Enhancing Teacher Motivation for Professional Development

Scales to Measure Teachers' Beliefs
about Motivation-Related Features
and Outcomes of Prospective, Concurrent,
and Post-PD Interventions

Math and Science Partnership
Motivation Assessment Program II
(MSP-MAP II)
mspmap.org

Abstract

Most teachers participate in some form of professional development (PD) either voluntarily or contractually. The impact of PD depends on whether teachers are motivated and engaged in those experiences. The more PD is considered interesting, useful, and important, the more likely teachers will absorb new ideas, approaches, and skills and apply them to the benefit of their students. The program of research and development described here (a) identified the features of PD interventions that are related to teachers' motivation to participate and be engaged in PD and (b) constructed a series of scales to assess the extent that PD programs include those features. This report presents results of that effort for Math and Science Partnership programs with PD components.

MSP-MAP II

Stuart A. Karabenick (PI)
(skaraben@umich.edu)
Combined Program in Education and Psychology
University of Michigan

AnneMarie Conley (Co-PI)
(ampm@uci.edu)
Department of Education
University of California • Irvine

Martin L. Maehr (Co-PI)
(mlmaehr@umich.edu)
Combined Program in Education and Psychology
University of Michigan

Contributors

Arena Chang
Lawrence Cho
Colleen Kuusinen
Fani Lauermann
Kara Makara
Glen Marian
Loren Marulis
Katerina Schenke

— Please cite as —

Contents

Why Teacher Motivation for PD?

Professional development (PD), also referred to as professional learning, is considered an essential feature of programs to improve teacher quality. Although questions persist about its efficacy and sustainability (e.g., Avalos, 2011; Bullough, Jr., 2009; Joyce, Wolf, & Calhoun, 2009; Quint, 2011), most teachers participate in some form of PD either voluntarily, as an informal professional expectation or policy, or more often due to a contractual obligation.

There is general consensus regarding the features of PD programs that are likely to be successful in producing behavioral and attitudinal changes conducive to improved student learning and achievement (Darling-Hammond et al., 2009; Guskey, 2003; Hassel, 1999; Hawley & Valli, 1999; Loucks-Horsley et al., 2003; National Commission on Teaching and America's Future, 1996; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Weiss & Pasley, 2009).

These findings extend to various subject domains and instructional contexts as well, and focus on the changes in teacher knowledge and teacher practices that mediate the effects of interventions on student achievement (Avalos, 2011; Borko, 2004; Boyd et al., 2003; Heck et al., 2006; Joyce et al., 2009; Wayne et al., 2008; Weiss & Pasley, 2009; Zhang et al., 2008).

Virtually absent from the discourse surrounding teacher PD, however, are systematic analyses and empirical evidence regarding teachers' motivation to participate and be engaged in PD (designated here as PDM)—that is, an examination of PD from the teachers' perspective (Goldsmith & Schifter, 1997).

Tittle (2006), for instance, concluded that while "[t]here are references [in the literature] to motivation and affective (or dispositional) characteristics as important to teacher learning…[f]ew studies address these areas, areas that are likely to be important for assessments of long-term professional learning and development" (p. 976). Boyd et al. (2003) also echoed the call that went out over a decade ago for more attention to motivation: "You have to make every effort to get the teachers there and once you get them there, you have to make sure you have something of high quality that will encourage them to come back." Motivation was also one of Boyd et al.'s (2003) four key recommendations: "A primary challenge for large-scale professional development projects lies in attracting teachers and sustaining their involvement so that they can receive the full dose of professional development" (p. 112).

Even the evaluation of PD programs requires motivational considerations to the extent that motivation can result in differential rates of participation and engagement, and thus the potential for selection bias (Wayne et al., 2008). And yet, reviews of PD in math and science instruction (Avalos, 2011; Weiss & Pasley, 2009) have not explicitly taken teacher motivation into consideration.

In sum, motivational issues, while noted in passing (e.g., with regard to participation incentives or teacher confidence), remain a critical yet understudied precursor and consequence of teacher PD interventions. Fortunately, the recognized importance of PDM arises at a time of renewed interest in the application of contemporary motivation theory based on studying students to teacher motivation (Richardson, Karabenick, & Watt, 2014; Watt & Richardson, 2007, 2008). This emerging literature helps to understand, and to identify, the relevant features of PD that teachers are likely to find more motivating. Essential to that goal is the development of adequate assessment tools. Accordingly, MSP-MAP II was tasked with developing PDM-related instruments that MSPs (and others) could use for formative and summative, as well as for research purposes.

Determining Features of PD That Promote PDM

Based on results from studies of teachers recruited using national teacher panels from Qualtrics.com, the present report provides scales and items that are designed to assess the extent to which PD programs include features that teachers find more attractive and engaging, and that render them more likely to implement the practices promoted by those programs.

In the absence of prior evidence, we began by conducting foundational research to examine teachers' experiences and characteristics related to PDM. The first two studies (n = 552 and n = 507) were designed to yield information about the general level of teacher PDM and its association with PD features, contexts, and teacher characteristics. Teachers in Study 1 (http://mspmap.org/wp-content/uploads/2012/01/Teacher-PDM.pdf), for example, reported they were very positively motivated to participate in PD, and a majority indicated that PD was useful for improving their teaching practices. They were open to a variety of PD formats, especially those that included teacher participation. Furthermore, teachers' motivation to participate was directly related to their ratings of whether PD helped them with their teaching competence, and such outcomes as students' level of subject-matter understanding, interest, importance, motivation to perform on state tests, to attend class, and do homework.

Results of Study 2 (http://mspmap.org/wp-content/uploads/2013/10/2013PDreport1.pdf) indicated that teachers would want to participate in PD to the extent they expected participation to: improve their subject-matter knowledge, be enjoyable and fun, enhance their career, and not require too much time and effort. Teachers reported a preference for PD when other teachers in their school were participating and when their principal encouraged them to participate. The level of teacher PDM was directly related to all of these PD features.

Furthermore, teachers preferred PD formats consisting of a single workshop with teacher participation, a series of workshops with teacher participation, and PD delivered completely or partially online. Of these formats, the more that teachers were motivated to participate in PD the more they preferred a series of workshops with teacher participation. Less preferred were summer institutes, professional learning communities (PLCs), and lectures.

Subsequently, two studies (n = 214 and n = 200) that were specifically focused on scale and item development asked middle and high school teachers how certain features of PD did or would influence their level of PDM, and a third study (the results of which are presented here), based on a sample of elementary and secondary teachers (n = 82), was conducted to validate item formatting and psychometric adequacy.

Development of these instruments was informed by input from teachers involved in MSPs (e.g., TASEL-M: http://taselm.fullerton.edu/tasel_m_index.html), as well as based on prior research designed to determine more effective PD features (Penuel, Fishman, Yamaguchi, & Gallagher, 2007; http://files.eric.ed.gov/fulltext/ED486225.pdf) but which did not explicitly take PDM into consideration.

— Note —

Please see mspmap.org for assistance with the design and online collection of teacher data using the PDM scales and items described here.

Survey Versions

Recognizing that the appropriate assessment of PDM may vary for different stages of the PD process, we provide assessment versions designed for use before (prospective), during (concurrent), immediately after (immediate post), and delayed post-PD (follow-up). Depending on the circumstances, all versions can have both formative and summative value.

The **Prospective PD** version yields information about how teachers view an upcoming PD program. In this version of the survey, an option is included to accommodate teachers who believe they have insufficient knowledge to describe or judge the effects of the PD. Note that this version can also be used, with appropriate alterations, to assess teachers' preferred PD features.

The **Concurrent PD** version is formatted to be used during PD; for example, during a series of workshops or an extended professional learning community PD program.

The **Immediate post-PD** version is similar to the concurrent version, with appropriate alterations for teachers to provide evidence related to their just-completed PD.

The **Delayed post-PD** version is similar to the immediate version but formatted to assess the longer-term impact of their participation.

Surveys consist of three sections. Depending on their needs, MSPs may select to include all or only some of the scales and items provided. In addition to the scales, single global items are provided:

- Motivation to participate in PD (PDM)

- Effect of PD on motivation to participate in future PD

- Recommend that other teachers participate in that PD

- Extent that suggested practices were implemented following the PD or are likely to be implemented

Detailed information for scales and items are included in the following appendices:

A: Example Survey (Post-PD Version)

B: Example Survey Items and Scale Psychometric Analyses

C: Example PD Feature Correlations with PDM and Other Indicators

D: Items for Prospective, Concurrent, and Post-PD Scale Versions

Delayed Post-PD Example Results

For illustrative purposes, the following selective results are based on a national Qualtrics panel of full-time K-12 teachers, one-third in primary and two-thirds in secondary grades, including 20% math and 17% science teachers who reported having participated in PD during the prior year. Below is a summary of the scales and examples of scale items. Appendix B provides a detailed analysis of results for the items and scales in this study.

PD Features: Scales and Examples

PD Feature	Items	Example
Extrinsic Contingencies	3	Included a stipend
Administrative Support	4	Your principal actively supports PD attendance even it was not required/mandated
Peer Influence	4	Urged you to participate in the PD
Presenters	3	Have nationally recognized reputations
Autonomy	3	Allowed teachers to adjust the PD schedule to meet their needs
Teacher Involvement in PD Planning	4	Determining the PD format
Coherence	4	Based on what you had learned in earlier professional development experiences
Content Focus	4	New ways of teaching the subject(s) you teach
Mastery	4	Make a special effort to recognize teachers' individual progress
Professional Networking	4	Include opportunities for teachers attending PD to discuss the material presented with each other
Active Teacher PD	5	Include demonstrations of teaching techniques
Feedback	4	Coaching or mentoring in the classroom
Implementation	4	Include examples of how to implement the program's goals and ideas

Teacher Reported Outcomes

Outcome	Items	Example
Teachers changed practices	4	The curriculum content of the subject(s) you teach
Teachers increased teaching motivation	6	Interest in and enjoyment of teaching your subject(s)
Teachers increased their engagement in teaching	4	Thinking about teaching and learning more often
Students increased motivation	4	Interest in the subject(s) you teach
Students increased engagement	4	Think about their studies more often
Students increased use of learning strategies	3	Seek help when they need it
Increases in student achievement (grades and standardized test scores)	2	Increase their test scores in the subject(s) you teach

Consistent with results from other samples (see mspmap.org), as shown in Figure 1, teachers in general reported a moderate to high level of PDM, with 53% indicating being very or extremely motivated. Although sample bias cannot be completely ruled out, the nature of Qualtrics panels render it unlikely that the distribution is the result of self-selection.
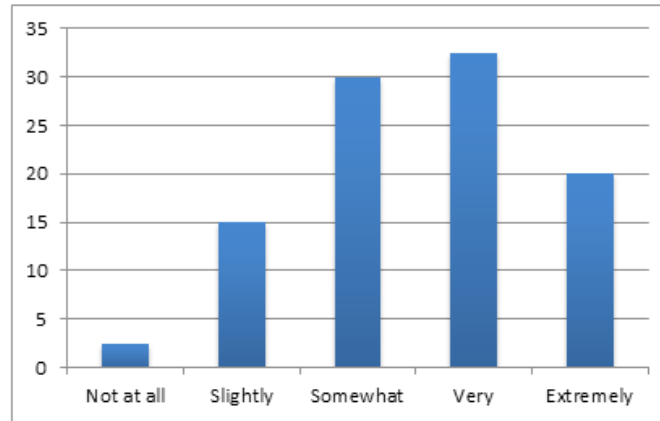

Figure 1. Distribution (%) of Teacher Motivation for Professional Development

Figure 2 describes the extent to which teachers reported the presence of each PD feature (scale from 1 = Not at all true — 5 = Completely true).
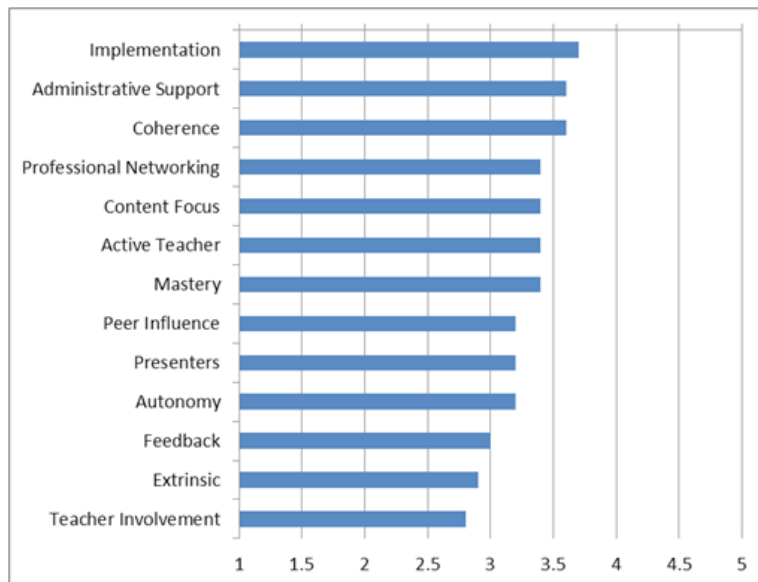

Figure 2. Teacher rated presence of PD Features

Table 1 presents the correlations between teachers' ratings of PD features and their ratings on the PDM continuum shown in Figure 1. In general, the more teachers reported that the features assessed described the PD in which they participated, the more motivated they were to participate (all r-values $p < .001$). Although the differences between the correlations are not large, the strongest associations involved features of the presenters, the extent that the PD content was consistent with their previous PD experiences, and the extent of autonomy they had over their PD experiences.

Table 1. Correlation of PD Features and PDM

PD Features Scales	Correlation (r) with PDM
Extrinsic Contingencies	.48
Administrative Support	.36
Peer Influence	.56
Presenters	.66
Autonomy	.61
Teacher Involvement	.45
Coherence	.62
Content Focus	.54
Mastery	.55
Professional Networking	.43
Active Teacher PD	.52
Feedback	.53
Implementation	.48
Mean of PD Features Scales	**.63**

Tables 2 and 3 present correlations between teacher-reported outcomes for themselves and their students. All are statistically significant ($p < .001$), which indicates the extent that PDM played a role in those changes.

Table 2. Correlation of Outcomes and PDM

Teacher Outcome	Correlation (r) with PDM
Teacher Instruction Changes	.45
Increased Teacher Efficacy	.63
Increased Teacher Engagement	.56
Mean of Scales	**.59**

Table 3. Correlation of PD Features and PDM

Teacher-Rated Student Increases	Correlation (r) with PDM
Motivation	.60
Engagement	.60
Learning Strategy Use	.57
Achievement	.49
Mean of Scales	**.62**

References

Avalos, B. (2011). Teacher professional development in *Teaching and Teacher Education* over ten years. *Teaching and Teacher Education, 27*(1), 10–20. doi: 10.1016/j.tate.2010.08.007

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3–15. doi: 10.3102/0013189X033008003

Boyd, S. E., Banilower, E. R., Pasley, J. D., & Weiss, I. R. (2003). *Progress and pitfalls: A cross-site look at local systemic change through teacher enhancement.* Chapel Hill, NC: Horizon Research, Inc.

Bullough, Jr., R. V. (2009). The continuing education of teachers: In-service training and workshops. In L. J. Saha & A. G. Dworkin (Eds.), *International handbook of research on teachers and teaching* (pp. 159–169). New York, NY: Springer. doi: 10.1007/978-0-387-73317-3_10

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). State of the profession: Study measures status of professional development. *Journal of Staff Development, 30*(2), 42–44.

Goldsmith, L. T., & Schifter, D. (1997). Understanding teachers in transition: Characteristics of a model for the development of mathematics teaching. In E. Fennema & B. S. Nelson (Eds.), *Mathematics teachers in transition* (pp. 19–54). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Guskey, T. R. (2003). What makes professional development effective? *Phi Delta Kappan, 84*(10), 748–750.

Hassel, E. (1999). *Professional development: Learning from the best. A toolkit for schools and districts based on the National Awards Program for Model Professional Development.* Oak Brook, IL: North Central Regional Educational Laboratory.

Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 127–150). Hoboken, NJ: Wiley.

Heck, D. J., Rosenberg, S. L., & Crawford, R. A. (2006). *LSC teacher questionnaire study: Indicators of systemic change. A longitudinal analysis of data collected between 1997 and 2006.* Chapel Hill, NC: Horizon Research, Inc.

Joyce, B., Wolf, J., & Calhoun, E. (2009). The lifelong learning issue: The knowledge base under professional development? In L. J. Saha & A. G. Dworkin (Eds.), *International handbook of research on teachers and teaching* (pp. 183–213). New York, NY: Springer. doi: 10.1007/978-0-387-73317-3_12

Loucks-Horsley, S. (2003). Curriculum development and adaptation. In S. Loucks-Horsley, K. E. Stiles, S. Mundry, & P. W. Hewson (Eds.), *Designing professional development for teachers of science and mathematics* (pp. 79–85). Thousands Oaks, CA: SAGE Publications.

National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future.* New York, NY: National Commission on Teaching and America's Future, Teachers College, Columbia University.

Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal, 44*(4), 921–958. doi: 10.3102/0002831207308221

Quint, J. (2011). *Professional development for teachers: What two rigorous studies tell us.* MDRC Report.

Richardson, P. W., Karabenick, S. A., & Watt, H. M. G. (2014). *Teacher motivation: Theory and practice.* London, UK: Routledge.

Tittle, C. K. (2006). Assessment of teacher learning and development. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology, volume 41* (pp. 953–980). Mahwah, NJ: Erlbaum.

Watt, H. M. G., & Richardson, P. W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice scale. *Journal of Experimental Education, 75*(3), 167–202. doi: 10.3200/JEXE.75.3.167-202

Watt, H. M. G., & Richardson, P. W. (2008). Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers. *Learning and Instruction, 18*(5), 408–428. doi: 10.1016/j.learninstruc.2008.06.002

Wayne, A. J., Yoon, K. S., Zhu, P., Cronen, S., Garet, M. S. (2008). Experimenting with teacher professional development: Motives and methods. *Educational Researcher, 37*(8), 469–479. doi: 10.3102/0013189X08327154

Weiss, I. R., & Pasley, J. D. (2009). *Mathematics and science for a change: How to design, implement, and sustain high-quality professional development.* Portsmouth, NH: Heinemann Educational Books.

Zhang, J., Hong, H.-Y., Teo, C. Scardamalia, M., & Morley, E. (2008, March). *"Constantly going deeper": Knowledge building innovation in an elementary professional community.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Appendix A:

Example Survey (Post-PD Version)

West Central High School Teacher Feedback About This Year's Professional Development

You recently participated in the New Learning Paradigm PD. This anonymous survey is designed to learn about your experiences in that activity and its possible impact on your teaching and students. Please respond as best you can to each item.

How motivated were you to participate in that PD?

- Not at all
- Slightly
- Somewhat
- Very
- Extremely

How much did your participation in that PD affect your motivation to participate in PD in the future?

- Much less motivated
- Somewhat less motivated
- No change
- Somewhat more motivated
- Much more motivated

Please indicate whether you recommended that other teachers participate in that PD.

- Strongly recommended they not attend
- Recommended they not attend
- No recommendation
- Recommended they attend
- Strongly recommended they attend

To what extent did you implement the instructional practices suggested by that PD?

- None of the practices
- A few of the practices
- Some of the practices
- Many of the practices
- Most of the practices
- All of the practices

	Not at all true	Slightly true	Somewhat true	Very true	Completely true
We would like to know your thoughts about the PD. Please do this by indicating the extent that each of the following was true. The PD you attended...					
Resulted in a pay bonus	☐	☐	☐	☐	☐
Included a stipend	☐	☐	☐	☐	☐
Fulfilled a district or school requirement	☐	☐	☐	☐	☐
To what extent is it true that...					
There was administrative support and encouragement for teachers to identify, document, and analyze their own PD needs	☐	☐	☐	☐	☐
The school administration provided the needed resources for you to implement the PD practices	☐	☐	☐	☐	☐
Your school administration encouraged you to use the practices that you learned in the PD	☐	☐	☐	☐	☐
Your principal actively supported PD attendance even if it was not required/mandated	☐	☐	☐	☐	☐
Other teachers...					
Told you they found the PD useful	☐	☐	☐	☐	☐
Enjoyed participating in the PD	☐	☐	☐	☐	☐
Urged you to participate in the PD	☐	☐	☐	☐	☐
Indicated they intended to change their teaching practices based on the PD recommendations	☐	☐	☐	☐	☐
The presenters...					
Had extensive knowledge of the subject(s) you teach	☐	☐	☐	☐	☐
Had nationally recognized reputations	☐	☐	☐	☐	☐
Were teachers of the subject(s) you teach	☐	☐	☐	☐	☐
The PD you attended...					
Allowed teachers to choose the topics they wanted to work on	☐	☐	☐	☐	☐
Allowed teachers to determine how much time to spend on each PD topic	☐	☐	☐	☐	☐
Allowed teachers to adjust the PD schedule to meet their needs	☐	☐	☐	☐	☐
Teachers were involved in...					
Selecting the PD program(s)	☐	☐	☐	☐	☐
Determining the PD content	☐	☐	☐	☐	☐
Determining the PD format	☐	☐	☐	☐	☐
Setting the PD goals and objectives	☐	☐	☐	☐	☐

	Not at all true	Slightly true	Somewhat true	Very true	Completely true
The PD content was...					
Consistent with your own goals for your professional development	☐	☐	☐	☐	☐
Consistent with existing ideas within your school or department related to teaching practices	☐	☐	☐	☐	☐
Based on what you had learned in earlier professional development experiences	☐	☐	☐	☐	☐
Focused on ways to merge new recommended practices with teachers' own teaching goals and practices	☐	☐	☐	☐	☐
The PD you attended included...					
Methods of teaching specific content of the subject(s) you teach	☐	☐	☐	☐	☐
New ways of teaching the subject(s) you teach	☐	☐	☐	☐	☐
Information about how students learn the content of the subject(s) you teach	☐	☐	☐	☐	☐
Ways to strengthen your knowledge of the subject(s) you teach	☐	☐	☐	☐	☐
The PD you attended...					
Emphasized the importance of teachers learning from their mistakes	☐	☐	☐	☐	☐
Gave teachers opportunities to think about how they have improved their skills or understanding	☐	☐	☐	☐	☐
Made a special effort to recognize teachers' individual progress	☐	☐	☐	☐	☐
Stressed to teachers the importance of understanding instructional concepts rather than the one right way to teach	☐	☐	☐	☐	☐
The PD you attended...					
Provided an opportunity for networking among your colleagues about how to teach your subject(s) in your school	☐	☐	☐	☐	☐
Facilitated the development of professional communication and contacts with teachers in other schools	☐	☐	☐	☐	☐
Offered opportunities for professional networking such as collaboration in planning with other teachers	☐	☐	☐	☐	☐
Included opportunities for teachers attending PD to discuss the material presented with each other	☐	☐	☐	☐	☐
The PD you attended included...					
Demonstrations of teaching techniques	☐	☐	☐	☐	☐
Large or small group discussions	☐	☐	☐	☐	☐
Lectures or presentations to colleagues	☐	☐	☐	☐	☐
Opportunities for teachers to practice strategies	☐	☐	☐	☐	☐
Time to explore, question, and debate new ideas about teaching your subject(s)	☐	☐	☐	☐	☐

	Not at all true	Slightly true	Somewhat true	Very true	Completely true
The PD you attended included...					
Coaching or mentoring in the classroom	☐	☐	☐	☐	☐
Coaches' observations of your teaching	☐	☐	☐	☐	☐
Opportunities for other PD participants to observe your teaching	☐	☐	☐	☐	☐
Practice under simulated conditions, with feedback	☐	☐	☐	☐	☐
The PD you attended...					
Included examples of how to implement the program's goals and ideas	☐	☐	☐	☐	☐
Focused on issues with implementing new recommended practices and new curricula	☐	☐	☐	☐	☐
Acknowledged how difficult it may be for teachers to change their approaches to instruction	☐	☐	☐	☐	☐
Acknowledged the challenges associated with implementing a new curriculum or practice	☐	☐	☐	☐	☐
Participation in the PD resulted in your changing…					
The curriculum content of the subject(s) you teach	☐	☐	☐	☐	☐
How cognitively challenging your classroom activities are	☐	☐	☐	☐	☐
The instructional methods you employ	☐	☐	☐	☐	☐
The types or mix of assessments you use to evaluate students	☐	☐	☐	☐	☐
Participation in the PD resulted in increasing your...					
Interest in and enjoyment of teaching your subject(s)	☐	☐	☐	☐	☐
Confidence in your ability to teach your subject(s)	☐	☐	☐	☐	☐
Belief in the importance of teaching your subject(s)	☐	☐	☐	☐	☐
Confidence in your ability to motivate students to learn your subject(s)	☐	☐	☐	☐	☐
Desire to learn more about your subject(s)	☐	☐	☐	☐	☐
Desire to learn more about how to teach your subject(s)	☐	☐	☐	☐	☐
Participation in the PD resulted in your…					
Thinking about teaching and learning more often	☐	☐	☐	☐	☐
Feeling more positive about teaching	☐	☐	☐	☐	☐
Spending more time working on improving your teaching	☐	☐	☐	☐	☐
Talking to other teachers about teaching and learning	☐	☐	☐	☐	☐

	Not at all true	Slightly true	Somewhat true	Very true	Completely true
As a consequence of any ways you changed your instruction due to the PD you attended, your students increased their...					
Interest in the subject(s) you teach	☐	☐	☐	☐	☐
Beliefs that the subject(s) you teach is/are important	☐	☐	☐	☐	☐
Beliefs that the subject(s) you teach is/are useful	☐	☐	☐	☐	☐
Confidence in their capability to succeed in the subject(s) you teach	☐	☐	☐	☐	☐
As a consequence of any ways you changed your instruction due to the PD you attended, your students...					
Think about their studies more often	☐	☐	☐	☐	☐
Feel more positive about their studies	☐	☐	☐	☐	☐
Spend more time working on their studies	☐	☐	☐	☐	☐
Talk to other students more often about school work	☐	☐	☐	☐	☐
As a consequence of any ways you changed your instruction due to the PD you attended, your students increased the extent to which they...					
Seek help when they need it	☐	☐	☐	☐	☐
Monitor their understanding of your subject(s) (e.g., what they know and don't know)	☐	☐	☐	☐	☐
Use better learning strategies in the subject(s) you teach	☐	☐	☐	☐	☐
As a consequence of any ways you changed your instruction due to the PD you attended, your students increased their...					
Test scores in the subject(s) you teach	☐	☐	☐	☐	☐
Scores on standardized tests in the subject(s) you teach	☐	☐	☐	☐	☐

Appendix B:

Example Survey Items and Scale

Psychometric Analyses

PDM Indicators

1. How motivated were you to participate in that PD?

2. How much did your participation in that PD affect your motivation to participate in PD in the future?

3. Please indicate whether you recommended that other teachers participate in that PD.

4. To what extent did you implement the instructional practices suggested by that PD?

Items	Mean	SD
1	3.5	1.1
2	3.3	1.0
3	3.5	1.1
4	3.5	1.3
Total	**3.5**	**0.9**

Item 1 Scale: 1 = "Not at all," 3 = "Somewhat," 5 = "Extremely"

Item 2 Scale: 1 = "Much less motivated," 3 = "No change," 5 = "Much more motivated"

Item 3 Scale: 1 = "Strongly recommended they not attend," 5 = "Strongly recommended they attend"

Item 4 Scale: 1 = "None of the practices," 6 = "All of the practices"

Extrinsic Contingencies

The PD you attended...

1. Resulted in a pay bonus

2. Included a stipend

3. Fulfilled a district or school requirement

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	2.2	1.5	.16
2	2.4	1.7	.15
3	3.9	1.2	.92
Total	**2.9**	**1.1**	**.65**

Factor Structure	
Eigen Value	% Variance Accounted For
1.87	62.3

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	PDM	Future PD	Implement	Recommend
1	.49	.31	.42	.10
2	.52	.25	.39	.15
3	.02	.10	.10	.10
Total	**.48**	**.30**	**.41**	**.15**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.53
Teaching Efficacy	.49
Teacher Engagement	.46
Student Motivation	.50
Student Engagement	.58
Student Strategy	.55
Student Achievement	.53

Administrative Support

To what extent is it true that...

1. There was administrative support and encouragement for teachers to identify, document, and analyze their own PD needs

2. The school administration provided the needed resources for you to implement the PD practices

3. Your school administration encouraged you to use the practices that you learned in the PD

4. Your principal actively supported PD attendance even if it was not required/mandated

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.3	1.4	.70
2	3.5	1.3	.76
3	3.6	1.2	.71
4	3.8	1.2	.84
Total	**3.6**	**1.0**	**.81**

Factor Structure	
Eigen Value	**% Variance Accounted For**
2.55	63.9

*Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.43	.24	.53	.22
2	.30	.31	.34	.19
3	.22	.01	.34	.08
4	.13	.23	.25	.16
Total	**.34**	**.25**	**.47**	**.21**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.62
Teaching Efficacy	.55
Teacher Engagement	.61
Student Motivation	.62
Student Engagement	.60
Student Strategy	.54
Student Achievement	.46

Peer Influence

Other teachers...

1. Told you they found the PD useful

2. Enjoyed participating in the PD

3. Urged you to participate in the PD

4. Indicated they intended to change their teaching practices based on the PD recommendations

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.4	1.2	0.89
2	3.3	1.3	0.90
3	3.1	1.4	0.90
4	3.2	1.3	0.90
Total	**3.2**	**1.2**	**.92**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.23	80.6

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	47	.29	.36	.28
2	.62	.36	.46	.35
3	.46	.36	.41	.28
4	.47	.25	.38	.23
Total	**.56**	**.35**	**.45**	**.32**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.60
Teaching Efficacy	.65
Teacher Engagement	.71
Student Motivation	.70
Student Engagement	.70
Student Strategy	.65
Student Achievement	.55

PD Presenters

The presenters...

1. Had extensive knowledge of the subject(s) you teach

2. Had nationally recognized reputations

3. Were teachers of the subject(s) you teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.6	1.1	.76
2	2.8	1.5	.76
3	3.1	1.5	.66
Total	**3.2**	**1.2**	**.80**

Factor Structure	
Eigen Value	% Variance Accounted For
2.17	72.3

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.50	.27	.29	.23
2	.54	.40	.53	.25
3	.62	.37	.49	.36
Total	**.66**	**.41**	**.52**	**.33**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.67
Teaching Efficacy	.76
Teacher Engagement	.70
Student Motivation	.73
Student Engagement	.75
Student Strategy	.68
Student Achievement	.65

Autonomy

The PD you attended...

1. Allowed teachers to choose the topics they wanted to work on

2. Allowed teachers to determine how much time to spend on each PD topic

3. Allowed teachers to adjust the PD schedule to meet their needs

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.2	1.4	.77
2	3.1	1.3	.67
3	3.1	1.5	.84
Total	**3.1**	**1.2**	**.83**

Factor Structure	
Eigen Value	% Variance Accounted For
2.24	74.8

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.47	.26	.38	.21
2	.66	.39	.51	.28
3	.46	.20	.33	.13
Total	**.61**	**.33**	**.47**	**.24**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.66
Teaching Efficacy	.76
Teacher Engagement	.74
Student Motivation	.75
Student Engagement	.81
Student Strategy	.79
Student Achievement	.76

Teacher Involvement

Teachers were involved in...

1. Selecting the PD program(s)

2. Determining the PD content

3. Determining the PD format

4. Setting the PD goals and objectives

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	2.9	1.4	.96
2	2.6	1.6	.94
3	2.7	1.5	.94
4	2.7	1.5	.93
Total	**2.7**	**1.4**	**.96**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.54	88.4

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.45	.15	.31	.02
2	.42	.25	.39	.14
3	.36	.16	.30	.09
4	.45	.24	.40	.09
Total	**.45**	**.22**	**.37**	**.09**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.62
Teaching Efficacy	.59
Teacher Engagement	.59
Student Motivation	.63
Student Engagement	.65
Student Strategy	.56
Student Achievement	.50

Coherence

The PD content was...

1. Consistent with your own goals for your professional development

2. Consistent with existing ideas within your school or department related to teaching practices

3. Based on what you had learned in earlier professional development experiences

4. Focused on ways to merge new recommended practices with teachers' own teaching goals and practices

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.6	1.1	.85
2	3.5	1.1	.89
3	3.5	1.2	.89
4	3.6	1.0	.85
Total	**3.6**	**1.0**	**.90**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.08	77.1

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.60	.31	.50	0.23
2	.57	.28	.46	0.28
3	.43	.23	.42	0.19
4	.59	.21	.41	0.29
Total	**.62**	**.29**	**.51**	**.28**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.73
Teaching Efficacy	.77
Teacher Engagement	.81
Student Motivation	.78
Student Engagement	.81
Student Strategy	.76
Student Achievement	.65

Content Focus

The PD you attended included...

1. Methods of teaching specific content of the subject(s) you teach

2. New ways of teaching the subject(s) you teach

3. Information about how students learn the content of the subject(s) you teach

4. Ways to strengthen your knowledge of the subject(s) you teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.5	1.3	.82
2	3.4	1.3	.86
3	3.4	1.3	.84
4	3.4	1.2	.88
Total	**3.4**	**1.1**	**.88**

Factor Structure	
Eigen Value	**% Variance Accounted For**
2.97	74.3

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.49	.26	.45	.27
2	.45	.40	.54	.41
3	.56	.30	.43	.31
4	.37	.38	.44	.36
Total	**.54**	**.39**	**.54**	**.39**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.79
Teaching Efficacy	.86
Teacher Engagement	.82
Student Motivation	.82
Student Engagement	.85
Student Strategy	.81
Student Achievement	.69

Mastery

The PD you attended...

1. Emphasized the importance of teachers learning from their mistakes

2. Gave teachers opportunities to think about how they have improved their skills or understanding

3. Made a special effort to recognize teachers' individual progress

4. Stressed to teachers the importance of understanding instructional concepts rather than the one right way to teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.3	1.3	.87
2	3.5	1.3	.83
3	3.2	1.3	.87
4	3.4	1.3	.89
Total	**3.4**	**1.1**	**.90**

Factor Structure	
Eigen Value	% Variance Accounted For
3.05	76.2

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.55	.41	.45	.27
2	.55	.29	.45	.29
3	.41	.18	.28	.18
4	.42	.16	.36	.26
Total	**.55**	**.30**	**.44**	**.29**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.76
Teaching Efficacy	.82
Teacher Engagement	.85
Student Motivation	.78
Student Engagement	.87
Student Strategy	.80
Student Achievement	.74

Professional Networking

The PD you attended...

1. Provided an opportunity for networking among your colleagues about how to teach your subject(s) in your school

2. Facilitated the development of professional communication and contacts with teachers in other schools

3. Offered opportunities for professional networking such as collaboration in planning with other teachers

4. Included opportunities for teachers attending PD to discuss the material presented with each other

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.5	1.3	.91
2	3.3	1.4	.92
3	3.3	1.2	.90
4	3.7	1.2	.91
Total	**3.5**	**1.2**	**.93**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.33	83.1

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.34	.22	.24	.22
2	.42	.29	.37	.32
3	.46	.37	.36	.30
4	.35	.39	.40	.40
Total	**.43**	**.35**	**.37**	**.34**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.73
Teaching Efficacy	.73
Teacher Engagement	.79
Student Motivation	.74
Student Engagement	.75
Student Strategy	.66
Student Achievement	.53

Active Teacher PD

The PD you attended included...

1. Demonstrations of teaching techniques

2. Large or small group discussions

3. Lectures or presentations to colleagues

4. Opportunities to practice strategies

5. Time to explore, question, and debate new ideas about teaching your subject(s)

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.2	1.3	.89
2	3.5	1.3	.91
3	3.4	1.3	.91
4	3.5	1.3	.89
5	3.5	1.3	.90
Total	**3.4**	**1.1**	**.92**

Factor Structure	
Eigen Value	% Variance Accounted For
3.77	75.4

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	PDM	Future PD	Implement	Recommend
1	.51	.32	.41	.28
2	.40	.21	.29	.17
3	.47	.25	.38	.35
4	.45	.28	.41	.25
5	.44	.34	.42	.25
Total	**.52**	**.32**	**.44**	**.30**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.65
Teaching Efficacy	.72
Teacher Engagement	.76
Student Motivation	.76
Student Engagement	.78
Student Strategy	.70
Student Achievement	.63

Feedback

The PD you attended included...

1. Coaching or mentoring in the classroom

2. Coaches' observations of your teaching

3. Opportunities for other PD participants to observe your teaching

4. Practice under simulated conditions, with feedback

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.1	1.6	.94
2	3.0	1.6	.93
3	2.9	1.6	.94
4	3.2	1.5	.95
Total	**3.0**	**1.4**	**.95**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.52	87.9

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.45	.29	.46	.23
2	.47	.27	.47	.21
3	.53	.35	.52	.24
4	.52	.35	.54	.30
Total	**.53**	**.34**	**.53**	**.26**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.72
Teaching Efficacy	.74
Teacher Engagement	.76
Student Motivation	.79
Student Engagement	.84
Student Strategy	.82
Student Achievement	.81

Implementation

The PD you attended...

1. Included examples of how to implement the program's goals and ideas

2. Focused on issues with implementing new recommended practices and new curricula

3. Acknowledged how difficult it may be for teachers to change their approaches to instruction

4. Acknowledged the challenges associated with implementing a new curriculum or practice

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.7	1.1	.89
2	3.6	1.2	.89
3	3.5	1.2	.86
4	3.7	1.2	.86
Total	**3.7**	**1.0**	**.91**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.12	77.9

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.54	.23	.42	.23
2	.36	.13	.26	.12
3	.37	.21	.35	.13
4	.44	.23	.31	.20
5	.54	.23	.42	.23
6	.36	.13	.26	.12
Total	**.48**	**.22**	**.38**	**.19**

Outcome Scales	Correlation with Outcomes
Teaching Changes	.56
Teaching Efficacy	.69
Teacher Engagement	.73
Student Motivation	.64
Student Engagement	.70
Student Strategy	.65
Student Achievement	.57

Teaching Changes

Participation in the PD resulted in your changing...

1. The curriculum content of the subject(s) you teach

2. How cognitively challenging your classroom activities are

3. The instructional methods you employ

4. The types or mix of assessments you use to evaluate students

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.2	1.4	.91
2	3.4	1.3	.85
3	3.3	1.2	.85
4	3.4	1.2	.86
Total	**3.3**	**1.1**	**.90**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.09	77.2

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.33	.26	.42	.19
2	.50	.36	.59	.26
3	.40	.39	.61	.42
4	.36	.32	.50	.23
Total	**.45**	**.37**	**.60**	**.31**

Teacher Efficacy Outcomes

Participation in the PD resulted in increasing your...

1. Interest in and enjoyment of teaching your subject(s)

2. Confidence in your ability to teach your subject(s)

3. Belief in the importance of teaching your subject(s)

4. Confidence in your ability to motivate students to learn your subject(s)

5. Desire to learn more about your subject(s)

6. Desire to learn more about how to teach your subject(s)

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.4	1.2	.94
2	3.5	1.2	.94
3	3.5	1.2	.95
4	3.5	1.2	.94
5	3.4	1.2	.95
6	3.4	1.2	.94
Total	**3.4**	**1.1**	**.95**

Factor Structure	
Eigen Value	% Variance Accounted For
4.86	81.0

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.59	.40	.56	.33
2	.62	.35	.55	.33
3	.50	.23	.41	.23
4	.60	.36	.54	.34
5	.47	.31	.48	.32
6	.62	.39	.53	.36
Total	**.63**	**.38**	**.57**	**.35**

Teaching Engagement Outcomes

Participation in the PD resulted in your...

1. Thinking about teaching and learning more often

2. Feeling more positive about teaching

3. Spending more time working on improving your teaching

4. Talking to other teachers about teaching your subject(s)

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.5	1.2	.86
2	3.5	1.2	.86
3	3.6	1.2	.86
4	3.6	1.1	.91
Total	**3.6**	**1.0**	**.90**

Factor Structure	
Eigen Value	% Variance Accounted For
3.09	77.3

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.47	.42	.57	.37
2	.58	.39	.47	.30
3	.56	.25	.47	.22
4	.34	.31	.32	.36
Total	**.56**	**.39**	**.52**	**.35**

Student Motivation Outcomes

As a consequence of any ways you changed your instruction due to the PD you attended, your students increased their...

1. Interest in the subject(s) you teach

2. Beliefs that the subject(s) you teach is/are important

3. Beliefs that the subject(s) you teach is/are useful

4. Confidence in their capability to succeed in the subject(s) you teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.4	1.3	.95
2	3.3	1.3	.95
3	3.2	1.3	.95
4	3.4	1.4	.95
Total	**3.3**	**1.3**	**.97**

Factor Structure	
Eigen Value	% Variance Accounted For
3.62	90.4

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	PDM	Future PD	Implement	Recommend
1	.56	.42	.59	.36
2	.55	.28	.53	.28
3	.57	.33	.54	.30
4	.60	.49	.65	.36
Total	**.60**	**.40**	**.61**	**.34**

Student Engagement Outcomes

As a consequence of any ways you changed your instruction due to the PD you attended, your students...

1. Think more often about the subject(s) you teach

2. Feel more positive about the subject(s) you teach

3. Spend more time working on the subject(s) you teach

4. Talk to other students more often about the subject(s) you teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.2	1.4	.94
2	3.4	1.3	.93
3	3.2	1.3	.94
4	3.2	1.4	.95
Total	**3.2**	**1.3**	**.96**

Factor Structure	
Eigen Value	**% Variance Accounted For**
3.53	88.1

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

	Correlations with Global Indicators			
Items	**PDM**	**Future PD**	**Implement**	**Recommend**
1	.58	.33	.54	.32
2	.63	.38	.55	.26
3	.54	.29	.54	.22
4	.52	.35	.56	.28
Total	**.60**	**.36**	**.59**	**.29**

Student Strategy Outcomes

As a consequence of any ways you changed your instruction due to the PD you attended, your students increased the extent to which they...

1. Seek help when they need it in your classes

2. Monitor their understanding of your subject(s) (e.g., what they know and don't know)

3. Use better learning strategies in the subject(s) you teach

Descriptive Statistics

Items	Mean*	SD	α with item deleted
1	3.4	1.3	.89
2	3.4	1.3	.89
3	3.4	1.3	.87
Total	**3.4**	**1.2**	**.92**

Factor Structure	
Eigen Value	% Variance Accounted For
2.58	86.0

* Scale: 1 = "Not at all true," 3 = "Somewhat true," 5 = "Completely true"

Correlations with Global Indicators				
Items	PDM	Future PD	Implement	Recommend
1	.51	.36	.55	.30
2	.54	.36	.59	.27
3	.55	.31	.53	.23
Total	**.57**	**.37**	**.60**	**.29**

Appendix C:

Example PD Feature Correlations with PDM and Other Indicators

Items	PDM	Future PD	Implement	Recommend
Extrinsic Contingencies				
Resulted in a pay bonus	.49	.31	.42	.10
Included a stipend	.52	.25	.39	.15
Fulfilled a district or school requirement	.02	.10	.10	.10
Administrative Support				
There was administrative support and encouragement for teachers to identify, document, and analyze their own PD needs	.43	.24	.53	.22
The school administration provided the needed resources for you to implement the PD practices	.30	.31	.34	.19
Your school administration encouraged you to use the practices that you learned in the PD	.22	.01	.34	.08
Your principal actively supported PD attendance even if it was not required/mandated	.13	.23	.25	.16
Peer Influence				
Told you they found the PD useful	.47	.29	.36	.28
Told you they enjoyed participating in the PD	.62	.36	.46	.35
Urged you to participate in the PD	.46	.36	.41	.28
Indicated they intended to change their teaching practices based on the PD recommendations	.47	.25	.38	.23
Presenters				
Had extensive knowledge of the subject(s) you teach	.50	.27	.29	.23
Had nationally recognized reputations	.54	.40	.53	.25
Were teachers of the subject(s) you teach	.62	.37	.49	.36
Autonomy				
Allowed teachers to choose the topics they want to work on	.47	.26	.38	.21
Allowed teachers to determine how much time to spend on each topic	.66	.39	.51	.28
Allowed teachers to adjust the PD schedule to meet their needs	.46	.20	.33	.13
Teacher Involvement in PD Planning				
Selecting the PD program(s)	.45	.15	.31	.02
Determining the PD content	.42	.25	.39	.14
Determining the PD format	.36	.16	.30	.09
Setting PD goals and objectives	.45	.24	.40	.09

Items	PDM	Future PD	Implement	Recommend
Coherence				
Consistent with your own goals for your professional development	.60	.31	.50	.23
Consistent with existing reform ideas within your school or department related to teaching practice	.57	.28	.46	.28
Based on what you had learned in earlier professional development experiences	.43	.23	.42	.19
Focused on ways to merge new recommended practices with teachers' own teaching goals and practices	.59	.21	.41	.29
Content Focus				
Methods of teaching specific content of the subject(s) you teach	.49	.26	.45	.27
New ways of teaching the subject(s) you teach	.45	.40	.54	.41
How students learn the content of the subject(s) you teach	.56	.30	.43	.31
Strengthening your knowledge of the subject(s) you teach	.37	.38	.44	.36
Mastery				
Emphasized the importance of teachers learning from their mistakes	.55	.41	.45	.27
Gave teachers opportunities to think about how they have improved their skills or understanding	.55	.29	.45	.29
Made a special effort to recognize teachers' individual progress	.41	.18	.28	.18
Stressed to teachers the importance of understanding instructional concepts rather than the one right way to teach	.42	.16	.36	.26
Professional Networking				
Provided an opportunity for networking among your colleagues about how to teach your subject(s) in your school	.34	.22	.24	.22
Facilitated the development of professional communication and contacts with other teachers in other schools	.42	.29	.37	.32
Offered opportunities for professional networking such as collaboration in planning with other teachers	.46	.37	.36	.30
Included opportunities for teachers attending PD to discuss the material presented with each other	.35	.39	.40	.40

Items	PDM	Future PD	Implement	Recommend
Active Teacher PD				
Included demonstrations of teaching techniques	.51	.32	.41	.28
Included group discussions	.40	.21	.29	.17
Included lectures or presentations to colleagues	.47	.25	.38	.35
Included opportunities for teachers to practice strategies	.45	.28	.41	.25
Included time to explore, question, and debate new ideas about teaching your subject(s)	.44	.34	.42	.25
Feedback				
Included coaching or mentoring in the classroom	.45	.29	.46	.23
Included coaches' observations of your teaching	.47	.27	.47	.21
Included opportunities for other PD participants to observe your teaching	.53	.35	.52	.24
Included role-playing to illustrate the suggested strategies	.52	.35	.54	.30
Implementation				
Included examples of how to implement the program's goals and ideas	.54	.23	.42	.23
Focused on issues with implementing new recommended practices and new curricula	.36	.13	.26	.12
Acknowledged how difficult it may be for teachers to change their approaches to instruction	.37	.21	.35	.13
Acknowledged the challenges associated with implementing a new curriculum or practice	.44	.23	.31	.20

Appendix D:

Items for Prospective, Concurrent, and Post-PD Scale Versions

PD Scales			
Prospective	**Concurrent**	**Immediate Post-PD**	**Delayed Post-PD**
Participating in PD will…	*Participating in PD…*	*Participating in PD…*	*The PD you attended…*

Extrinsic Contingencies

Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
Result in a pay bonus	Is resulting in a pay bonus	Resulted in a pay bonus	Resulted in a pay bonus
Include a stipend	Includes a stipend	Included a stipend	Included a stipend
Will fulfill a district or school requirement	Is fulfilling a district or school requirement	Fulfilled a district or school requirement	Fulfilled a district or school requirement
Based on what you know at this time, to what extent do you believe the following are true?	*To what extent are the following true?*	*To what extent are the following true?*	*To what extent are the following true?*

Administrative Support

Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
There will be administrative support and encouragement for teachers to identify, document, and analyze their own PD needs	There is administrative support and encouragement for teachers to identify, document, and analyze their own PD needs	There was administrative support and encouragement for teachers to identify, document, and analyze their own PD needs	There was administrative support and encouragement for teachers to identify, document, and analyze their own PD needs
The school administration will provide the needed resources for you to implement the PD practices	The school administration will provide the needed resources for you to implement the PD practices	The school administration will provide the needed resources for you to implement the PD practices	The school administration provided the needed resources for you to implement the PD practices
Your school administration will encourage you to use the practices that you learn in the PD	Your school administration is encouraging you to use the practices that you are learning in the PD	Your school administration encouraged you to use the practices that you learned in the PD	Your school administration encouraged you to use the practices that you learned in the PD
Your principal actively supports PD attendance even if it is not required/mandated	Your principal actively supports PD attendance even if it is not required/mandated	Your principal actively supported PD attendance even if it was not required/mandated	Your principal actively supported PD attendance even if it was not required/mandated

PD Scales

	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
Peer Influence	*Other teachers…*	*Other teachers…*	*Other teachers…*	*Other teachers…*
	Told you they would find the PD useful	Tell you they are finding the PD useful	Told you they found the PD useful	Told you they found the PD useful
	Told you they will enjoy participating in the PD	Tell you they enjoy participating in the PD	Told you they enjoyed participating in the PD	Told you they enjoyed participating in the PD
	Urge you to participate in the PD	Are urging you to participate in the PD	Urged you to participate in the PD	Urged you to participate in the PD
	Indicated they intend to change their teaching practices based on the PD recommendations	Indicate they intend to change their teaching practices based on the PD recommendations	Indicated they intended to change their teaching practices based on the PD recommendations	Indicated they intended to change their teaching practices based on the PD recommendations
Presenters	*The PD presenters will…*	*The PD presenters…*	*The PD presenters…*	*The PD presenters…*
	Have extensive knowledge of the subject(s) you teach	Have extensive knowledge of the subject(s) you teach	Had extensive knowledge of the subject(s) you teach	Had extensive knowledge of the subject(s) you teach
	Have nationally recognized reputations	Have nationally recognized reputations	Had nationally recognized reputations	Had nationally recognized reputations
	Be teachers of the subject(s) you teach	Are teachers of the subject(s) you teach	Were teachers of the subject(s) you teach	Were teachers of the subject(s) you teach
Autonomy	*The PD will…*	*The PD…*	*The PD you just attended…*	*The PD you attended…*
	Allow teachers to choose the topics they want to work on	Allows teachers to choose the topics they wanted to work on	Allowed teachers to choose the topics they wanted to work on	Allowed teachers to choose the topics they wanted to work on
	Allow teachers to determine how much time to spend on each PD topic	Allows teachers to determine how much time to spend on each PD topic	Allowed teachers to determine how much time to spend on each PD topic	Allowed teachers to determine how much time to spend on each PD topic
	Allow teachers to adjust the PD schedule to meet their needs	Allows teachers to adjust the PD schedule to meet their needs	Allowed teachers to adjust the PD schedule to meet their needs	Allowed teachers to adjust the PD schedule to meet their needs

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
Teacher Involvement in PD Planning	*Teachers are/will be involved in…*	*Teachers are/were involved in…*	*Teachers were involved in…*	*Teachers were involved in…*
	Selecting the PD program(s)	Selecting the PD program(s)	Selecting the PD program(s)	Selecting the PD program(s)
	Determining the PD content	Determining the PD content	Determining the PD content	Determining the PD content
	Determining the PD format	Determining the PD format	Determining the PD format	Determining the PD format
	Setting PD goals and objectives	Setting PD goals and objectives	Setting PD goals and objectives	Setting PD goals and objectives
Coherence	*The PD content will be…*	*The PD content is…*	*The PD content was…*	*The PD content was…*
	Consistent with your own goals for your professional development	Consistent with your own goals for your professional development	Consistent with your own goals for your professional development	Consistent with your own goals for your professional development
	Consistent with existing reform ideas within your school or department related to teaching practices	Consistent with existing reform ideas within your school or department related to teaching practices	Consistent with existing reform ideas within your school or department related to teaching practices	Consistent with existing reform ideas within your school or department related to teaching practices
	Based on what you had learned in earlier professional development experiences	Based on what you have learned in earlier professional development experiences	Based on what you have learned in earlier professional development experiences	Based on what you had learned in earlier professional development experiences
	Focused on ways to merge new recommended practices with teachers' own teaching goals and practices	Focused on ways to merge new recommended practices with teachers' own teaching goals and practices	Focused on ways to merge new recommended practices with teachers' own teaching goals and practices	Focused on ways to merge new recommended practices with teachers' own teaching goals and practices
Content Focus	*The PD will include…*	*The PD includes…*	*The PD you just attended included…*	*The PD you attended included…*
	Methods of teaching specific content of the subject(s) you teach	Methods of teaching specific content of the subject(s) you teach	Methods of teaching specific content of the subject(s) you teach	Methods of teaching specific content of the subject(s) you teach
	New ways of teaching the subject(s) you teach	New ways of teaching the subject(s) you teach	New ways of teaching the subject(s) you teach	New ways of teaching the subject(s) you teach
	How students learn the content of the subject(s) you teach	How students learn the content of the subject(s) you teach	How students learn the content of the subject(s) you teach	How students learn the content of the subject(s) you teach
	Strengthening your knowledge of the subject(s) you teach	Strengthening your knowledge of the subject(s) you teach	Strengthening your knowledge of the subject(s) you teach	Ways to strengthen your knowledge of the subject(s) you teach

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	The PD will…	*The PD…*	*The PD you just attended…*	*The PD you attended…*
Mastery	Emphasize the importance of teachers learning from their mistakes	Emphasizes the importance of teachers learning from their mistakes	Emphasized the importance of teachers learning from their mistakes	Emphasized the importance of teachers learning from their mistakes
	Give teachers opportunities to think about how they have improved their skills or understanding	Gives teachers opportunities to think about how they have improved their skills or understanding	Gave teachers opportunities to think about how they have improved their skills or understanding	Gave teachers opportunities to think about how they have improved their skills or understanding
	Make a special effort to recognize teachers' individual progress	Makes a special effort to recognize teachers' individual progress	Made a special effort to recognize teachers' individual progress	Made a special effort to recognize teachers' individual progress
	Stress to teachers the importance of understanding instructional concepts rather than the one right way to teach	Stresses to teachers the importance of understanding instructional concepts rather than the one right way to teach	Stressed to teachers the importance of understanding instructional concepts rather than the one right way to teach	Stressed to teachers the importance of understanding instructional concepts rather than the one right way to teach
	The PD will…	*The PD…*	*The PD you just attended…*	*The PD you attended…*
	Provide an opportunity for networking among your colleagues about how to teach your subject(s) in your school	Provides an opportunity for networking among your colleagues about how to teach your subject(s) in your school	Provided an opportunity for networking among your colleagues about how to teach your subject(s) in your school	Provided an opportunity for networking among your colleagues about how to teach your subject(s) in your school
	Facilitate the development of professional communication and contacts with teachers in other schools	Facilitates the development of professional communication and contacts with teachers in other schools	Facilitated the development of professional communication and contacts with teachers in other schools	Facilitated the development of professional communication and contacts with teachers in other schools
Professional Networking	Offer opportunities for professional networking such as collaboration in planning with other teachers	Offers opportunities for professional networking such as collaboration in planning with other teachers	Offered opportunities for professional networking such as collaboration in planning with other teachers	Offered opportunities for professional networking such as collaboration in planning with other teachers
	Include opportunities for teachers attending PD to discuss the material presented with each other	Includes opportunities for teachers attending PD to discuss the material presented with each other	Included opportunities for teachers attending PD to discuss the material presented with each other	Included opportunities for teachers attending PD to discuss the material presented with each other

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	The PD will include…	*The PD includes…*	*The PD you just attended included…*	*The PD you attended included…*
Active Teacher PD	Demonstrations of teaching techniques	Demonstrations of teaching techniques	Demonstrations of teaching techniques	Demonstrations of teaching techniques
	Large or small group discussions	Large or small group discussions	Large or small group discussions	Large or small group discussions
	Lectures or presentations to colleagues	Lectures or presentations to colleagues	Lectures or presentations to colleagues	Lectures or presentations to colleagues
	Opportunities for teachers to practice strategies	Opportunities for teachers to practice strategies	Opportunities for teachers to practice strategies	Opportunities for teachers to practice strategies
	Time to explore, question, and debate new ideas about teaching your subject(s)	Time to explore, question, and debate new ideas about teaching your subject(s)	Time to explore, question, and debate new ideas about teaching your subject(s)	Time to explore, question, and debate new ideas about teaching your subject(s)
Feedback	*The PD will include…*	*The PD includes…*	*The PD you just attended included…*	*The PD you attended included…*
	Coaching or mentoring in the classroom	Coaching or mentoring in the classroom	Coaching or mentoring in the classroom	Coaching or mentoring in the classroom
	Coaches' observations of your teaching	Coaches' observations of your teaching	Coaches' observations of your teaching	Coaches' observations of your teaching
	Opportunities for other PD participants to observe your teaching	Opportunities for other PD participants to observe your teaching	Opportunities for other PD participants to observe your teaching	Opportunities for other PD participants to observe your teaching
	Practice under simulated conditions, with feedback	Practice under simulated conditions, with feedback	Practice under simulated conditions, with feedback	Practice under simulated conditions, with feedback

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	The PD will...	*The PD you are attending...*	*The PD you just attended...*	*The PD you attended...*
Implementation	Include examples of how to implement the program's goals and ideas	Includes examples of how to implement the program's goals and ideas	Included examples of how to implement the program's goals and ideas	Included examples of how to implement the program's goals and ideas
	Focus on issues with implementing new recommended practices and new curricula	Focuses on issues with implementing new recommended practices and new curricula	Focused on issues with implementing new recommended practices and new curricula	Focused on issues with implementing new recommended practices and new curricula
	Acknowledge how difficult it may be for teachers to change their approaches to instruction	Acknowledges how difficult it may be for teachers to change their approaches to instruction	Acknowledged how difficult it may be for teachers to change their approaches to instruction	Acknowledged how difficult it may be for teachers to change their approaches to instruction
	Acknowledge the challenges associated with implementing a new curriculum or practice	Acknowledges the challenges associated with implementing a new curriculum or practice	Acknowledged the challenges associated with implementing a new curriculum or practice	Acknowledged the challenges associated with implementing a new curriculum or practice
	Outcome Scales			
	The PD will change...	*The PD you are attending is likely to change...*	*The PD you attended resulted in your changing...*	*The PD you attended resulted in your changing...*
Teacher Changes	The curriculum content of the subject(s) you teach	The curriculum content of the subject(s) you teach	The curriculum content of the subject(s) you teach	The curriculum content of the subject(s) you teach
	How cognitively challenging your classroom activities are	How cognitively challenging your classroom activities are	How cognitively challenging your classroom activities are	How cognitively challenging your classroom activities are
	The instructional methods you employ	The instructional methods you employ	The instructional methods you employ	The instructional methods you employ
	The types or mix of assessments you use to evaluate students	The types or mix of assessments you use to evaluate students	The types or mix of assessments you use to evaluate students	The types or mix of assessments you use to evaluate students

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	Participation in the PD will result in increasing your…	*Participation in the PD is increasing your…*	*Participation in the PD resulted in increasing your…*	*Participation in the PD resulted in increasing your…*
	Interest in and enjoyment of teaching your subject(s)	Interest in and enjoyment of teaching your subject(s)	Interest in and enjoyment of teaching your subject(s)	Interest in and enjoyment of teaching your subject(s)
	Confidence in your ability to teach your subject(s)	Confidence in your ability to teach your subject(s)	Confidence in your ability to teach your subject(s)	Confidence in your ability to teach your subject(s)
Effect on Teaching Motivation	Belief in the importance of teaching your subject(s)	Belief in the importance of teaching your subject(s)	Belief in the importance of teaching your subject(s)	Belief in the importance of teaching your subject(s)
	Confidence in your ability to motivate students to learn your subject(s)	Confidence in your ability to motivate students to learn your subject(s)	Confidence in your ability to motivate students to learn your subject(s)	Confidence in your ability to motivate students to learn your subject(s)
	Desire to learn more about your subject(s)	Desire to learn more about your subject(s)	Desire to learn more about your subject(s)	Desire to learn more about your subject(s)
	Desire to learn more about how to teach your subject(s)	Desire to learn more about how to teach your subject(s)	Desire to learn more about how to teach your subject(s)	Desire to learn more about how to teach your subject(s)
	Participation in the PD will result in your…	*Participation in the PD is resulting in your…*	*Participation in the PD resulted in your…*	*Participation in the PD resulted in your…*
	Thinking about teaching and learning more often	Thinking about teaching and learning more often	Thinking about teaching and learning more often	Thinking about teaching and learning more often
Teacher Engagement	Feeling more positive about teaching	Feeling more positive about teaching	Feeling more positive about teaching	Feeling more positive about teaching
	Spending more time working on improving your teaching	Spending more time working on improving your teaching	Spending more time working on improving your teaching	Spending more time working on improving your teaching
	Talking to other teachers about teaching and learning	Talking to other teachers about teaching and learning	Talking to other teachers about teaching and learning	Talking to other teachers about teaching and learning

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	As a consequence of any ways you change your instruction due to the PD you are about to attend, your students will be likely to increase their...	*As a consequence of any ways you change your instruction due to the PD you are attending, your students are likely to increase their...*	*As a consequence of any ways you change your instruction due to the PD you just attended, your students are likely to increase their...*	*As a consequence of any ways you changed your instruction due to the PD you attended, your students increased their...*
Student Motivation	Interest in the subject(s) you teach	Interest in the subject(s) you teach	Interest in the subject(s) you teach	Interest in the subject(s) you teach
	Beliefs that the subject(s) you teach is/are important	Beliefs that the subject(s) you teach is/are important	Beliefs that the subject(s) you teach is/are important	Beliefs that the subject(s) you teach is/are important
	Beliefs that the subject(s) you teach is/are useful	Beliefs that the subject(s) you teach is/are useful	Beliefs that the subject(s) you teach is/are useful	Beliefs that the subject(s) you teach is/are useful
	Confidence in their capability to succeed in the subject(s) you teach	Confidence in their capability to succeed in the subject(s) you teach	Confidence in their capability to succeed in the subject(s) you teach	Confidence in their capability to succeed in the subject(s) you teach
	As a consequence of any ways you change your instruction due to the PD you are about to attend, your students will be likely to...	*As a consequence of any ways you change your instruction due to the PD you are attending, your students are likely to...*	*As a consequence of any ways you change your instruction due to the PD you just attended, your students are likely to...*	*As a consequence of any ways you changed your instruction due to the PD you attended, your students...*
Student Engagement	Think about their studies more often	Think about their studies more often	Think about their studies more often	Think about their studies more often
	Feel more positive about their studies	Feel more positive about their studies	Feel more positive about their studies	Feel more positive about their studies
	Spend more time working on their studies	Spend more time working on their studies	Spend more time working on their studies	Spend more time working on their studies
	Talk to other students about school work more often	Talk to other students about school work more often	Talk to other students about school work more often	Talk to other students about school work more often

	PD Scales			
	Prospective	Concurrent	Immediate Post-PD	Delayed Post-PD
	As a consequence of any ways you change your instruction due to the PD you are about to attend, your students are likely to increase the extent to which they...	*As a consequence of any ways you change your instruction due to the PD you are attending, your students are likely to increase the extent to which they...*	*As a consequence of any ways you change your instruction due to the PD you just attended, your students are likely to increase the extent to which they...*	*As a consequence of any ways you changed your instruction due to the PD you attended, your students increased the extent to which they...*
Student Strategy	Seek help when they need it	Seek help when they need it	Seek help when they need it	Seek help when they need it
	Monitor their understanding of your subject(s) (e.g., what they know and don't know)	Monitor their understanding of your subject(s) (e.g., what they know and don't know)	Monitor their understanding of your subject(s) (e.g., what they know and don't know)	Monitor their understanding of your subject(s) (e.g., what they know and don't know)
	Use better learning strategies in the subject(s) you teach	Use better learning strategies in the subject(s) you teach	Use better learning strategies in the subject(s) you teach	Use better learning strategies in the subject(s) you teach
	As a consequence of any ways you change your instruction due to the PD you are about to attend, your students are likely to increase their...	*As a consequence of any ways you change your instruction due to the PD you are attending, your students are likely to increase their...*	*As a consequence of any ways you change your instruction due to the PD you just attended, your students are likely to increase their...*	*As a consequence of any ways you changed your instruction due to the PD you attended, your students increased their...*
Student Achievement	Test scores in the subject(s) you teach	Test scores in the subject(s) you teach	Test scores in the subject(s) you teach	Test scores in the subject(s) you teach
	Scores on standardized tests in the subject(s) you teach	Scores on standardized tests in the subject(s) you teach	Scores on standardized tests in the subject(s) you teach	Scores on standardized tests in the subject(s) you teach