Research Brief

Authors:
Borko, H. & Jarry-Shore, M.

Practical measures: Improving mathematics discussions with quick, actionable feedback

Background

In this brief research report, we describe what we learned from SFUSD coaches and teachers when asked to provide feedback on charts displaying data from the practical measures surveys.

Practical measures are brief student surveys designed to provide teachers with quick, actionable feedback on some aspect of their lessons (Jackson, Henrick, Cobb, Kochmanski, & Nieman, 2016; Yeager, Bryk, Muhich, Hausman, & Morales, 2013). The practical measures currently in use in SFUSD were designed to provide teachers with insight into the nature of the student discourse in their math lessons.

Two practical measures surveys are currently available for use by middle-school math teachers in SFUSD, one to be administered after students have worked in small groups and another to be administered following a whole-class mathematics discussion. At present, students' responses to these surveys can be displayed for teachers in digital pie and bar charts generated immediately after students have taken a practical measures survey online.

In the latter half of the 2016-2017 school year, the authors of this report asked SFUSD coaches and teachers for feedback on pie and bar

charts displaying data from the small-group discussion survey. Specifically, we conducted a focus group with a group of coaches and interviewed two teachers. In both the focus group and the interviews, we asked for feedback on six digital data-displays (appendix A) showing the actual responses of a class of SFUSD students who had responded to the small-group practical measures survey.

In what follows, we share some key findings from the focus group and interviews. We then discuss implications of these conversations and current work now underway to act on the feedback we received.

Findings

Information Available and Unavailable

When discussing the digital data-displays shared with them, both coaches and teachers spoke of information that was available in the displays. As an example, consider what one teacher had to say upon seeing a pie chart that was shared with her:

> It shows me that, say, out of my twenty-eight 6th-grade students, that twenty-one of them really did what I was hoping, right? That in fact they were talking to each other, they were learning from each other…they were trying to, they were asking each other to repeat things.

Although this teacher was looking at data from another teacher's classroom, the preceding quote demonstrates that she was able to learn a fair bit about this other teacher's lesson just from looking at a simple pie chart.

On the other hand, both teachers and coaches also spoke about information that was not available in the displays we shared with them and that they would like to know. For example, they mentioned wanting to know about patterns in the responses of individual students. As one coach said when discussing the displays during the focus group:

> We had a similar question as like, 'who are the students?' And if it's the same five that are answering the certain questions a similar way, that's going to affect my instruction, or it's going to affect what I do next, my next steps.

Reactions to the Data

In both the focus group and interviews, coaches and teachers spoke of how teachers might react to the data depicted in the displays. In one interview, a teacher described how she would be happy to see her students respond to a practical measures survey as did the students whose responses were depicted in the displays. Specifically, upon seeing the data in one pie chart, this particular teacher said, "I'd also be over the moon if my students answered in this way."

Implications for Practice

In looking at the data displays, several teachers and coaches spoke not only of what a display revealed, but what they would want to do or change in their teaching/coaching as a result. For example, upon seeing one pie chart, a teacher we interviewed commented:

> Well, that means I have more work to do to change their mentality. And also, maybe I should probe harder when I talk to them.

In the focus group, some coaches wondered what they would do if a teacher reacted positively to data inconsistent with the district's vision of powerful math classrooms. For example, one coach explained, "I've got a couple of teachers who, … they want kids to do it this way," referring to how some teachers might be pleased to see their students indicate that the point of a lesson was to follow the problem-solving steps shown to them by their teacher. Coaches discussed how such a situation, while worrisome, could present a great opening into an important coaching conversation with teachers.

Communicating Value

Finally, both the coaches and teachers we spoke with described how the colors used in a given display may or may not communicate value to the teachers seeing the display. As an example, one coach stated the following: "Um, blue means 'good', yellow 'okay', red 'bad.'" Another coach seconded this sentiment in stating that, "There's value communicated with the color…" On the other hand, a teacher we interviewed mentioned how the colors in one display did not communicate any value, stating, "Yeah, I don't think there are any particular connotations that go along with these colors, you know…"

Implications and Next Steps

Efforts are currently underway to incorporate the feedback we received from the teachers and coaches in our interviews and focus group. Specifically, members of the Stanford research team

and district personnel are presently looking into modifying the data displays so that teachers can more easily see how individual students responded to each of the survey questions. Additionally, we are working to modify the colors used in the displays so they are more neutral and don't inadvertently communicate evaluative messages to teachers upon seeing their data.
In more recent interviews the Stanford research team conducted with two district coaches, the coaches mentioned how they wished to highlight equity issues using the practical measures data displays. As such, efforts are now underway to modify the data displays so that both coaches and teachers can see how different groups of students – for example, English learners and native English speakers – respond to the surveys.

If you would like to learn more about the practical measures, please click on the following link, http://www.education.uw.edu/pmr2/, or contact the authors of this report: Hilda Borko (hildab@stanford.edu) and Michael Jarry-Shore (mjarrysh@stanford.edu).

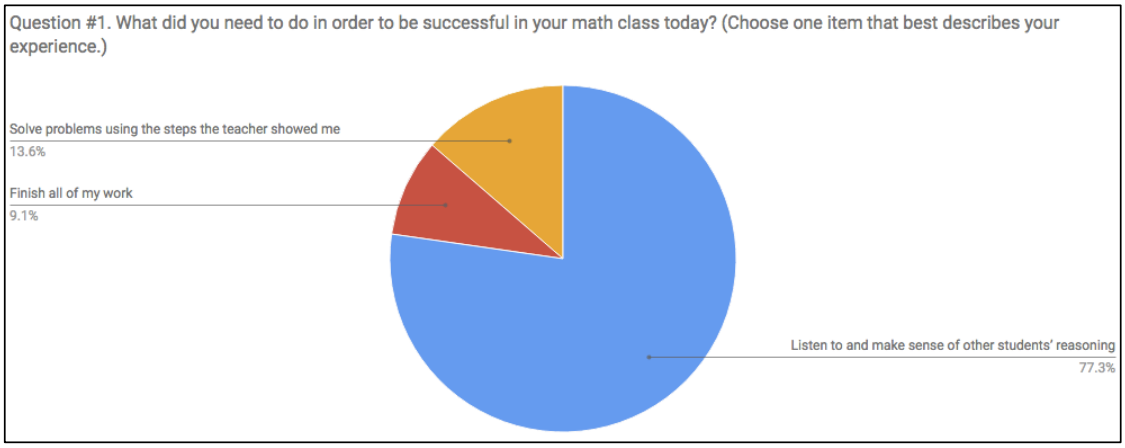
References

Jackson, K., Henrick, E., Cobb, P., Kochmanski, N., & Nieman, H. (2016). Practical measures to improve the quality of small-group and whole-class discussions [White Paper]. Retrieved August 8, 2017 from University of Washington: http://www.education.uw.edu/pmr/files/2016/09/White-Paper.pdf

Yeager, D., Bryk, A., Muhich, J., Hausman, H., & Morales, L. (2013). Practical measurement. Palo Alto, CA: Carnegie Foundation for the Advancement of Teaching.

Appendix A: Data Displays from the Focus Group and Interviews

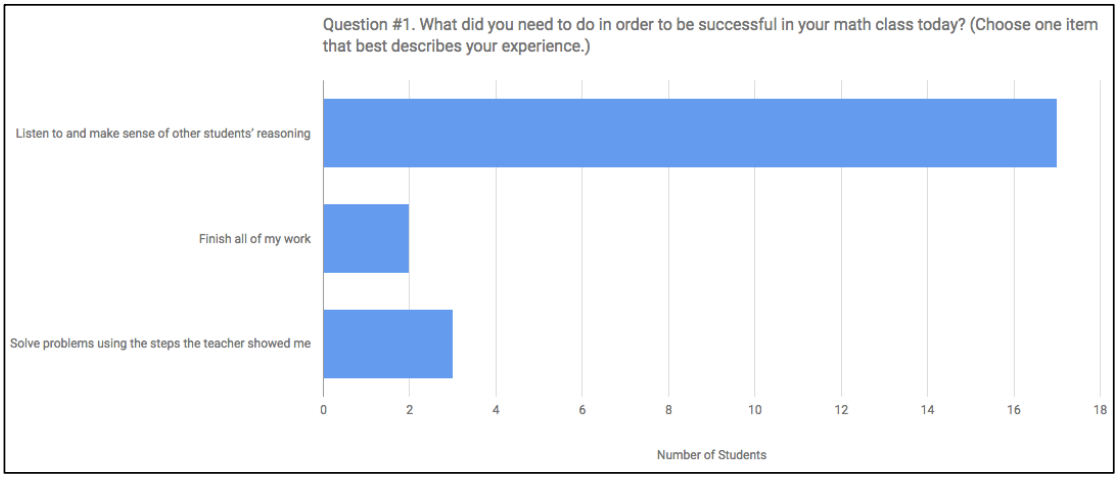
Small-Group Survey: Question #1 (Pie)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET

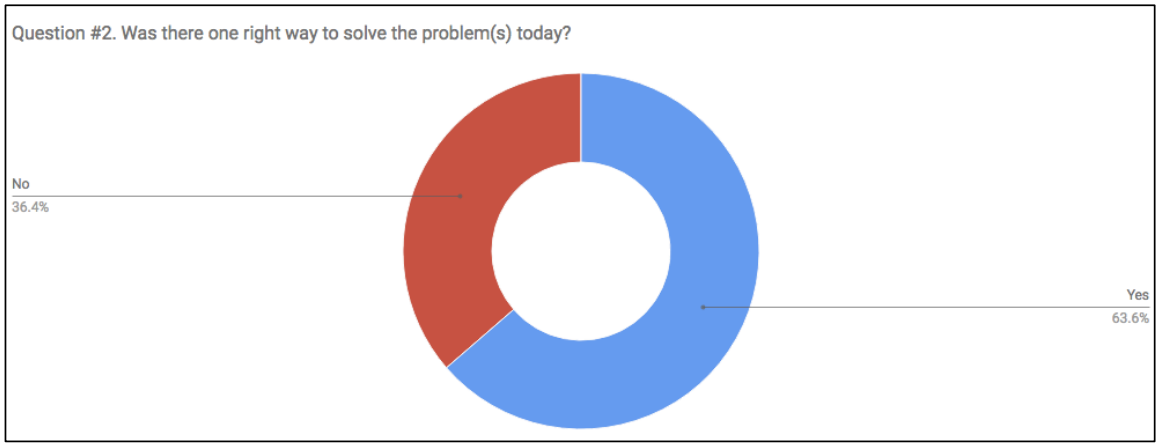
Small-Group Survey: Question #1 (Bar)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET

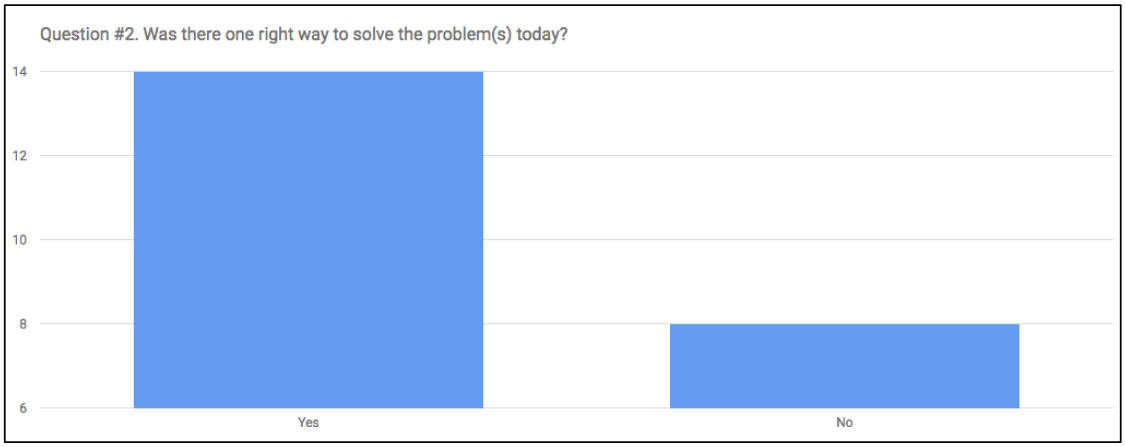
Small-Group Survey: Question #2 (Pie)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET

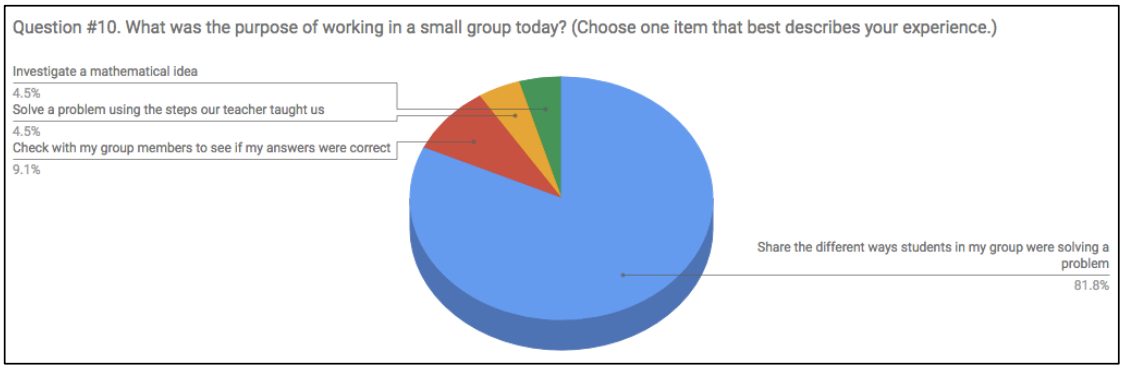
Small-Group Survey: Question #2 (Bar)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET

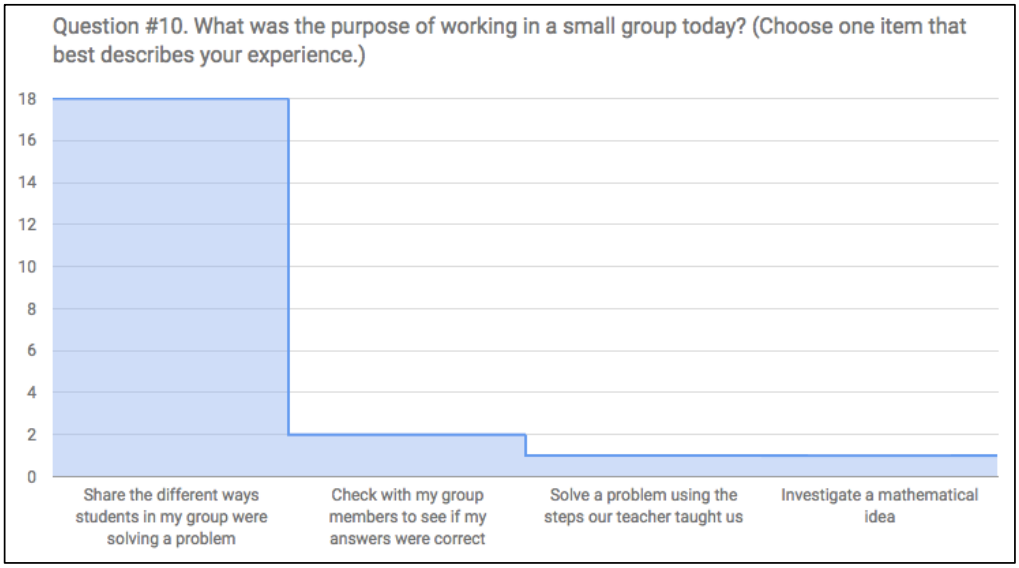
Small-Group Survey: Question #10 (Pie)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET

Small-Group Survey: Question #10 (Bar)



SFUSD SAN FRANCISCO PUBLIC SCHOOLS

Stanford | CSET