selective and self-determined for teachers in a later career stage (Cameron et al. 2013).

What does this mean for ICT integration? Which is the better approach to enable teachers to transform their pedagogical practice with ICT? If we understand professional development as a series of activities for new knowledge about a tool or teaching practice that is more likely to be externally organized and professional learning to be about the process of engagement internally driven for self-actualization and learner autonomy to inform practice, then which concept should be foregrounded? Drawing from the literature mentioned here, it is clear that there are nuances, synergies, and convergences of features of each approach that makes it difficult to suggest a more preferred or more valuable option other than drawing on both professional development and professional learning elements that are relevant to the given purpose and context. However, in saying this, we believe that the teacher needs to be the driver, the center of any professional experience rather than the content or the ICT; that the learning process, the metacognitive gain and shift in mindset, is more important than gains in ICT skill competency or knowledge; and that learning takes place as part of a community where the contributions of the teachers are the currency for content rather than the teachers being the passive recipients of knowledge. In describing this, philosophically, professional learning precedes professional development in design.

The following section will explore approaches to professional learning that identify features that could be used to design effective engagement opportunities for teachers as drivers and critical participants in development activities for ICT integration. Informing understandings about teachers working collaboratively, teaching teams, communities of practice, and social networks will be examined.

Approaches to Professional Learning

Communities of practice, teaching communities, teacher teams, and learning communities are terms that have been used interchangeably within the literature. Each term has been used to describe a type of social structure used by educators to collaborate to improve their practice. Communities of practice have been defined as a self-selected purposeful social structure whereby educators regularly come together to work for the collective benefit of students (Lave and Wenger 1991). The term was conceptualized through a reexamination of learning theories that argued that much of an individual's learning is a result of our participation in social interactions. Communities of practice are designed to capitalize on that premise. DuFour (2014) argued that professional learning communities have two broad purposes: (a) to improve the skills and knowledge of educators through social interaction and professional dialogue, and (b) improve the learning outcomes of students. Much of the work of these two types of collaborative groups is accomplished through action research cycles of investigation of shared practice and ongoing learning. As such Communities of practices and professional learning communities are similarly structured and are closely aligned in their overarching goals.

Teacher teams can be defined as two or more teachers working collaboratively and taking responsibility for teaching the major part of the instruction for the same group of students. Team practices can include all or some of a range of activities including planning, teaching, resource sharing, and assessing (Main 2012). Thus, these professional interactions also initiate and provide professional learning opportunities as teachers learn from collaborating with others and that learning is ongoing through active engagement in improved practice (Voogt et al. 2016).

For professional learning to be effective, it must be relevant, collaborative, and future focused, and encourage teachers and leaders to reflect on, question, and continuously improve their practice (Australian Institute for Teaching and School Leadership [AITSL] 2012). Working collaboratively can be argued to be a very effective form of professional learning for teachers as it is embedded within the context of a teacher's own classroom, is conducted over time, and is positioned where they can receive feedback and reflect through an iterative cycle of planning, practice, and reflection. These elements have been designed in professional development activities that support teachers to become conscious of their ICT beliefs and practices (Prestridge 2013). With education systems now recognizing the wide range of benefits that can be realized by purposely having teachers work together, greater opportunities are being afforded for teachers to work together rather than in isolation. The benefits of teachers collaborating that align with professional learning include early career teachers learning from more experienced teachers (Westheimer 2008), increased professional dialogue that supports innovation and new ideas (Meirink et al. 2010), and the broadening of teaching strategies (Shiple 2009). Thus, when working collaboratively, either face-to-face or online, teachers have reported a wide range of professional and personal benefits (see, for example, meta-analysis by Blitz 2013, p. 6). Collaborative activities form a basis of professional development models and structures. The benefits of working collaboratively as well as how different formal structures of teacher collaboration, both face-to-face and online, are operationalized will now be discussed.

Teacher Teams

Teacher teams have been introduced in schools across the world as part of school improvement initiatives and school reform efforts. Recognizing the potential of teachers working together has resulted in a significant amount of research which has attempted to understand how effective teams function (see, for example, meta-analysis by Vangrieken et al. 2015). The size, configuration, and practices of teaching teams vary widely. Each team is unique and must accommodate differences among team members (i.e., levels and types of expertise, personalities, understandings of team practices), students (i.e., age, year level, class configurations), physical layout of classrooms, and the school program under which the team will be operating (i.e., interdisciplinary team or interdisciplinary curriculum, primary school, middle school, or senior school). These differences result in teaching teams and team practices looking very different across year levels, within year levels, and from

setting to setting across schools. However, there are also several commonalities that can be identified in any team's development. Key to effective collaborative practices is understanding the characteristics and tasks associated with each stage of the team's development.

Aligning with the seminal work of Bruce Tuckman (1965) around the life cycle of business teams, teaching teams have also been shown to go through a life cycle with a beginning, middle, and an end. Tuckman's theory of small group development outlined four key stages, namely, forming, storming, norming, and performing. There are a number of key tasks that need to be undertaken at each stage of the teams' life cycle for the team to move forward positively. First, in the forming stage, the main tasks are to establish the procedures that will govern the team such as its goals, individual member's roles, agreed upon rules and to set common expectations that will guide the team. Some of the most common reasons teams fail are disorganisation, unclear or conflicting goals and expectations, competing commitments (time management), lack of motivation, and conflict (Main 2012). The storming stage is an essential part of the team's life cycle where team members begin to challenge ideas and reassess the team's goals and expectations. During this stage, the team needs to develop a plan as to how the team will be able to achieve its goals which often requires reestablishing team rules and expectations. It is also critical at this stage for team members to put into place effective conflict management strategies that will ensure that they are able to manage conflict in a positive way and build trust within the team. The norming stage is where the focus has moved from the individual to uniting as a team and getting the job done. Team members begin to feel a sense of belonging and a stronger commitment to the team as trust builds and progress is made. The final stage, performing, is achieved when the team is working cohesively and there is a balance between achieving the team's goals and maintaining and building relationships between team members. Tuckman's theory has proven to have transferability across disciplines and, although teams do not necessarily progress through these stages in a sequential pattern, there are characteristics and tasks associated with each stage. As a team progresses through its life cycle, team members must manage three different processes simultaneously, namely, task processes (the job to be done), team processes (how the team functions), and relationship processes (how team members get along with each other).

Understanding the reciprocal dependency between team processes has increasingly been recognized as being critical to developing theoretical models of team effectiveness (Nicolaidis et al. 2014). For team members to be able to work together, there needs to be a simultaneous balance between using team processes (e.g., appointing a leader, setting regular meetings, assigning specific roles, agreed team rule) to complete the task (e.g., knowing how to plan, teach, and assess a unit; complete a special project) and maintaining the relationships (Main 2012, 2017).

The effectiveness of teams is measured by more than its productivity (task completion) or performance (team working together). It also involves the development of each individual's self-efficacy and personal satisfaction with their work (Main 2012). The professional learning that occurs through working in teams supports the development of one's sense of efficacy as well as enhancing their

commitment to the team. This positive cycle of influence creates a sustainable pattern of self- and team improvement through nurturing shifts in practice (Butler and Schnellert 2012). In their analysis of studies involving curriculum design teams, Voogt et al. (2016) found that where teachers' worked collaboratively and where their professional learning outcomes were focused on pedagogical content knowledge and design knowledge and skills as well as being linked to the curriculum, it led to "an improved quality of teachers' knowledge and skills (. . .) and the quality of the curriculum design process" (p. 136). They further noted that teacher self-efficacy was related to the teachers developing ownership in the curriculum change process and that this sense of ownership was a critical element for successful implementation of any change.

Teacher teams or curriculum design teams that are school, district, or wider reaching through online pathways can involve teachers in codesigning units of work which effectively use ICT. These can be a part of structured professional development or opportunistic, informal interest-based professional learning activities, for example, Teach Meets on Coding. A Teach Meet can be organized by teachers themselves within their school districts or by a professional organization such as a Department of Education or Computer Association. At these meetings, teachers share good practice on nominated topics and teachers who are interested attend. These face-to-face meetings can be organized through an online community where conversations can occur before and after, in ways that expand teachers' professional networks and their pedagogical understanding of ICT. The Teach Meet, if local, can give teachers the opportunity to meet face-to-face. In the fully online space, teams of teachers from different schools can work collaboratively to analyze lesson plans and video recordings of classroom teaching through an online platform, as found in Zhang, Liu, Chen, Wang, and Huang's study (2017). Using an online platform enabled the teachers in the study to collaborate across time and place, and the process of providing feedback and suggestions for improvement on lesson plans and delivery was considered by the teachers beneficial for linking theory to practice and exchanging information. Lin et al. (2008) researched virtual teacher teams who were collaborating on developing ICT lesson plans identifying the factors that affect the process of knowledge sharing and creation online, such as teachers taking on roles of task performers or idea providers. Teachers as active participants in the curriculum design process are driving their professional learning and are positioned as the expert within educational reform.

Communities of Practice

In the late 1980s and early 1990s, social anthropologists began to recognize the significant learning that comes from our participation in social life and personal interactions (Lave and Wenger 1991). Through a process of reconceptualizing the then current learning theories, the term "Community of Practice" was developed, as noted previously. A Community of Practice (CoP) was defined as a group of people who intentionally interact regularly with each other around a common concern or a

passion and work together to learn how to do it better, that is, how to improve their practice (Lave and Wenger 1991). The intent behind the term CoP is that the learning is embedded within a shared practice rather than just a shared learning experience. Thus, in the case of a CoP in an educational setting, it can be viewed as a form of ongoing professional learning with the process of learning setting its members on a positive trajectory for improving practice. Thus, in a CoP, a group of teachers work together to improve both their own performance and that of their colleagues in their day-to-day practice (Farnsworth et al. 2016).

Within a CoP, teachers work together and can collaborate on a range of curriculum and planning tasks and can also engage in co-teaching and peer observation to facilitate performance monitoring. Making these practices known breaks down professional barriers and establishes a sense of collaboration and community between educators within the setting (Ranmuthugala et al. 2011). Working in this way acknowledges the value of teachers as professionals and helps to further develop the established pedagogy and a vision to improve practice. As such, a CoP seeks to locate the learning in the process of co-participation (building social capital) and not just within individuals. Hence, collaborative practice can become the main method of professional development for educators improving practice and “learning” and for making educators who are working together accountable to each other (Main 2012).

Communities of practice or professional learning communities have been promoted for over a decade as an effective form of professional learning (DuFour 2014). In more recent times, the Internet and mobile communication technologies have extended and changed the construct of CoPs as well as the way that they operate within a school context, district, or beyond. With increased opportunities and greater flexibility of time and space, CoPs are extending to include not just teachers within a school but also drawing on outside expertise and developing hybrid CoPs that use a combination of face-to-face and online interactions. Blitz (2013) conducted a comparative review of face-to-face and online CoPs (professional learning teams) and noted that online communities could achieve many of the same beneficial outcomes as face-to-face CoPs (see, for example, Zhang et al. 2017). Those working in the online environment were also found to be more self-reflective; however, the professional learning was shown to be the same regardless of the model of CoP (Blitz 2013).

The success of online CoPs is reliant on the members of the community voluntarily sharing their knowledge and experience. Knowledge giving and receiving as social and cognitive practices in online CoPs are dependent upon teacher’s interpersonal connections and proactive self-regulation in these spaces (Tseng and Kuo 2014). In practice, the lack of engagement by members has been seen as a significant issue (Macdonald and Poniatowska 2011) and, as experienced in face-to-face CoPs, the presence of the “social loafer” syndrome can disrupt the flow and effectiveness and commitment of all members to the group. However, to overcome this, Matzat (2013) noted that a high level of embeddedness (i.e., the degree of off-line interaction between members of an online community) can promote commitment to the group and reduce the tendency for social loafing. Further, in this large-scale,

comparative study, Matzat (2013) found that “blended communities,” where there was a mix of off-line interactions that complemented the online community, “deliver more benefits than purely virtual communities” (p. 49). However, in one study, where only 7% of the members met and networked in an informal off-line meeting, the benefits including increased communication, more open sharing of materials, and an increase in trust between members were realized. Thus, it is possible to increase the effectiveness of an online CoP by increasing the embeddedness of the membership through strategies such as recruiting members within an area where some may already know each other or by providing opportunities for face-to-face meetings through conferences or other forms of professional development.

Social Networking

Educators’ professional learning landscape has shifted greatly with web-based technologies offering the opportunities for on-demand, 24/7 learning delivered to the palm of the *teacher’s* hand (Simonson et al. 2011). With the ease of use of Web 2.0 tools, the explosion of apps, and the growth of social networking, there has been a move by teachers to self-action their professional learning opportunities online (Prestridge and Tondeur 2015; Vu et al. 2014). Issues associated with isolation and cost, which have previously precluded teacher engagement (Cameron et al. 2013), are easily overcome within these virtual spaces. Social networking sites such as Facebook[®], Instagram[®], Pinterest[®], TeacherspayTeachers[®], Twitter[®], and Google Plus[®] provide the more common online places to communicate and contribute to a current worldwide topic. Additionally, professional societies use online environments that have the capability to group teachers, provide a space to build a personal profile, discuss and make a repository of resources which are also places teachers are networking.

The move from school-based training to online course work to self-generating on-demand learning shifts the approach from professional development with content delivery to professional learning through the primary practice of actioning teacher’s content generation, such that teachers themselves are generating the content through collaboration and independent inquiry. Simply, teachers use their classrooms as sites for investigation from which they explore issues, ideas, problems, questions that arise and share these out through social networks online. In these networks, teachers discuss, extend ideas, make suggestions, and work together. As such, inquiry-based professional learning is grounded in teachers’ intentional investigation and reflection on their own practice in light of other teachers’ practices, associated theories, knowledge, and the larger educational, social, and political contexts. Online social networks can provide both the space/place and tools to actively communicate, reflect upon, and collaborate with other like-minded teachers as part of facilitated professional development programs, as mentioned above in the online CoP created within a specific online software platform (Zang et al. 2017); or using more common media such as Facebook (Goodyear et al. 2014). These spaces can also support the more organic professional learning activities where teachers are moving in and out of

online social media based on their own timely needs and interests (Sumuer et al. 2014).

Research in this area is currently limited but it is an area that provides an abundance of opportunity as teachers themselves are currently exploring how to leverage social networks for their own professional learning. In this field, studies focus on varying elements such as Webinars as opportunities for authentic dialogue which network teachers worldwide (Albers et al. 2013); models of professional development online such as programs designed based on teacher-generated content and requirements for facilitated engagement (Prestridge 2016); the difference between the uptake of formal and informal professional learning activities (Petras et al. 2012); the alignment between networking and the conceptualization of learning-as-social participation (Niesz 2007); and ethical issues in social networks (Foulger et al. 2009). What is interesting and needs more research to understand will be the ways and whys that direct how teachers engage in these social networks, such as moving in/out and serendipitously between social media; the reasons for inactive, lurker activity compared to active participation; consumer culture verses contributing culture where teachers prefer to take ideas and resources rather than contribute their own; how an online presence or teacher profiling is created and contributes to a sense of connectedness and presence; the list goes on. What is evident in this field is that professional development in these kinds of social media-supported spaces requires the philosophical approach described earlier as professional learning. Thus, professional development through social media needs to be designed so that activities are self-directed by teachers based on internalized goals to fulfil their needs and interests as part of, and in alignment with, the greater grouping or community.

Final Words

It has been long established that technology integration in K-12 classrooms is usually overly teacher-centered and tends to replicate traditional pedagogies that supplement student learning (Al-Zaidiyeen et al. 2010; Ertmer and Ottenbreit-Leftwich 2013; Prestridge 2012, 2017; Tsai and Chai 2012). These classroom practices have been historically replicated in teacher professional development models that provide training on ICTs rather than pedagogical reform. It is the ‘chicken before the egg’ syndrome: ICT practices are being modelled in professional development approaches. Moving toward the use of ICT to support students’ engagement in higher-order thinking means moving toward models of teacher professional development that advocate for and embrace critical thinking paradigms. Whether it be considered professional development or professional learning that involves teachers working in teams, through CoPs, blended or solely face-to-face or by using social media, better professional outcomes are enabled when teachers collaborate. Teachers collaborating and teachers as drivers of their professional experiences has been the resounding message of this chapter.

In closing, we live in an ever-changing world. This world is getting smaller with the advent of technologies. Teachers are using ICT both as instructional devices and

to support students to use them as learning devices. Teachers worldwide can (while some already are) share, collaborate, challenge, and create new knowledge and understandings that influence what they do with their students in classrooms. However, for this to be the status quo, some things need to change. Fundamental shifts need to be made with regard to teachers as pedagogical experts influencing their professional learning as active members of a larger professional culture that ensures the continual renewal of self-understanding and a requirement for contribution to the pool of knowledge moving forward. Teachers are the deliverers of educational reform, as it is “education” that they co-construct that is most powerful.

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