Research Brief
James Madison Legacy Project
Cohort 2 Student Knowledge
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Key Finding: A preliminary analysis finds that students of middle and high school teachers who took part in the James Madison Legacy Project (JMLP) professional development program scored higher on a test of civic knowledge than the control group. The analysis takes into account students whose teachers had gone through the traditional and hybrid professional development program. Middle school students whose teachers had taken part in the traditional PD program gained slightly more civic knowledge than those whose teachers went through the hybrid PD program. Both middle school PD groups scored significantly higher than the control group students. The high school students whose teachers experienced the traditional or the hybrid PD had nearly identical average scores on the knowledge posttest. High school students in the traditional and hybrid PD groups had significantly higher scores than students in the control group.

Student Knowledge Analysis

This research brief provides a preliminary report of the student knowledge findings based on data collected for Cohort 2 of the JMLP. A multi-site, school-level, random assignment study was conducted. A total of 240 schools were recruited for the analysis. Schools were randomly assigned to the traditional PD group (80 schools), the hybrid PD group (80 schools), and an "as is" control group (80 schools). 39% of the participating schools are middle schools and 61% are high schools.

Students took a knowledge pretest before they began their civics class and a posttest when they had completed the course. The evaluation tests students' knowledge of core concepts related to the U.S. Constitution and the Bill of Rights, the institutions of government, and elections and voting. The items reflect those that are found on standard tests of civics and American government, and are not specifically aligned with the *We the People* curriculum. Separate grade-appropriate knowledge tests were administered to middle and high school students. The middle school test consists of 22 multiple choice and short answer items, and the high school test includes 27 items. Additive indexes were created where one point was awarded for each correct answer. The test reliabilities are all higher than .700, and meet What Works Clearing House (WWC) standards (see Table 1).

Table 1
Reliability of Knowledge Measures

	Middle School	High School
Pretest	.792	.874
Posttest	.910	.951

Hierarchical linear models were estimated using analysis of covariance (ANCOVA) to determine if there is a statistically significant difference in knowledge scores of the middle school and high school students whose teachers had received the JMLP traditional or hybrid professional development and students in the control group whose teachers had not gone through the JMLP. Students' score on the posttest is the dependent variable. The pretest score is entered as a covariate in the model. Traditional PD/hybrid PD/control group is entered as a fixed factor. Effect size is measured by Hedges' g.

A total of 5,067 students were included in the middle school knowledge evaluation—2,155 in the traditional PD group, 1,506 in the hybrid PD group, and 1,406 in the control group. Scores on both the pretest and the posttest ranged from 1 to a perfect score of 22, which four students achieved on the pretest and 83 students achieved on the posttest. The unadjusted mean score on the pretest for all students was 8.13 and was 12.50 on the posttest. As Table 2 depicts, the students in both the traditional and hybrid JMLP groups scored higher on the knowledge posttest than the students in the control group. Students in the traditional PD group had the highest scores, followed by students in the hybrid and control groups. The adjusted mean score for the traditional PD group is 13.38 compared to 12.82 for the hybrid PD group and 11.29 for the control group. The largest difference in scores was between the traditional PD and control groups (2.00, significant at p=.00). The effect size as determined by Hedges' g is .442, indicating a moderate effect. The difference between the hybrid PD and control groups was slightly smaller (1.53, significant at p=.00); Hedges' g of .326 indicates a moderate effect. There was a small difference in the mean scores of the traditional and hybrid PD groups (.57, significant at p=.00). The effect size as determined by the Hedges' g of .116 is minimal.

A total of 6,345 high school students were included in the knowledge evaluation—2,348 in the traditional PD group, 1,851 in the hybrid PD group, and 2,146 in the control group. The pretest and posttest scores ranged from 1 to 27, with 91 students achieving a perfect score on the pretest and 342 on the posttest. The unadjusted mean score for all of the high school students on the pretest was 13.43 and 17.03 on the posttest. As Table 2 demonstrates, the students in the traditional and hybrid PD groups had virtually identical adjusted mean knowledge scores on the posttest. Both PD groups had substantially higher adjusted mean scores on the posttest than students in the control group. The average adjusted mean scores for the traditional PD group (16.99) and hybrid PD group (16.98) were greater than for the control group (15.61). The difference in mean scores between the traditional PD and control groups was 1.18, and is statistically significant at p=.00. The effect size based on Hedges' g is .179 which is moderately small.

Table 2
Estimated Mean Knowledge Scores of JMLP PD and Control Students

	n	Unadjusted $\bar{x}$	SD	Adjusted $\bar{x}$	SE	$\bar{x}$ Difference	p	Effect Size
Middle School								
Traditional PD	2,155	13.28	4.83	13.38	.09	T/H 0.57	.00	.116
Hybrid PD	1,506	12.32	4.81	12.82	.11	T/C 2.00	.00	.442
Control	1,406	12.00	4.58	11.29	.12	H/C 1.53	.00	.326
High School								
Traditional PD	2,348	16.53	6.10	16.99	.10	T/H 0.01	n.s.	--
Hybrid PD	1,851	17.21	6.47	16.98	.12	T/C 1.18	.00	.179
Control	2,146	16.17	6.43	15.61	.11	H/C 1.17	.00	.172

Note: T=Traditional PD Group; H=Hybrid PD Group; C=Control Group