Practical Measures,
Routines & Representations

Thanks for expressing interest in our collaborative professional development survey!

In this document, you'll find an annotated version of the tool, which includes the research informing the tool and information for use of the tool, as well as information about its development.

Please note that we are in the process of refining these tools. It is important to us that we learn from those who are using them. We are currently operating under a Creative Commons license. As such, we ask that you track and share any revisions you make to the tool. If you'd like to download other tools for instructional improvement, visit http://pmr2.org.

A word of caution: This tool is intended to support inquiry about facilitation and to inform instructional improvement efforts. It is not appropriate to use this tool to evaluate professional development facilitators or participants.

Thank you!

The PMR2 Team

To support facilitators' ongoing inquiry, we developed a quick (3–4 minute) teacher-facing survey designed to provide facilitators a window into their practice (Collaborative Professional Development Survey, or CPDS). The CPDS is grounded in research on high-quality PD in mathematics education (Figure 1). At its core, high-quality PD provides teachers with robust opportunities to make visible authentic dilemmas of teaching; investigate the relationships between students' learning, the content of mathematics, and their teaching; and develop new forms of and knowledge about teaching (e.g., Cohen & Ball, 2001). Each survey item is designed to provide insight into an aspect of the PD learning environment that research suggests shapes teachers' opportunities to learn through PD.

One key aspect concerns the **focus of discussions** in the group, specifically the quality of discussions focused on elements of the "instructional triangle" (mathematics, students' learning and experiences, teaching) and on the relations among these elements (Cohen & Ball, 2001; Horn et al., 2018; Jaworski, 1994).[1] A second aspect concerns the **discussion practices** employed in the group. *How* teachers talk together matters for the depth of their inquiry (Lefstein et al., 2020), and particular practices enable teachers to build an evidence base for their inquiry (Horn & Little, 2010). A third aspect concerns the opportunities teachers have to **make their practice public** and thus available for inquiry (e.g., Ball & Cohen, 1999; Little, 2002). A fourth aspect concerns **relevance,** the extent to which teachers experience the PD as responsive to and possible in their own instructional contexts (e.g., Horn & Kane, 2015; Putnam & Borko, 2000). A fifth aspect concerns teachers' sense of **membership in the community**, including whether teachers see themselves as valued members of the group (e.g., Grossman et al., 2001).

After we identified key aspects of high-quality PD, we generated initial survey items and then engaged in 18 cycles of design, analysis, and revision to ensure that the survey items assessed what they were designed to measure. In each cycle, researchers observed a professional development session and gathered evidence specific to the focus of each item. Next, the then-current measure was administered to PD participants after a relevant phase of the professional development session (e.g., at the end of a session). Immediately following the session, the research team conducted cognitive interviews (Desimone & Le Floch, 2004) with three to five participants, in which they asked participants to explain their response choices and probed participants'

Figure 1. Key Aspects of Collaborative PD

interpretations of the items. Further, after each session, researchers shared the resulting data with facilitators to understand their interpretations of the items and whether they perceived the data as helpful and able to inform their practice. Following this, researchers conducted a qualitative analysis of the various forms of data, which resulted in proposed revisions to the survey including eliminating, adding, and/or modifying items. Whereas the survey was initially designed with a focus on in-service teacher PD, it has been used in PD for coaches and pre-service teachers, with slight modification to the language of the items.
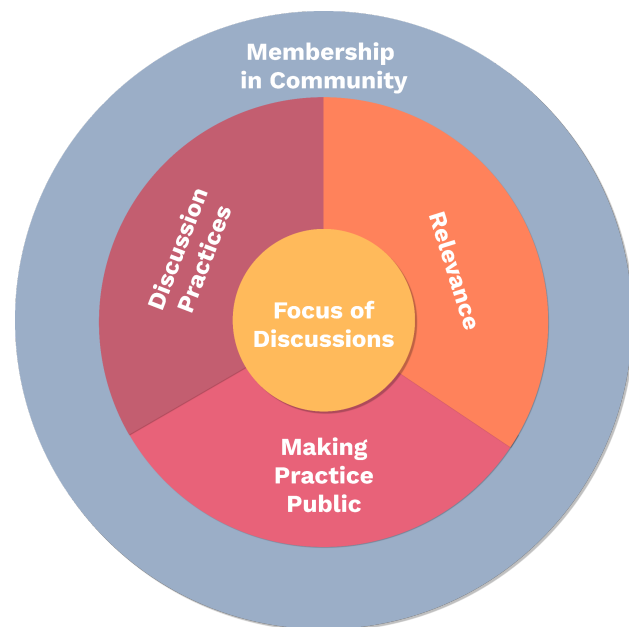
---

[1] The current survey assesses each of the aspects of high-quality PD described above, except for the focus of discussions. We have not yet found a way to reliably assess this important aspect of PD on a survey.

Making Practice Public: Participants deprivatize their practice, making it available for inquiry, and see value in doing so.	
Items provide information about the extent to which...	Survey items
PD participants feel they can share their ongoing questions, dilemmas, and challenges in the group. For teaching practice to become an object of inquiry, it is essential that participants feel comfortable making their practice public to others. This includes participants explicitly sharing their ongoing questions, dilemmas, and challenges in a group (Little, 2002; Horn, 2010; Horn & Kane, 2015). Making practice public, or deprivatizing practice, is counter to the egg-crate culture and isolation that teachers often experience, which tends to keep teachers' questions, dilemmas, and challenges private (Flinders, 1988). This item provides information about participants' openness to share ongoing questions, dilemmas, and challenges.	In today's session, I felt like I could share something I'm wondering about my own teaching (examples: a question, a dilemma, a challenge). ○ Yes ○ No
The group's activity is grounded in representations of and artifacts from PD participants' own practice. Revealing problems of practice in a way that makes space for generative inquiry depends on sharing particulars of those problems (Horn & Little, 2010). Specific details become visible in artifacts from teachers' practice (Ball & Cohen, 1999; Grossman, 2011). When a group explores artifacts such as student work (Kazemi & Franke, 2004), video of teaching (Borko et al., 2008; Sherin & van Es, 2009), and verbal retellings of classroom interactions (Horn, 2010), they can form a rich evidence base from which to build and refine general principles of teaching and learning. These items provide information about participants' openness to share various artifacts.	I would be open to sharing the following with this group of participants and leaders: (Select all that apply.) ❏ an anecdote about what my students said or did ❏ an anecdote about something I said or did when teaching ❏ samples of my students' written work (examples: exit tickets; photos of students' work) ❏ a math task or activity ❏ video of my students solving problems ❏ video of my teaching ❏ I would not be open to sharing any of the above. I would be open to inviting members of this group of participants and leaders to join a lesson of mine. ○ Yes ○ No

Discussion Practices: Authentic, generative inquiry involves processes of sharing and revising emergent thinking, pressing for reasoning/evidence, and challenging ideas.		
Items provide information about the extent to which...	Survey items (for contexts with primarily whole-group interactions)	Survey items (for contexts with whole- and small-group interactions)
PD participants can share tentative or rough-draft thinking. To build an evidence base for their collective inquiry, teachers need to be able to pose tentative ideas for refinement about both subject matter and teaching practices (Horn & Little, 2010; Thanheiser & Jansen, 2016). These items provide information about participants' sense of their ability to share tentative or rough-draft thinking in the PD group.	I feel like I can share a *mathematical idea* I am unsure about with this group of participants and leaders. ○ Yes ○ No I feel like I can share an *idea about teaching* I am unsure about with this group of participants and leaders. ○ Yes ○ No	I feel like I can share a *mathematical idea* I am unsure about... ☐ in the whole group ☐ in my small group ☐ in neither the whole group nor my small group I feel like I can share an *idea about teaching* I am unsure about... ☐ in the whole group ☐ in my small group ☐ in neither the whole group nor my small group
PD participants can press others to elaborate their reasoning. To build an evidence base for their collective inquiry, teachers must also be able to press one another for specificity, inviting one another to elaborate their contributions to the discussion and the reasoning underlying them (Horn & Little, 2010; van Es et al., 2014). This can support the group to refine general principles of teaching and learning (Horn et al., 2018) and to support one another to call into question harmful narratives about the capabilities of their students (Louie, 2017). This item provides information about participants' sense of their ability to press others in the PD group to elaborate their reasoning.	I feel like I can ask others to elaborate on an idea with this group of participants and leaders. ○ Yes ○ No	I feel like I can ask others to elaborate on an idea... ☐ in the whole group ☐ in my small group ☐ in neither the whole group nor my small group

PD participants can challenge one another's ideas. Investigating problems of practice often requires that teachers challenge one another's ideas, offering different and even competing perspectives on teaching and learning – especially in groups working to shift modal narratives or ways of teaching (Dobie & Anderson, 2015; Louie, 2016). This item provides information about participants' sense of their ability to challenge one another's ideas in the PD group.	I feel like I can push back on an idea with this group of participants and leaders. ○ Yes ○ No	I feel like I can push back on an idea… ☐ in the whole group ☐ in my small group ☐ in neither the whole group nor my small group

---

Relevance: Participants experience professional learning as responsive to and possible in their own instructional contexts.		
Items provide information about the extent to which…	Survey items (for contexts that involve **participants** who teach multiple classes of students, e.g., *secondary* teachers)	Survey items (for contexts that involve **participants** who teach one class of students, e.g., *elementary* teachers)
PD participants view the focus of the professional learning as possible with their own students in their own contexts. If teachers are to try out what they are learning in PD, they need to see the focus of PD as possible in their own instructional contexts (Horn & Kane, 2015). This item provides information about participants' readiness to try ambitious practices in their own classroom(s). Open-ended responses provide insight into the reasoning behind participants' readiness, including structural challenges and their current views of their students' mathematical capabilities (Jackson et al., 2017).	I feel ready to try something I learned today in… Select the one best response. ○ all of my math classes ○ some of my math classes ○ none of my math classes If applicable, what are you planning to try? If applicable, in which classes are you hesitant or not ready to try something, and why?	I feel ready to try something I learned today with… Select the one best response. ○ all of my students ○ some of my students ○ none of my students If applicable, what are you planning to try? If applicable, with which students are you hesitant or not ready to try something, and why?

| PD participants view the work as responsive to their own needs and interests.

If teachers are to try out what they are learning in PD, they need to view the PD content as responsive to what they experience as genuine "problems" or "opportunities" of practice. Especially since normative practices of teaching may be at odds with those foregrounded in professional learning, PD will likely not always be directed by teachers' stated needs and interests. Instead, the facilitator often must balance and negotiate what they see as important, how problems are framed, and how participants are currently identifying, framing, and understanding a problem of practice (Putnam & Borko, 2000). To do so, a facilitator seeks to understand participants' current contexts, experiences and needs, while carefully considering where and how they might support participants to engage in alternative ways of making sense of their current needs and interests. This item provides facilitators with participants' perceptions of the relevance of the PD to their own contexts. | Today's session was relevant to my work as a teacher.

◯ Yes ◯ No

If yes, what did you find relevant?

If no, why not? |

Membership in Community: Participants both feel valued and see the value in learning with and from others in the group.		
Items provide information about the extent to which...	Survey items (for contexts with primarily whole-group interactions)	Survey items (for contexts with whole- and small-group interactions)
PD participants see themselves as a valued member of the group. When teachers feel like valued members of the group, they are more likely to engage in authentic inquiry together, opening their own practice and engaging meaningfully with others' ideas (Grossman et al., 2001). This item provides information about participants' sense of value in the group and can prompt inquiry into issues of equity in participants' participation and ways of supporting newcomers into the group.	In today's session, I felt like my ideas were valued. ◯ Yes ◯ No	In today's session, I felt like my ideas were valued... ☐ in the whole group ☐ in my small group ☐ in neither the whole group nor my small group

References

Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3–22). Jossey Bass.

Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and Teacher Education, 24*, 417–436.

Cohen, D. K., & Ball, D. L. (2001). Making change: Instruction and its improvement. *Phi Delta Kappan, 83*(1), 73–77.

Desimone, L. M., & LeFloch, K. C. (2004). Are we asking the right questions? Using cognitive interviews to improve surveys in education research. *Educational Evaluation and Policy Analysis, 26*(1), 1–22.

Dobie, T. E., & Anderson, E. R. (2015). Interaction in teacher communities: Three forms teachers use to express contrasting ideas in video clubs. *Teaching and Teacher Education, 47*, 230-240.

Flinders, D. J. (1988). Teacher isolation and the new reform. *Journal of Curriculum and Supervision*, 4(1), 17-29.

Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record, 103*, 942–1012.

Grossman, P. (2011). Framework for teaching practice: A brief history of an idea. *Teachers College Record, 113*(12), 2836–2843.

Horn, I. S. (2010). Teaching replays, teaching rehearsals, and re-visions of practice: Learning from colleagues in a mathematics teacher community. *Teachers College Record, 112*(1), 225–259.

Horn, I. S., & Little, J. W. (2010). Attending to problems of practice: Routines and resources for professional learning in teachers' workplace interactions. *American Educational Research Journal, 47*(1), 181–217.

Horn, I. S., & Kane, B. D. (2015). Opportunities for professional learning in mathematics teacher workgroup conversations: Relationships to instructional expertise. *Journal of the Learning Sciences, 24*(3), 1–46.

Horn, I. S., Kane, B. D., & Garner, B. (2018). Teacher collaborative time: Helping teachers make sense of ambitious teaching in the context of their schools. In P. Cobb, K. Jackson, E. Henrick, T. Smith, & MIST team (Eds.), *Systems for instructional improvement: creating coherence from the classroom to the district central office* (pp. 93-112). Harvard Education Press.

Jackson, K., Gibbons, L., & Sharpe, C. (2017). Teachers' views of students' mathematical capabilities: A challenge for accomplishing ambitious reform. *Teachers College Record, 119*(7), 1-43.

Jaworski, B. (1994). *Investigating mathematics teaching: A constructivist enquiry.* London: Falmer Press.

Kazemi, E., & Franke, M. L. (2004). Teacher learning in mathematics: Using student work to promote collective inquiry. *Journal of Mathematics Teacher Education, 7*(3), 203–235.

Lefstein, A., Louie, N., Segal, A., & Becher, A. (2020). Taking stock of research on teacher collaborative discourse: Theory and method in a nascent field. *Teaching and Teacher Education, 88*, 1–27.

Little, J. W. (2002). Professional community and the problem of high school reform. *International Journal of Educational Research, 37*(8), 693–714.

Louie, N. L. (2016). Tensions in equity- and reform-oriented learning in teachers' collaborative conversations. *Teaching and Teacher Education, 53*, 10–19.

Louie, N. L. (2017). The culture of exclusion in mathematics education and its persistence in equity-oriented teaching. *Journal for Research in Mathematics Education, 48*(5), 488–519.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(1), 4-15.

Sherin, M. G., & Van Es, E. A. (2009). Effects of video club participation on teachers' professional vision. *Journal of Teacher Education, 60*(1), 20–37.

Thanheiser, E. & Jansen, A. (2016). Inviting prospective teachers to share rough draft mathematical thinking. *Mathematics Teacher Educator, 4*(2), 145–163.

van Es, E. A., Tunney, J., Goldsmith, L., & Seago, N. (2014). A framework for the facilitation of teachers' analysis of video. *Journal of Teacher Education, 65*(4), 340–356.