

RPDC Evaluation 2000 – 2001

EXECUTIVE SUMMARY

By Dr. David Hough, Project Investigator

Overview

Does teacher participation in professional development impact classroom practice and student learning? Data from the 2000 – 2001 Regional Professional Development Center program evaluation indicate that the answer to this question may be “yes.” Schools identified as “high” professional development sites, on average, had significantly higher student achievement as measured by the Missouri Assessment Program than did schools identified as “low” professional development sites.

Before examining the above finding more closely, however, it is necessary first to understand what constitutes a “high” or “low” professional development school and what relationship these designations have to the RPDCs. That is, what role did the RPDCs play or what contribution did they make relative to the school’s level of involvement in professional development.

Caution should be observed, as one makes generalizations about the relationship of student achievement and a school’s level of involvement in professional development. Not all schools designated at “high” PD sites outscored their “low” PD site counterparts. In addition, variables such as per pupil expenditures, socio-economic status, attendance rates, and school / district size (as well as other variables not identified, here) must be considered when making generalizations about the impact of professional development on student achievement.

Still, even with the above cautions, data indicate that a positive relationship between professional development and student achievement does, in fact, exist. Further, there is sufficient evidence to support the contention that Missouri’s RPDCs can (and in some cases do) impact some schools in such a way as to create a climate that leads to high levels of involvement in professional development. Research Report #801 *An Evaluation of Missouri’s RPDCs 2000 – 2001* (Hough, et al.) contains data and analyses that support findings presented in this executive summary.

Methodology

A matched pairs design was used to evaluate the impact of RPDC-related school level professional development on student achievement. RPDC directors, in collaboration with the evaluation team, identified 64 schools to be studied. Thirty-four schools were identified and labeled “high” professional development sites, and 34 schools with similar demographic characteristics were matched to this group and labeled “low” professional development sites. To validate the selection of sites, focus group interviews were conducted and survey questionnaires were administered to teachers. Two “high” PD and one “low” PD sites were eliminated from the study. Missouri Assessment Program (MAP) data were collected for each site. The “high” professional development schools constituted the quasi-experimental group; “low” professional development schools constituted the control group.

Table 1a displays demographic data aggregated by “high” and “low” groups for the 34 pairs (68 schools): 21 elementary pairs (42 schools), 7 middle school pairs (14 schools), and 6 high school pairs (12 schools) included in the matched pairs design. Table 1b displays these data aggregated by “high” and “low” groups for the 61 schools (33 “high” and 32 “low”) actually included in data analyses after three schools were eliminated from the study due to low response to the survey questionnaire.

Finding #1. “High vs. Low”

Validation of schools as either “high” or “low” professional development sites was determined by combining qualitative and quantitative methods. A school’s level of professional development involvement and the reasons for that involvement can generally be attributed either to outside influences from organizations such as the RPDCs or internal influences, most notably the building principal or district policy compelling teachers to participate.

Figure 1 demonstrates how a school’s level of involvement and sponsorship for professional development can be conceptualized on these two dimensions simultaneously. Some schools work closely with their RPDCs and have a high level of teacher involvement in PD activities sponsored by the RPDC. These schools are labeled “Effective Regional Support.” Some schools have developed their own support, either internally as site- or district-based initiatives in which significant numbers of teachers participate. These are labeled “Effective Internal Support,” even though they may have limited associations with their RPDC. [Note: Some schools first learned from their local RPDC how to develop effective plans / programs and then, subsequently, put these into place. This is actually one of the RPDC goals – to help districts build on-going, job-embedded, site-based, systemic professional development.] Some PD schools do not utilize their RPDCs at a significant level and do not have a significant number of teachers involved in PD. These schools are labeled “Ineffective Regional Support” and often try to “go it alone,” but lack the ability to provide effective opportunities for a significant number of their teachers, and therefore are “low” PD sites. Schools that have a “low” level of teacher involvement in school / district sponsored PD and almost no involvement with their RPDC are labeled “Ineffective Internal Support.” The limited amount of PD that does take place in these schools is not sponsored by the RPDC or any other external or internal organization.

Finding #2. Student Achievement

On average when aggregated, MAP scores in Communication Arts and in Mathematics are significantly higher for the 32 “high” professional development schools than for their 33 “low” professional development counterparts. However, in four of the nine RPDC regions, “low” professional development schools had higher MAP scores than their “high” professional development counterparts. Only when all schools across all regions are aggregated do “high” PD sites score significantly higher than “low” PD sites. Table 2 and Figure 2 display these data.

Table 3, along with Figures 3a and 3b display the above data by region. In Region 1, for example, the “High” PD schools scored higher in Communication Arts than did the “Low” PD schools; however, the “Low” PD schools scored higher in Mathematics. Only in Regions 2, 6, and 9 did “High” PD sites outscore “Low” PD sites in both Communication Arts and Mathematics. “Low” PD schools outscored “High” PD schools in both Communication Arts and Mathematics in Regions 5 and 7. In Regions 1 and 8, “High” PD schools outscored “Low” PD schools in Communications, but not in Mathematics. In Regions 3 and 4, “High” PD schools outscored “Low” PD schools in Mathematics, but not in Communication Arts.

Because the unit of analysis is the school, the small sample size precludes any within region comparisons or school level comparisons: elementary to elementary, middle to middle, or high school to high school. Still, the number of convoluting variables that are believed to impact student achievement, need to be considered with interpreting these data. It is reasonable to assume that a larger sample size could control for these complications associated with a matched pairs design.

Finding #3. School Demographics

Table 1a and 1b display data regarding the demographics of schools included in the matched –pairs design and the schools utilized in data analyses. Distinctions between “high” and “low” PD schools based on data collected

in this study are difficult to make with regard to school size, SES, geographic location, attendance rates, or per pupil expenditures. One of the most notable “high” PD schools was found to be in a very rural setting where per pupil expenditures were low and the percent of children on free or reduced lunch was very high. In turn, some “low” PD sites are found in more urban, affluent districts. However, this is not to say that important differences do not exist.

“High” PD elementary schools tend to be found in larger districts than their “Low” PD counterparts, and while average attendance is only slightly higher, the average percent of students on free / reduced lunch is significantly lower.

“High” PD middle schools tend to be slightly smaller in size, from smaller districts, with a significantly lower percentage of students receiving free / reduced lunches. “High” PD middle schools also spend almost \$1,000 more, per pupil, to educate students.

“High” PD high schools were larger in size, but from smaller districts than their “Low” PD counterparts. Their average attendance was significantly higher, and their percent of students receiving free / reduced lunches was significantly lower, by almost 15%.

Table 4 displays differences among school types (i.e. elementary, middle and high schools). The above differences are less pronounced when all school types (elementary, middle, and high school) are grouped together and the data are aggregated. And, close examination of individual matched pairs yields no significant differences on any of the demographic characteristics studied. Only when these data are examined across districts / regions are inconsistencies between the “High” and “Low” schools found. Therefore, comparisons between individual pairs are most appropriate. Regional and state-wide groupings provide less stable comparisons, due to the small sample size.

Finding #4. Teacher Involvement

Missouri school teachers have become increasingly more involved in professional development over the last four years. Many “High” PD schools first learned about the basic principals of effective professional development from their local RPDC. Then, over the last four years have become more self-sustaining. Table 5 shows data indicating teachers’ involvement in PD over the last four years disaggregated by “High” and “Low” PD involvement.

As discussed under finding #1 above, some schools learned from their local RPDC how to develop and implement effective professional development programs, and then gradually moved toward systemic programs sponsored by the school or district. This, ironically, is one of the RPDC goals: to help schools become self-sustaining professional development organizations.

Almost 85% of all teachers surveyed had participated in an average of 12 school-sponsored professional development activities over the last four years. Just under 58% had participated in an average of 5 RPDC-sponsored professional development activities over the same period of time. Teachers in “High” PD schools attended a significantly greater number of school-sponsored professional development activities ($n = 11.77$) than did teachers in “Low” professional development schools ($n = 9.40$). The differences in RPDC sponsored activities attended by respondents did not differ significantly [(“High” = 5.27) v. (“Low” = 4.73)] over the last four years.

Teachers in “High” PD schools contacted their local RPDC almost twice as often as did teachers in “Low” PD schools. While “High” PD schools are no more likely to participate in MAP training than are “Low” PD schools, they are much more likely to utilize STARR teachers (21% more) and/or be involved with a whole school reform initiative (9% more) than are “Low” PD schools.

Finding #5. Teacher Traits

Educators most likely to be involved in professional development activities are female elementary teachers

holding a master's degree (or higher) with 14 or more years' teaching experience. Differences between "High" and "Low" professional development sites with regard to these variables were not found to be significant (see Tables & Figures 6, 7, 8).

Those involved in professional development in schools identified as "High" professional development sites tended to attend more school sponsored activities ($M = 11.77$) than did individuals in schools identified as "Low" professional development sites ($M = 9.40$). In addition the former cohort tended to make more inquiries, on average, to their local RPDC office ($M = 6.87$) than did the latter cohort ($M = 3.94$). There was virtually no difference between the two groups in terms of their participation in RPDC sponsored activities [("High" = 5.25) ("Low" = 4.73)]

Policy Implications: The Seven Professional Development [sic] Habits of Highly Effective Schools

"High" PD schools tend to 1) have support for professional development from the school's leadership, 2) solicit RPDC help, 3) involve the majority of their teachers, 4) know what effective professional development is, 5) use data to focus on initiatives, 6) understand the "bigger picture" of local, state, and national trends including accountability for student achievement, and 7) actively seek out professional development opportunities. These seven characteristics are validated across focus groups and can be identified in much of the survey as data.

Using these seven traits (or habits) one can reasonably assume that RPDCs should consider a proactive approach to involving school leadership in PD activities to help create supportive site-level climates that would involve the entire school (#1, 2, 3). Additionally, RPDCs might consider inculcating basic principals of effective PD, including a focus on data to help schools identify specific initiatives (#4, 5), while providing research-based PD programs that are readily available and easily accessed by schools (#6, 7).

Table 1a. High and Low PD School Demographic Data Averages by Matched Pairs Design
Collected from DESE Missouri School Directory and School Finance Data for years
1999-2000^a and 2000-2001^b [All Schools in Survey Sample n= 68]

	School Type	# of Schools in Sample	Average # of Students Per School Site ^a	Average # of Students Per District ^a	Average % Attendance ^a	Average % Free/Reduced Lunch ^b	Average Per Pupil Expenditure ^a
High PD Sites	Elementary	21	377	5,076	95.07%	48.29%	\$7,679.15
	Middle	7	367	2,036	95.46%	28.33%	\$8,823.31
	High	6	711	4,475	92.37%	23.33%	\$8,076.09
	Total	34	434	4,344	94.67%	39.78%	\$7,984.76
Low PD Sites	Elementary	21	361	4,371	94.95%	50.03%	\$7,396.10
	Middle	7	394	3,131	94.90%	35.07%	\$7,936.89
	High	6	592	8,173	90.73%	38.11%	\$6,972.91
	Total	34	409	4,787	94.20%	44.84%	\$7,432.76

Table 1b. High and Low PD School Demographic Data Averages by Matched Pairs Design
Collected from DESE Missouri School Directory and School Finance Data for years
1999-2000^a and 2000-2001^b [Schools Used in Data Analyses n= 65]

	School Type	# of Schools in Sample	Average # of Students Per School Site ^a	Average # of Students Per District ^a	Average % Attendance ^a	Average % Free/Reduced Lunch ^b	Average Per Pupil Expenditure ^a
High PD Sites	Elementary	20	385	5,284	95.05%	49.19%	\$7,548.47
	Middle	7	367	2,036	95.46%	28.33%	\$8,823.31
	High	5	435	1,260	92.68%	26.11%	\$7,977.53
	Total	32	396	2,860	94.40%	34.54%	\$8,116.44
Low PD Sites	Elementary	20	373	4,578	95.05%	49.87%	\$7,299.49
	Middle	7	394	3,131	94.90%	35.07%	\$7,936.89
	High	6	592	8,173	90.73%	38.11%	\$6,972.91
	Total	33	453	5,294	93.56%	41.02%	\$7,403.10

Figure 1. Effective Level of Professional Development Support Model

		Level of Professional Development Involvement	
		High	Low
Sponsor	RPDC	Effective Regional Support	Ineffective Regional Support
	Other (i.e. School / District)	Effective Internal Support	Ineffective Internal Support

Table 2. ANOVA and Comparisons of Average Percent of Students Scoring Proficient and Above on the MAP Communication Arts and Mathematics Assessments Schools Identified by High / Low PD Involvement [All RPDC Regions Combined (n = 65 schools)]

RPDC Region	# of Schools	MAP Scores					
		Communication Arts	S. D.	(Minimum) (Maximum)	Mathematics	S. D.	(Minimum) (Maximum)
High Sites	E.S. = 20 M.S. = 7 H.S. = 5	29.92%	9.07	(14.58%) (47.01%)	28.96%	19.16	(1.52%) (72.22%)
Low Sites	E.S. = 20 M.S. = 7 H.S. = 6	28.12%	13.05	(2.11%) (59.09%)	24.29%	19.43	(0.00%) (61.70%)
(Differences)		(1.80%)	F = 6.108	p = .014	(4.67%)	F = 14.167	p = .000

Figure 2. Average MAP Scores of Students Scoring Proficient and Above in Communication Arts and Mathematics for Schools Identified as High/Low PD Sites [All RPDC Regions Combined (n = 65 schools)]

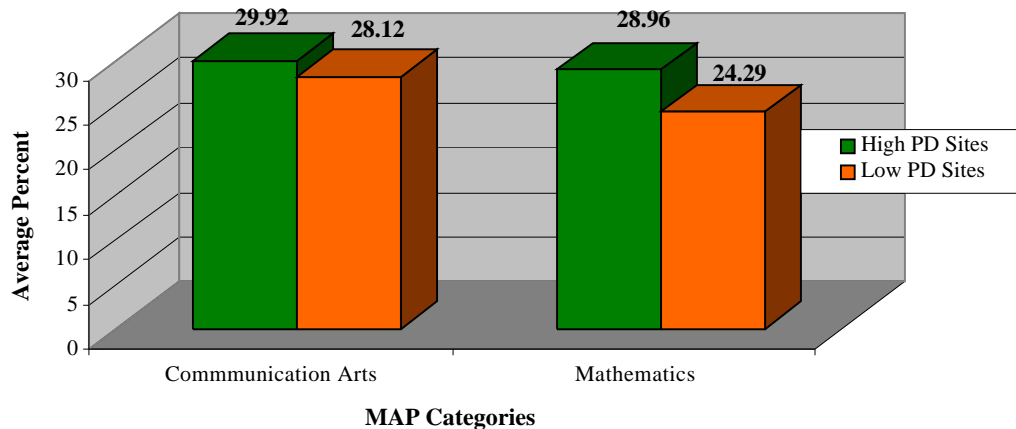


Table 3. Comparisons of Average Percent of Students Scoring Proficient and Above on the MAP Communication Arts and Mathematics Assessments for School Identified by High PD and Low PD School Sites and RPDC Region (n = 65 schools)

RPDC Region	# of Schools	MAP Scores					
		Communication Arts	S. D.	(Minimum) (Maximum)	Mathematics	S. D.	(Minimum) (Maximum)
1 SEMO	E.S. = 3 M.S. = 0 H.S. = 2	24.99%	6.15	(18.62%) (37.50%)	22.68%	17.89	(4.27%) (49.58%)
	E.S. = 3 M.S. = 0 H.S. = 2	23.49%	10.23	(6.20%) (40.00%)	28.57%	20.15	(0.00%) (45.68%)
	E.S. = 1 M.S. = 2 H.S. = 1	35.27%	8.08	(17.78%) (41.82%)	33.22%	16.87	(7.37%) (53.95%)
2 UMC	E.S. = 1 M.S. = 2 H.S. = 1	25.36%	4.66	(22.45%) (38.78%)	17.71%	13.53	(8.13%) (40.91%)
	E.S. = 3 M.S. = 1 H.S. = 0	30.41%	14.87	(14.58%) (47.01%)	32.82%	28.82	(10.08%) (72.22%)
	E.S. = 3 M.S. = 1 H.S. = 0	36.16%	10.52	(23.19%) (59.09%)	21.39%	11.91	(2.33%) (34.78%)
3 UMKC	E.S. = 1 M.S. = 1 H.S. = 1	19.07%	2.73	(17.39%) (25.00%)	20.39%	13.12	(6.94%) (34.62%)
	E.S. = 0 M.S. = 1 H.S. = 1	33.54%	3.13	(30.99%) (37.25%)	7.25%	1.34	(5.66%) (8.34%)

5 NWMSU	M.S. = 0 H.S. = 0	28.79%	5.47	(25.00%)	41.45%	1.66	(40.30%)
				(36.36%)			(43.75%)
	E.S. = 2 M.S. = 0 H.S. = 0	33.10%	11.89	(20.00%)	54.85%	4.41	(50.00%)
				(43.21%)			(58.62%)
6 UMR	E.S. = 3 M.S. = 0 H.S. = 0	28.41%	2.46	(24.29%)	31.12%	14.64	(6.55%)
				(30.16%)			(39.77%)
	E.S. = 3 M.S. = 0 H.S. = 0	14.99%	3.31	(13.33%)	14.34%	5.60	(10.00%)
				(21.35%)			(22.62%)
7 SMSU	E.S. = 2 M.S. = 1 H.S. = 1	30.62%	7.22	(20.07%)	25.62%	17.38	(1.52%)
				(37.69%)			(42.45%)
	E.S. = 2 M.S. = 1 H.S. = 1	36.94%	10.59	(15.15%)	30.43%	16.97	(12.50%)
				(43.58%)			(49.19%)
8 UMSL	E.S. = 1 M.S. = 1 H.S. = 0	39.20%	0.77	(38.97%)	18.24%	7.63	(16.00%)
				(41.77%)			(43.59%)
	E.S. = 2 M.S. = 1 H.S. = 1	25.72%	17.23	(2.11%)	19.65%	20.04	(0.00%)
				(48.78%)			(61.70%)
9 CMSU	E.S. = 3 M.S. = 0 H.S. = 2	33.36%	9.21	(23.08%)	40.34%	21.37	(16.28%)
				(46.51%)			(68.97%)
	E.S. = 3 M.S. = 0 H.S. = 2	26.23%	15.87	(13.95%)	36.32%	25.86	(5.00%)
				(53.33%)			(61.54%)

Low PD Sites

High PD Sites

Figure 3a. Average MAP CommunicationArts Scores for Students Scoring Proficient and Above in High and Low PD Schools by RPDC Region (n = 65 schools)

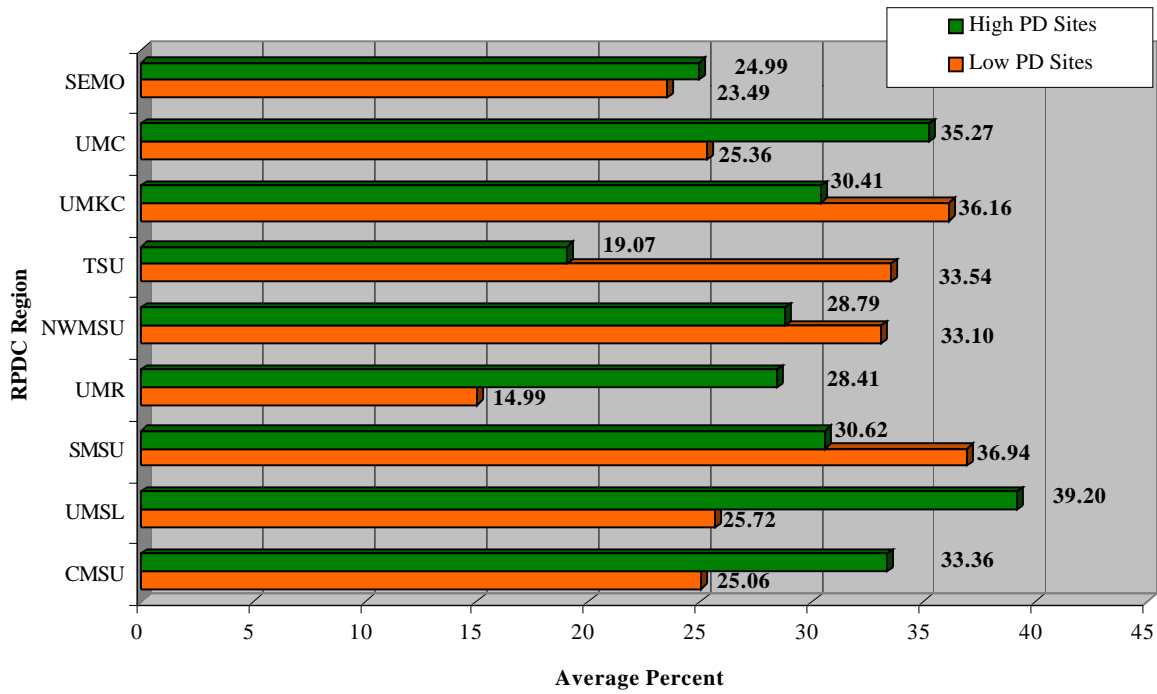


Figure 3b. Average Mathematics MAP Scores for Students Scoring Proficient and Above in High and Low PD Schools by RPDC Region (n = 65 schools)

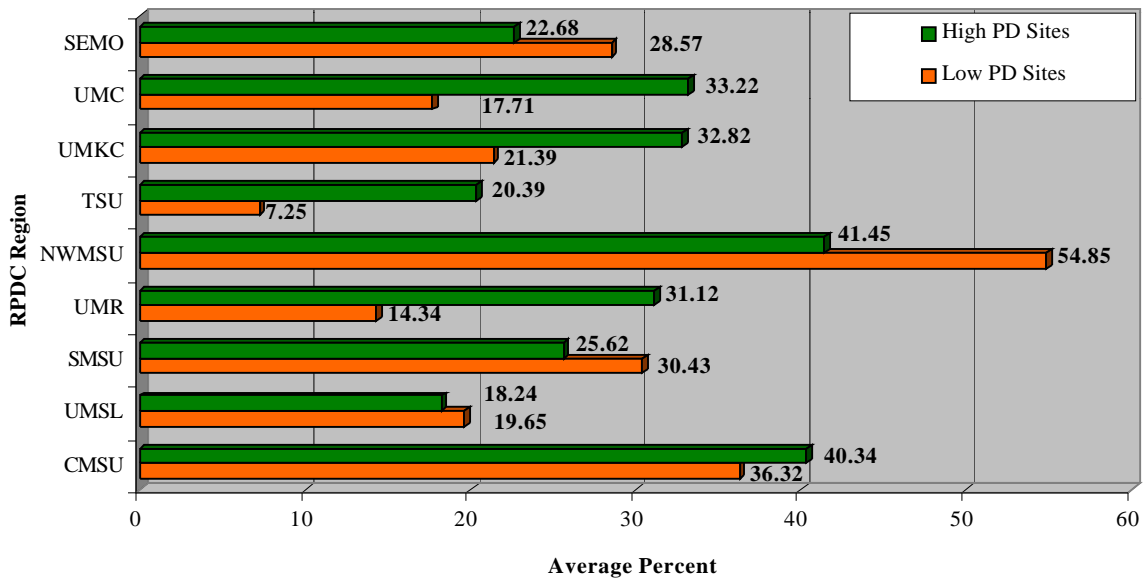


Table 4. Differences in High and Low PD School Demographic Data Averages by Matched Pairs Design Collected from DESE Missouri School Directory and School Finance Data for year 1999-2000^a and 2000-2001^b [Schools Used in Data Analyses n= 65]

	Elementary			Middle			High		
	High Ele.	Low Ele.	Diff.	High MS	Low MS	Diff.	High HS	Low HS	Diff.
# of Schools in Sample	20	20	0	7	7	0	5	6	-1
Average # of Students Per School Site^a	385	373	12	367	394	-27	435	592	-196
Average # of Students Per District^a	5,284	4,578	706	2,036	3,131	-1,095	1,260	8,173	-6,913
Average % Attendance^a	95.05%	95.05%	0.00%	95.46%	94.90%	0.56%	92.68%	90.73%	1.95%
Average % Free/Reduced Lunch^b	49.19%	49.87%	-0.68%	28.33%	35.07%	-6.74%	26.11%	38.11%	-12.00%
Average Per Pupil Expenditure^a	\$7,548.47	\$7,299.49	\$248.98	\$8,823.31	\$7,936.89	\$886.42	\$7,977.53	\$6,972.91	\$1,004.62

Note: (-) Negative numbers represent differences where the Low PD sites are more than High PD sites

Table 5. Number and (Percent)* of Respondents' Participation in Professional Development Activities and Contacts Made with RPDC Staff Over the Last Four Years by High / Low

Involvement in Professional Development
[All RPDC Regions Combined (n = 953)]

RPDC Region	School Sponsored PD ---RPDC Sponsored PD --- RPDC Contacts Made									
	Total Respondents (N = 953)	Respondents Attending School Sponsored PD Activities		Mean # of School	Respondents Attending RPDC Sponsored PD Activities		Mean # of RPDC	Respondents Making Inquiry to their Local RPDC		Mean # of RPDC Contacts
High PD Sites	480	411	[50.9%]	11.77	300	[54.6%]	5.27	132	[58.1%]	6.87
	(50.4%)	(85.6%)			(62.5%)			(27.5%)		
Low PD Sites	473	397	[49.1%]	9.40	249	[45.4%]	4.73	95	[41.9%]	3.94
	(49.6%)	(83.9%)			(52.6%)			(20.1%)		
Totals (Percent)	953	808	[100.0%]	10.59	549	[100.0%]	5.00	227	[100.0%]	5.41
	(100.0%)	(84.8%)			(57.6%)			23.8%		

*Note: Percentages in parentheses are based on total number of respondents in each region; Percentages in brackets [] are computed from category totals and may not equal 100% due to rounding.

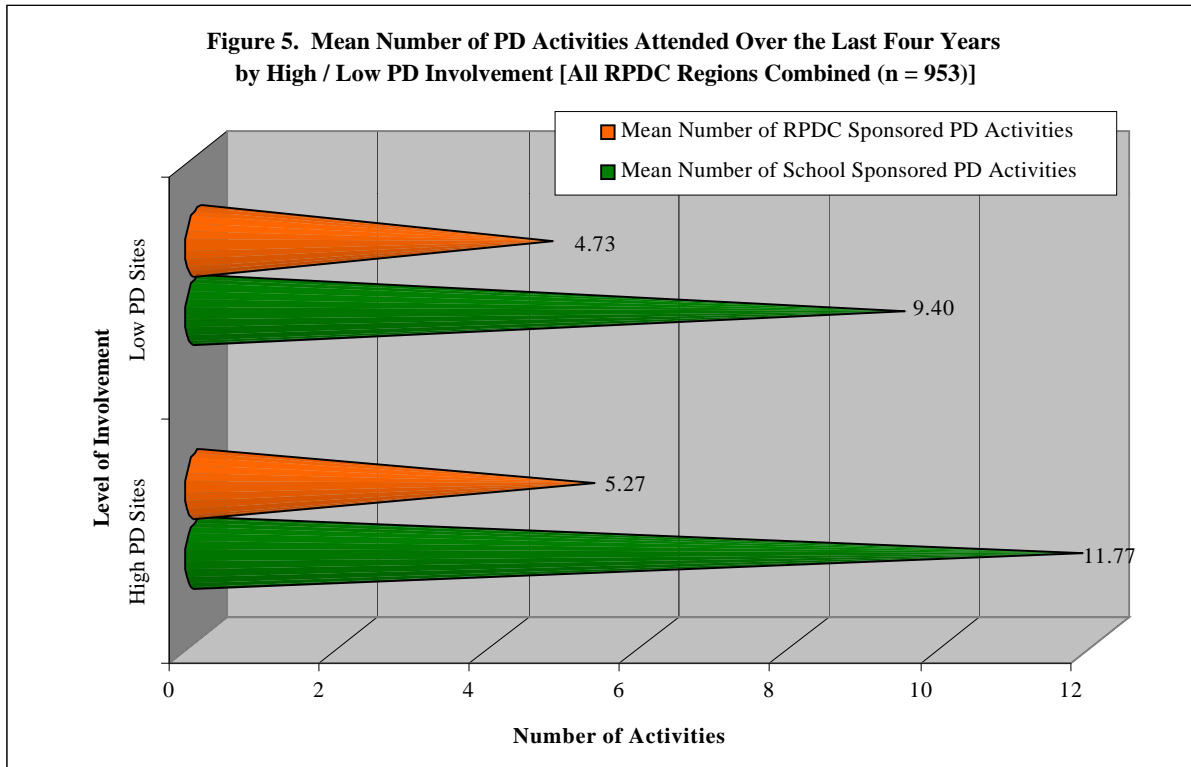
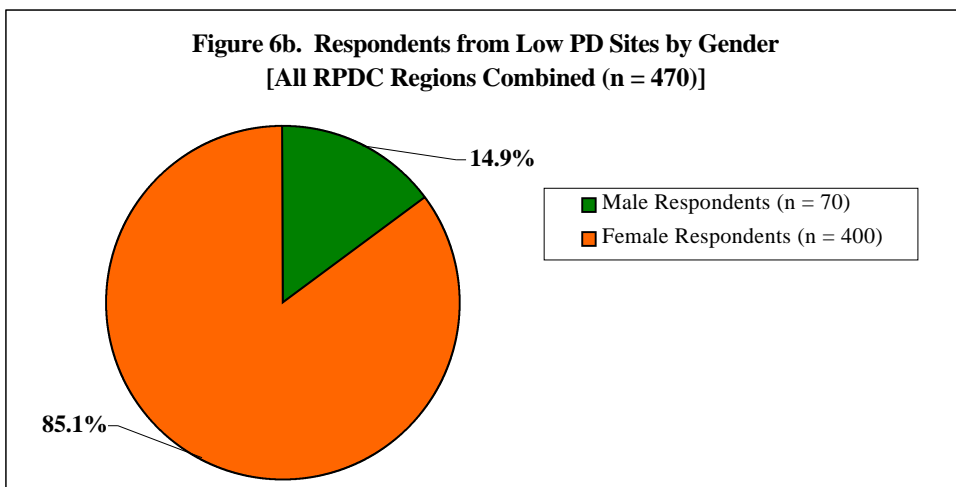
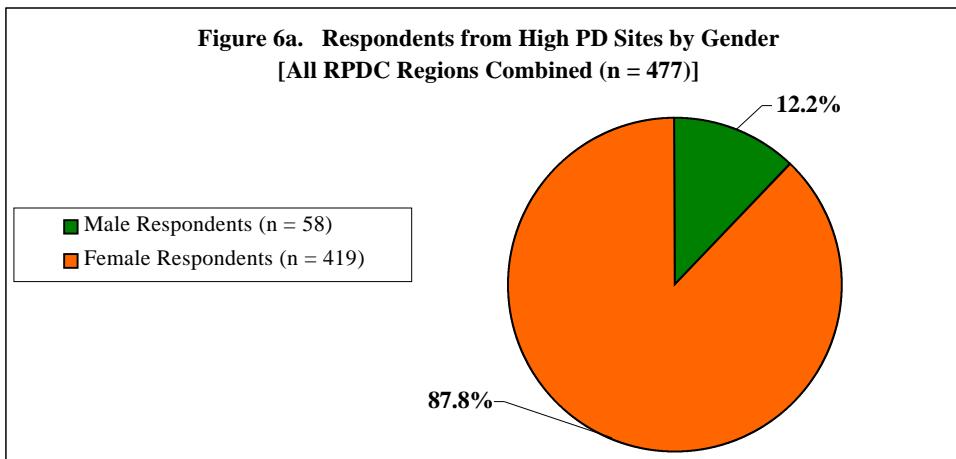


Table 6. Number and (Percent) of Respondents Identified by Gender and High / Low Involvement in Professional Development [All RPDC Regions Combined (n = 947)]

Level of PD	Gender		Totals (Percent)
	Male Respondents	Female Respondents	
High PD Sites	58 (12.2%)	419 (87.8%)	477 (100.0%)
Low PD Sites	70 (14.9%)	400 (85.1%)	470 (100.0%)
Totals (Percent)	128 (13.5%)	819 (86.5%)	947 (100.0%)

Note: Percentages based on those responding to the question.



**Table 7. Number and (Percent) of Respondents Identified by Highest Degree Earned and High / Low Involvement in Professional Development
[All RPDC Regions Combined (n =950)]**

RPDC Region	Degree Earned						Totals (Percent)
	Bachelors	Bachelors + additional hours	Masters	Masters + additional hours	Specialist	Ph. D / Ed. D.	
High PD Sites	49 (10.2%)	176 (36.7%)	55 (11.5%)	182 (38.0%)	15 (3.1%)	2 (0.4%)	479 (100.0%)
Low PD Sites	52 (11.0%)	176 (37.4%)	74 (15.7%)	155 (32.9%)	10 (2.1%)	4 (0.8%)	471 (100.0%)
Totals (Percent)	101 (10.6%)	352 (37.1%)	129 (13.6%)	337 (35.5%)	25 (2.6%)	6 (0.6%)	950 (100.0%)

Note: Percentages may not equal 100.0% exactly due to rounding.

Figure 7. Number of Respondents Identified by Highest Degree Earned and High / Low Involvement in Professional Development
 [All RPDC Regions Combined (n = 950)]

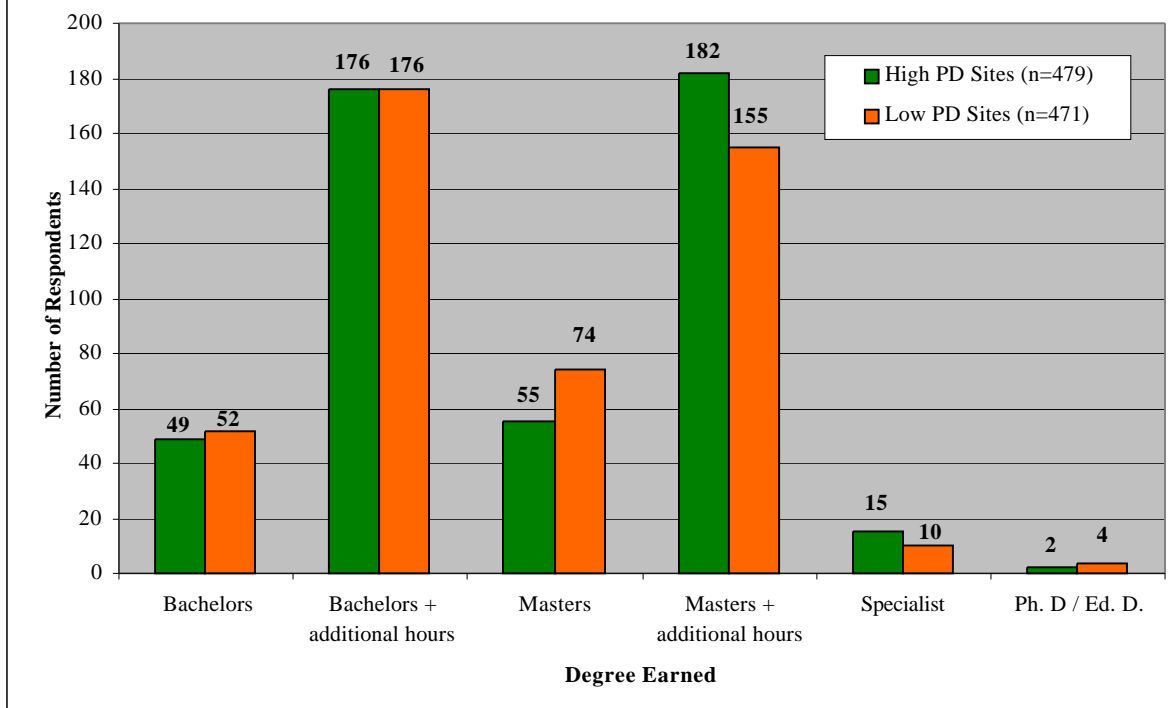


Table 8. Number and (Percent)* of Respondents' Involvement in Other DESE Initiatives by High / Low Involvement in Professional Development
 [All RPDC Regions Combined (n = 953)]

RPDC Region	STARR Program - MAP Program - Whole School Reform Initiatives									
	Total Respondents (n = 953)	STARR Presentations Attended Over the Last Four Years		Mean # STARR	Respondents who have participated as MAP Class I to Class VII Sr. Leaders		Others in respondents' district who have participated as MAP Class I to Class VII Sr. Leaders		Respondents whose Schools are participating in a Whole School Reform Initiative	
High PD Sites	480	357	[58.5%]	4.62	59	[51.8%]	224	[50.6%]	122	[60.7%]
	(50.4%)	(74.4%)			(12.3%)		(46.7%)		(25.4%)	
Low PD Sites	473	253	[41.5%]	3.48	55	[48.2%]	219	[49.4%]	79	[39.3%]
	(49.6%)	(53.5%)			(11.6%)		(46.3%)		(16.7%)	
Totals (Percent)	953	610	[100.0%]	4.05	114	[100.0%]	443	[100.0%]	201	[100.0%]
	(100.0%)	(64.0%)			(12.0%)		(46.5%)		(21.1%)	

*Note: Percentages in parentheses are based on total number of respondents in each region; Percentages in

brackets [] are computed from category totals and may not equal 100% due to rounding.

