PROJECT CITIZEN RESEARCH PROGRAM

INTERIM REPORT
COHORT 1 AND COHORT 2

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October 2023

PROJECT CITIZEN RESEARCH PROGRAM

The Project Citizen Research Program (PCRP) evaluates the efficacy of the Center for Civic Education's Project Citizen (PC) teacher professional development (PD) and curriculum intervention for middle and high school students. The evaluation research was conducted by the Civic Education Research Lab (CERL) at Georgetown University under the direction of Dr. Diana Owen. CERL operates independently from the Center and is located on the Georgetown University campus in Washington, D.C. (https://cerl.georgetown.edu/).

Project Citizen is a widely used curricular program that actively engages young people in cooperative, project-based learning as they work as a class to identify a problem in their school or community, research alternative policy-based solutions, develop a policy proposal to address the problem, and design a political action plan to convince public officials to adopt and implement the policy. Students present their action plans and portfolios to leaders in their schools and communities. PC supports students' development of social and emotional learning competencies (SEL) and Science, Technology, Engineering, and Mathematics (STEM) skills. The Center provides professional development to teachers for implementing PC in their classrooms that enhances their content knowledge, improves their capacity to effectively engage young people in the PC curriculum intervention, and increases their professional engagement with other educators.

KEY FINDINGS

Teachers and students gained substantial benefits from their participation in the PCRP. Their knowledge of American government and the public policy process increased significantly. Teachers acquired active pedagogies through the PC PD program which they used regularly when implementing the PC intervention in their classrooms. Students made significant gains in civic skills, civic dispositions, and SEL competencies. They used STEM skills, especially in math and science, to address the problems they identified in their communities and schools. These gains were made during the COVID-19 pandemic, a period of extensive upheaval and stress in delivering middle and high school education.

Teacher Study

Teachers participating in the PCRP and received the Center's PD program demonstrated significant increases in civic knowledge compared to teachers in the control group. The PC teachers placed greater emphasis on pedagogies related to students' development of civic skills and dispositions after taking part in the PD program, including those pertinent to the development of SEL competencies.

- ☐ Teachers had a 17% improvement in their civic knowledge scores in Cohort 1 and a 13% increase in Cohort 2 after participating in the PCRP.PCRP teachers scored significantly higher on the knowledge posttest than control group teachers.

- PC teachers routinely employed active learning approaches and instructional pedagogies in their classes due to the PCRP. PC teachers had a 28% improvement in their use of active pedagogies in their classrooms in Cohort 1 and a 21% increase in Cohort 2.
- The emphasis teachers placed on the activities that were relevant to PC in their classrooms increased significantly from pretest to posttest. The gains were greatest for directly engaging students in their community, and having students work cooperatively with others to solve a problem, develop an action plan to solve a problem, develop dispositions to become actively engaged in their community, and learn about the public policy process.
- The average PC teachers' score on an index measuring their use of active pedagogies was higher than more than 90% of the teachers in the control group.

Student Study

The PC curriculum intervention substantially increased students' attainment of civic knowledge, skills, and dispositions. Participation in PC improved students' SEL competencies and developed their STEM skills. The PC students' achievements were significantly greater than those of students in the control group.

- Students who took part in the Project Citizen curriculum intervention gained significantly more content knowledge about government and the public policy process than students in the control group. PC students' civic knowledge increased by 41% in Cohort 1 and 55% in Cohort 2 after participating in the program. The increase in the PC students' knowledge was significantly larger than that of the control group students.
- PC students' civic skills, which encompass a range of SEL competencies, improved markedly due to the curriculum intervention. The findings were especially pronounced for Cohort 2. PC students' average score on a civic skills index increased by 74%. Their scores on an index measuring their problem-solving ability increased by 116%. The improvements in PC students' civic skills were significantly greater than those of the control group.
- PC students were more likely to engage in STEM-related learning than students in the control group. Through their participation in PC, students used math and science skills to understand policy issues and to work on a community problem. They also saw a connection between math and science and their civics and social studies classes.
- Students' qualitative evaluations of Project Citizen indicated that they found the program to be valuable for learning about the public policy process, teaching them skills that enhance their civic engagement, and making them realize that they can make a difference in their community. These attainments were conducive to the students developing positive dispositions toward increased community service.

EVALUATION RESEARCH

This preliminary analysis provides findings on teacher and student outcomes resulting from their experience in Cohort 1 and Cohort 2 of the PCRP. These studies of the first two years of the PCRP provide a unique opportunity to track the implementation, outcomes, and possibilities of a civics program that relies heavily on active learning during periods of societal upheaval and shifting conditions in the educational environment. The unique circumstances of implementing PC during the pandemic presented challenges. Teachers and students had to adapt to virtual and hybrid instruction. Disruptions to program implementation occurred due to COVID-related absences of teachers and students. At the same time, the pandemic provided an opportunity to evaluate the effectiveness of a virtual implementation of the curriculum intervention. The findings offer encouraging evidence that the PC curriculum can be successfully implemented either fully or partially in a virtual environment.

The COVID-19 pandemic seriously disrupted the normal course of secondary school instruction during Cohort 1 as most schools rapidly transitioned to virtual learning. Despite the challenges, the Center proceeded with the first year of the PCRP. The teacher PD program was held entirely online during the summer of 2021. The majority of teachers (69%) implemented the Project Citizen curriculum intervention with their students virtually. Twenty-eight percent of teachers met with their students partially online and partially in-person or in a hybrid learning environment. Only 2% of teachers implemented the PC curriculum entirely in-person. Students presented their project portfolios—the culminating PC activity—primarily online to panels of community and government leaders.

Teachers continued to deal with the impact of the COVID-19 pandemic during Cohort 2. The instructional environment was characterized by a constant state of uncertainty. Teachers were still adapting to the conditions of the pandemic during the 2021-22 school year. Almost all (97%) of the teachers participating in the PCRP held their classes virtually for at least part of the previous academic year. While most schools started the academic year with the intention of holding classes in-person, only 36% of PCRP teachers held their classes in-person for the duration. Sixty-four percent of teachers held classes virtually for at least part of the time. The shifting modes of delivering the curriculum coupled with the lingering deleterious effects of the pandemic on student learning (Kuhfeld, et al., 2022; Kwakye and Kibort-Crocker, 2021), engagement (Hutchinson and Moore, 2021), and behavior (Lambert, 2022, Shen-Berro, 2023) posed novel challenges to implementing the PC curriculum.

Study Samples

The Cohort 1 study was conducted during the 2020-21 summer and academic year. Cohort 2 research took place during the summer of 2021 and the following academic year. The quantitative impact evaluation of the PCRP employed a randomized control trial (RCT) design examining teacher and student outcomes that were planned to meet What Works Clearinghouse (WWC) evidence standards without reservations. The RCT design provided for randomized assignment of teachers and their students to PC intervention and control groups. Teachers were recruited for each cohort through the

Center's network of teachers via personal outreach to their extensive contacts, advertising in education-related publications, and posting on social media. Qualified applicants were accredited public or private elementary, middle, and high school teachers of civics, social studies, American government, and American history courses in which the PC program could be incorporated in the ensuing academic year. Teachers and their students were recruited for participation in the PCRP from schools nationwide. While there was no explicit intention to target teachers from schools serving high-need and economically disadvantaged students to the program, and this was not a prerequisite for participation, a majority of the participating teachers served these students.

The population of interest in the study was composed of elementary and secondary school students who took a class from a teacher who participated in the Center's PC PD program and implemented the PC curriculum. The majority of participants were middle and high school students. A hierarchical design was employed where schools (clusters) were randomly assigned to PC treatment and control groups. The sample consisted of students in intact classrooms. All students enrolled in the classes in the study were eligible to take part in the research. Seventy teachers were recruited for inclusion in the study during each program year. Thirty-five teachers were randomly assigned to each of the PC intervention and comparison group conditions. In Cohort 1, a total of 59 teachers consisting of 33 PCRP teachers and 26 control group teachers completed all testing and were retained in the study. Sixty-one teachers in Cohort 2 completed all testing—34 PCRP teachers and 27 control group teachers. In Cohort 1, a total of 1,932 students participated in the study after attrition. The PC intervention group consisted of 1,184 students and 748 students were in the control group. A total of 2,142 students completed the Cohort 2 study, including 1,168 students in the PC intervention group and 974 in the control group.

Data

Teachers in the intervention group participated in a PC PD program that was offered at five regional sites across the country. The PD program was provided virtually to Cohort 1 and in-person to Cohort 2. Intervention group teachers completed at least forty-eight hours of PD and twenty hours of classroom instruction of the PC curriculum which included a whole-class showcase hearing. Their students were enrolled in the study and received the PC curriculum. Control group teachers had no prior experience with PC, did not participate in the PC PD program, and taught students who were enrolled in standard civics, social studies, American government, and American history classes.

Quantitative data were collected for teachers in the intervention and control groups through pretest/posttest surveys. Pretests were administered to the PC intervention group in June, prior to the start of the summer PD program. Control group teachers took the pretests during the same time frame. The pretests consisted of two survey instruments—one instrument gathered information on the teachers' professional backgrounds, their school characteristics, the pedagogies they employed in the classroom, their self-efficacy, and their commitment to civics instructional goals. A second instrument measured their civic content knowledge. The posttests included most of the items that were on the pretest. They were administered to teachers in both the

intervention and control groups at the conclusion of their classes. The pretest and posttest knowledge tests were proctored by site coordinators, school administrators, and CERL staff to preclude teachers from looking up answers.

Students whose teachers participated in either the PC intervention or the control group were enrolled in the research project. Quantitative data for students were collected through pretest surveys administered prior to the start of their PC instruction (intervention group) or general civics (control group) class. Posttests were given to students at the conclusion of their PC or general civics instruction. The surveys were administered online during class periods and were proctored by teachers. This interim report provides findings for PCRP Cohort 1 and Cohort 2 students on measures of civic content knowledge and civic skills, which includes SEL competencies, attention to issues, and STEM skills.

The Georgetown University Institutional Review Board (IRB) reviewed the teacher protocol (STUDY00002719) and student protocol (STUDY00002826) and granted exemption to both submissions.

Statistical Methodology

Statistical analyses were conducted on the pretest/posttest teacher and student outcome data to assess changes due to the PC intervention. Difference of means tests were performed to identify statistically significant shifts in the pretest and posttest outcome measures. In addition, hierarchical linear models were estimated using analysis of covariance (ANCOVA) to determine if there were statistically significant differences in the scores of the intervention and control group teachers. ANCOVA was an appropriate model for this analysis as it adjusts for non-equivalence in intervention and control group scores at baseline. The dependent variables were posttest scores. Pretest scores were entered as a covariate. Intervention/control group was treated as a fixed factor. Effect size was measured by Hedges' g. The adjusted means and unadjusted standard deviations were used in computing the effect sizes.[1] WWC's improvement index also was computed which represents the average expected change in the percentile rank if an average comparison group member receives the intervention. In other words, it is the difference in percentile ranks for an average intervention versus comparison group member.

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[1] What Works Clearinghouse, Procedures and Standards Handbook, version 5, pp. 135-36.
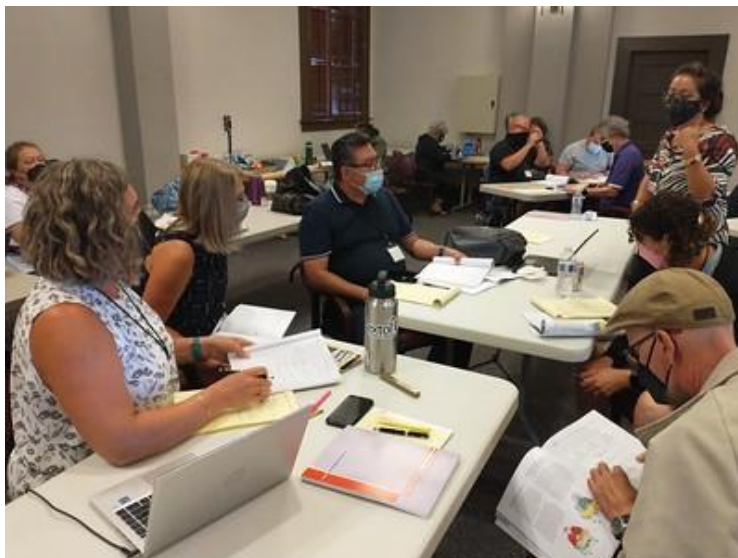
TEACHER STUDY

Teacher Characteristics

      PCRP and control group teachers' education, average years teaching, teaching specialty, whether they taught Advanced Placement (AP) courses, and grade level were compared. (See Table 1.) In Cohort 1, 5% of PC participants taught elementary school, 43% taught middle school, and 52% taught high school. Two percent of control group teachers instructed elementary school students, 51% taught middle school, and 46% taught high school. In Cohort 2, the PC group was comprised of 7% elementary school teachers, 38% middle school teachers, and 55% high school teachers. Four percent of the control group taught in elementary school, 41% in middle school, and 56% in high school.

      Overall, more than half of the teachers in the study held Master's degrees. In Cohort 1, a somewhat higher percentage of PC teachers (67%) held Master's degrees than control group teachers (55%). 32% of control group teachers had a Bachelor's degree compared to 25% in the PC group. In Cohort 2, 20% of PC teachers had earned a Bachelor's degree, 79% had a Master's degree and 1% had a Law degree. Among the control group teachers, 18% had a Bachelor's degree, 71% had a Master's degree, 4% had a Law degree, and 7% had a Doctoral degree.

      The control group teachers had been civic educators for somewhat longer than the PC teachers in both years. The Cohort 1 control group had been teaching for an average of 14.5 years compared to 11.3 years for the PC group. Control group teachers had worked at their current school for an average of 8 years compared to 7.3 years for the intervention group teachers. For Cohort 2, the PC teachers had an average of 12 years teaching civics and 7.6 years teaching at their present school. In contrast, the control group had an average of 13.1 years teaching civics and had been at their present school for 9.6 years.

      A small percentage of teachers in the PC and control groups considered themselves to be specialists working with special education students, English language learners ((ELLs), and Native American students. In Cohort 1, 2% of PC and control group teachers worked in adult

education. One PC teacher instructed incarcerated students. Eight percent of PC teachers in Cohort 2 worked with special education students compared to 3% in the control group. Eight percent of intervention group teachers instructed Native American students. Twice as many intervention group teachers (12%) taught ELLs than control group teachers (6%). Three percent of control group teachers worked with adult learners.

The percentage of teachers reporting that they currently or previously taught AP classes varied across cohorts and condition. In Cohort 1, 28% of the PC group had taught AP courses compared to 12% in the comparison group. In Cohort 2, 26% of the PC teachers had experience instructing AP courses compared to 41% in the control group.

Table 1
Teacher Characteristics
Cohorts 1 and 2

	Cohort 1		Cohort 2	
	Project Citizen	Control	Project Citizen	Control
Highest Degree Earned				
Bachelor	25%	32%	20%	18%
Master	67%	55%	79%	71%
Law	3%	7%	1%	4%
Doctoral	4%	5%	0%	7%
Average Years Teaching				
Civics	11.3 Years	14.5 Years	12 Years	13.1 Years
Civics at Present School	7.3 Years	8 Years	7.6 Years	9.6 Years
Teacher of				
Special Education Students	6%	7%	8%	3%
Native American Students	3%	2%	8%	0%
ELL/ESL	6%	9%	12%	6%
Adult Education	2%	2%	0%	3%
AP Teacher	28%	12%	26%	41%
Grade Level				
Elementary School	5%	2%	7%	4%
Middle School	43%	51%	38%	41%
High School	52%	46%	55%	56%
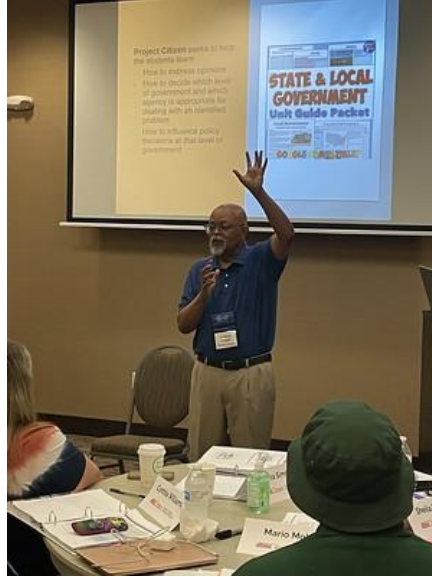
School Characteristics

School characteristics consisting of Title I designation, public or private school, school type, geographic location, and type of high-need students served were reported. (See Table 2.) In both study years, most teachers in the PD and control groups taught high-need student populations. Half of the teachers were employed in Title I schools that serve a high percentage of low-income students and receive federal funding. Nearly 80% of teachers taught a large number of high-need students defined as having at least 30% of students in their classes who are provided with free or reduced cost lunches, students living in poverty, minority students, students performing far below grade level, English language learners, students with disabilities, students who are homeless or in foster care, students served by rural local educational agencies, disconnected or migrant youth, and incarcerated youth.

In Cohort 1, 67% of PC teachers and 59% of control group teachers were placed with students who received free or reduced cost meals. 52% of PC participants taught students living in poverty compared to 34% of the control group. 56% of intervention group teachers were located in schools with high percentages of minority students compared to 50% in the control group. 30% of PC teachers were in schools that served a high percentage of English Language Learners (ELLs) compared to 23% in the control condition. One-quarter of teachers in the intervention and control groups taught in schools with high percentages of students with disabilities. Students performing far below grade level were prevalent in 36% of PC and 30% of control group teachers' schools.

In Cohort 2, over 60% of teachers in both conditions taught high numbers of students who received free or reduced cost meals. 44% of teachers served students living in poverty. PC participants (55%) were more likely to teach minority students than control group teachers (25%). A somewhat higher percentage of PC teachers (25%) than control group teachers (16%) were in schools with large numbers of ELLs. A similar pattern was evident for students with

disabilities. 23% of PC and 13% of control group teachers served this population. 19% of both the PC and control group teachers were in schools with high percentages of students performing far below grade level.

Most of the teachers in both years taught in public schools. In Cohort 1, 96% of teachers participating in PC and 95% of the control group were public school educators. Slightly fewer PC teachers (89%) were from public schools in Cohort 2 than control group teachers (96%). A higher percentage of PC teachers (26%) than control group teachers (17%) in Cohort 1 taught in rural schools. More control group teachers (36%) were situated in urban schools than PC teachers (27%). An equal percentage (47%) of teachers in both groups worked in suburban schools. The trend was somewhat different in Cohort 2. One-quarter of the PC teachers taught in rural schools compared to one-third of the control group teachers. 45% of the intervention group and 52% of the control group were situated in suburban settings. A higher percentage of PC teachers (28%) than control group teachers (15%) taught in urban schools.

Table 2
School Characteristics
Cohorts 1 and 2

Category	Cohort 1		Cohort 2	
	Project Citizen	Control	Project Citizen	Control
Title I School	48%	49%	51%	48%
Public School	96%	95%	89%	96%
Private School	4%	5%	11%	4%
School Type				
Alternative	5%	2%	0%	6%
Charter	10%	14%	6%	0%
Magnet	10%	0%	4%	0%
Parochial	0%	7%	6%	0%
Religious	1%	0%	3%	3%
Technical	3%	5%	1%	0%
Geographic Area				
Rural	25%	16%	27%	33%
Suburban	51%	47%	45%	52%
Urban	24%	37%	28%	15%
School Serves High Percentage				
Free or Reduced Lunch Recipients	67%	59%	64%	66%
Minority Students	56%	50%	55%	25%
Students Living in Poverty	52%	34%	44%	44%
Students Far Below Grade Level	36%	30%	19%	19%
English Learners	30%	23%	25%	16%
Students with Disabilities	25%	23%	23%	13%
Students Unhoused or in Foster Care	13%	11%	8%	19%
Students Served by RLEA	7%	7%	7%	6%
Disconnected/Migrant Youth	6%	5%	4%	3%
Incarcerated Students	0%	0%	0%	3%

Teachers' Civic Content Knowledge

Teachers' civic knowledge was measured using an index consisting of 46 multiple choice questions. The items tapped their general knowledge of the public policy process, federalism, branches of the U.S. government, government departments involved in the policy process, interest groups, and nongovernmental organizations. While these content areas are relevant to the PC curriculum, the items were not overly aligned with the intervention. The items were derived from questions from established civic knowledge inventories, such as the AP test, the National Assessment of Educational Progress (NAEP) Civics Assessment, and the evaluation of the James Madison Legacy Project (JMLP) by the author. All of these items have known reliability that meets WWC standards. The teachers' civic knowledge index was reliable for both cohorts. (See Table 3.)

Table 3
Teacher Content Knowledge Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	7-40	.908	.879
Cohort 2	11-39	.872	.887

Teachers who received the PC PD scored significantly higher on the posttest knowledge index than teachers in the control group. The findings are somewhat stronger for Cohort 1 than Cohort 2. In Cohort 1, the mean score on the pretest baseline of the intervention group (27.12) was nearly equivalent to that of the control group (27.46). The PD group's score on the posttest (31.94) was substantially higher than the control group's score (27.03). The pretest/posttest mean difference was 4.82 points for the PC group and -.42 for the control group. There was a 17-percentage point increase in PC teachers' average score from pretest to posttest compared to virtually no change in the control teachers' scores. (See Table 4.)

Table 4
Teacher Knowledge by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	33	27.12	8.28	31.94	4.61	4.82	.00
Control	26	27.46	5.88	27.03	6.43	-.42	n.s.

The adjusted posttest mean score for the PC group in Cohort 1 based on the ANCOVA analysis was 32.03 compared to 26.92 for the control group. The adjusted mean pre/post between group difference was 5.11, indicating that the intervention group scored 5 points higher, on average, on the posttest than the control group. The difference in mean posttest scores was statistically significant at $p \leq .01$. The effect size (Hedge's g) of .93 was large, which was reflected in the sizable improvement index of +33. In other words, if an average teacher in the control group took part in the PRCP, we would expect a 33% improvement in their percentile ranking on knowledge. (See Table 5.)

Table 5
Teacher Knowledge by Condition

Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\overline{x}$	Adjusted Posttest SE	Adjusted $\overline{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	32.03	.56	5.11	.00	.93	+33
Control	26.92	.63				

The mean knowledge pretest score of the PC group (26.64) in Cohort 2 was lower than that of the control group (28.92). The PC teachers' average score improved to 30.12 on the posttest for an average increase of 3.47 points that was statistically significant at p≤.01. The mean score of PC teachers increased by 13% after participating in the PCRP. The control teachers' knowledge score increased to 30.00 on the posttest, representing a 1% gain that was statistically significant. (See Table 6.)

Table 6
Teacher Knowledge by Condition
Difference of Means
Cohort 2

	n	Pretest $\overline{x}$	Pretest SD	Posttest $\overline{x}$	Posttest SD	$\overline{x}$ Diff.	Sign. Diff.
Project Citizen	34	26.64	8.30	30.12	6.39	3.47	.00
Control	26	28.92	5.90	30.00	5.47	1.07	.00

The ANCOVA model adjusts for the difference in the PC and control group mean knowledge scores at baseline. The adjusted PC group mean posttest knowledge score of 30.82 was higher than the control group score of 29.19. The posttest mean difference between groups of 1.69 was statistically significant at p≤.01. The effect size (Hedge's g) was small. The improvement index was +11. (See Table 7.)

Table 7
Teacher Knowledge by Condition
Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\overline{x}$	Adjusted Posttest SE	Adjusted $\overline{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	30.82	.560	1.69	.05	.28	+11
Control	29.12	.630				

Project Citizen Pedagogies

        The PC PD program provided teachers with the pedagogic tools necessary to successfully implement the PC curriculum intervention in their classrooms. The PC teachers were asked on the pretest and posttest surveys to indicate how much emphasis (1 not much, 2 some, 3 a great deal) they placed on activities that were related to the curriculum. These included: 1) identifying issues and problems facing their community, 2) working cooperatively with others to solve a problem in their community, 3) learning about the public policy process, 4) researching a problem, 5) developing a plan of action for addressing a problem, 6) evaluating alternative solutions to a problem, 7) directly engaging in the community, 8) developing civic skills, 9) developing dispositions to become involved in community affairs, and 10) having students reflect on their learning experience. These activities are conducive to students' development of SEL competencies. Additive indexes of core PC pedagogies were created consisting of all ten items. The indexes were reliable based on WWC standards and had a range of 1 to 21. (See Table 8.)

Table 8
Project Citizen Pedagogies Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-21	.909	.910
Cohort 2	1-21	.885	.939

The emphasis PC teachers placed on the activities that were relevant to PC in their classroom increased significantly from pretest to posttest for both cohorts. In Cohort 1, the differences in the mean pretest/posttest scores were statistically significant at p≤.02 or better with the exception of having students reflect on their learning experience, which approached statistical significance. The greatest improvement based on the mean difference scores was for directly engaging students in the community (.61), followed by students working cooperatively to solve a problem (.49), students developing an action plan (.45), students developing civic dispositions (.40), students evaluating alternative solutions (.36), students learning about the policy process (.35), students researching a problem (.33), students developing civic skills (.31), and students identifying issues and problems (.22). (See Table 9.)

Table 9
Project Citizen Teacher Pedagogies
Cohort 1

	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Identifying issues and problems facing their community	2.36	.70	2.58	.57	.22	.02
Working cooperatively with others to solve a problem in their community	2.04	.79	2.53	.57	.49	.00
Learning about the public policy process	2.24	.72	2.58	.53	.35	.00
Researching a problem	2.33	.70	2.65	.52	.33	.00
Developing a plan of action for addressing a problem	2.00	.67	2.45	.60	.45	.00
Evaluating alternative solutions to a problem	2.15	.65	2.51	.60	.36	.00
Directly engaging in their community	1.62	.73	2.25	.62	.64	.00
Developing civic skills	2.36	.65	2.67	.47	.31	.00
Developing dispositions to become involved in community affairs	1.96	.67	2.36	.62	.40	.00
Having students reflect on their learning experience	2.51	.60	2.62	.49	.11	.11

Difference of means tests performed on the core pedagogies index for Cohort 1 revealed a notable improvement in the average score for the PD intervention group. The mean score on the pretest of 12.65 rose to 16.24 on the posttest for a difference of 3.59 points. PC teachers had a 28% increase in their propensity to use active pedagogies in their classrooms. The control group's scores on the index declined by 2.61 points from pretest (13.91) to posttest (11.30). The mean differences for the intervention and control groups were statistically significant at p≤.01. (See Table 10.)

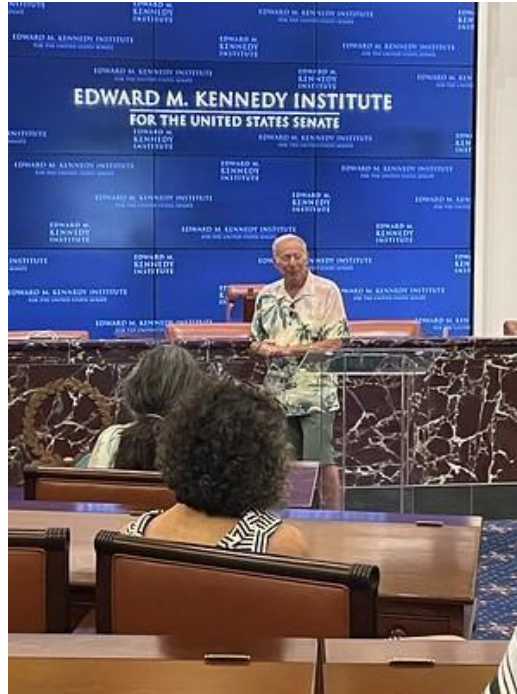**Table 10**
Teacher Core Pedagogies by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	33	12.65	4.78	16.24	3.83	3.59	.00
Control	26	13.91	5.41	11.30	5.53	-2.61	.00

An ANCOVA model calculated the adjusted mean posttest scores for the PD intervention (16.39) and control (10.94). The adjusted mean group difference was 5.45 points, which was statistically significant at p≤.01. The effect size (Hedge's g) of 1.24 was large, as was the improvement index of +39. (See Table 11.)

Table 11
Teacher Core Pedagogies by Condition
Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	16.39	.514	5.45	.00	1.24	+39
Control	10.94	.818				

Trends similar to those observed for Cohort 1 were evident for Cohort 2. Among the individual core pedagogies items, the largest statistically significant pretest/posttest mean differences (.55) were for having students work cooperatively with others to solve a problem in their community, develop an action plan, evaluate alternative solutions to a problem, and directly engage in their community. Teachers' emphasis on developing dispositions to become involved in community affairs (.41), learning about the public policy process (.40), identifying issues and problems facing their community (.36), and researching a problem (.27) also increased significantly after the PC PD program. The pre/post change was not significant for developing civic skills and having students reflect on their learning experience. The average scores on these variables were high at the outset. (See Table 12.)

Table 12
Project Citizen Teacher Pedagogies
Cohort 2

	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Identifying issues and problems facing their community	2.36	.65	2.73	.49	.36	.00
Working cooperatively with others to solve a problem in their community	2.04	.77	2.59	.54	.55	.00
Learning about the public policy process	2.11	.76	2.51	.59	.40	.00

Researching a problem	2.31	.73	2.59	.49	.27	.00
Developing a plan of action for addressing a problem	2.02	.76	2.57	.55	.55	.00
Evaluating alternative solutions to a problem	1.97	.76	2.52	.55	.55	.00
Directly engaging in their community	1.86	.73	2.41	.65	.55	.00
Developing civic skills	2.47	.59	2.57	.54	.10	n.s.
Developing dispositions to become involved in community affairs	2.00	.68	2.41	.62	.41	.00
Having students reflect on their learning experience	2.47	.59	2.47	.59	.00	n.s.

Difference of means tests were performed on the core PC pedagogies index. The Cohort 2 PC teachers' average score on the core pedagogies index improved significantly from 13.66 on the pretest to 16.48 on the posttest, for a mean difference of 2.83. The PC teachers exhibited a 21% increase in their use of active pedagogies during the PCRP. The control group teachers' scores on the index decreased from pretest to posttest, indicating that they were less inclined to use these pedagogies in their classes during the academic year under study than they had indicated on the pretest. Their pretest mean score of 12.14 declined to 8.91 on the posttest, for a mean difference of -3.23. The mean differences for both groups were statistically significant at p≤.01. (See Table 13.)

Table 13
Teacher Core Pedagogies by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	29	13.66	4.45	16.48	4.27	2.83	.00
Control	22	12.14	5.25	8.91	5.55	-3.23	.00

An ANCOVA model was estimated which adjusted for the difference in the pretest scores on the core pedagogies index for the intervention and control groups at baseline. The adjusted mean posttest score for the PC group was 16.14 compared to 9.36 for the control group. The difference in mean scores between groups was 6.78. The effect size (Hedge's g) of 1.40 was large, as was the improvement index of +42. The average PC teacher's score was significantly higher (p≤.01) than 92% of teachers in the control group. (See Table 14.)

Table 14
Teacher Core Pedagogies by Condition

Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	16.14	.79	6.78	.00	1.40	+42
Control	9.36	.90				

Teachers' Evaluations of Project Citizen

Teachers expressed enthusiasm for the PC program and had a strong desire to implement it in their classrooms. Many of the participants mentioned that they lacked understanding of the public policy process and would not have been able to explain it to their students without the PD program. They indicated that there are few opportunities for teachers to access professional development in this area, and praised the Center, state coordinators, teacher experts, and scholars providing a high-quality experience. They were engaged by the active, hands-on learning approach employed by the PD program. Participants appreciated the opportunity to create their own PC projects at the summer institute prior to using the curriculum with their students. They were especially grateful for the candor of teachers who had used PC in their classrooms and spoke about the successes and struggles of successfully implementing the program with students. Participants greatly appreciated the opportunity to collaborate with other educators and to learn how they were engaging with their schools and communities. They enjoyed comparing experiences with teachers from different school districts and states. Teachers also expressed their satisfaction with the follow-up PD sessions that took place over the course of the academic year. The following are comments by teachers about their experience with PCRP:

> Learning about public policy was very helpful. I didn't really understand it before. I feel better able to explain what it is. I enjoyed hearing experts in government. I think learning about how to implement Project Citizen was very effective.

> I have gained so much information myself. This was a learning process for me, as well as my students. I look forward to teaching it next year.

> It was very effective to have to create our own Project Citizen portfolio with our mentors before implementing the process in the classroom. It was nice meeting with our cohorts throughout the year to touch base about the program and bounce ideas off of our mentors.

> I enjoyed learning about this program and more about public policy. It is a great problem-based program to help students become better citizens and more engaged in their communities. What I found most useful was the mentor teachers sharing their experiences of how they used this program in their classroom along with working in groups with fellow teachers to research an issue and create a mock portfolio. I also enjoyed the book talks in our monthly PD meetings.

I received a tremendous amount of support from the Project Citizen presenters and other teachers. The Project Citizen national presenters were always available to answer questions, return emails and find additional resources. Their follow-up with the Project Citizen teachers was amazing.

The authenticity of the project is one of the strongest points. It can be difficult to implement truly authentic projects in a humanities classroom.

I felt the best aspect was the opportunity to work with other teachers who were active in their school communities. The benefit went beyond Project citizen to student government and bettering the school environment.

Suggestions for improving the program were offered by some of the participants. A number of teachers would have liked more background information about PC at the outset of the summer institute—one suggested a "Project Citizen 101" on the morning of the first day. Some teachers would have preferred a wider range of speakers, especially younger scholars who might bring some fresh perspectives to the material. A frequent suggestion was to provide more insight into how to adapt PC to different class structures and schedules. More time could have been spent on how to guide students in developing strong portfolios and making good presentations.

STUDENT STUDY

Student Participant Characteristics

Students' demographic characteristics were similar for the PC and control groups across the two study years. (See Table 15.) In Cohort 1, the intervention group consisted of 53% female, 45% male, and 2% gender non-binary students. The control group students included a higher percentage of males (55%) than females (44%), with 1% identifying as non-binary. In Cohort 2, the PC group consisted of 46% male, 50% female, and 4% non-binary students. The control group had 49% male, 46% female, and 5% non-binary participants.

The students participating in the PCRP study were racially and ethnically diverse. In Cohort 1, the racial/ethnic composition of the PC and control group was similar. 8% of students identified as Asian American Pacific Islander (AAPI), 14% as Black/African American, 17% as Latine, 49% as White/Caucasian, and 12.4% as multiracial. The Cohort 2 students in the PC group were 6% AAPI, 11% Black, 23% Latine, 49% White, and 11% multiracial. In the control group, 12% of students identified as AAPI, 5% as Black, 18% as Latine, 52% as White, and 13% as multiracial.

Table 15
Student Characteristics

Category	Cohort 1		Cohort 2	
	Project Citizen	Control	Project Citizen	Control
Gender				
Male	53%	44%	46%	49%
Female	45%	55%	50%	46%
Non-Binary/Another Gender	2%	1%	4%	5%
Race				
AAPI	8%	8%	6%	12%
Black/African American	12%	16%	11%	5%
Latine	18%	16%	23%	18%
White/Caucasian	51%	47%	49%	52%
Multiple Races	11%	13%	11%	13%

Civic Content Knowledge

Students' civic knowledge was based on twenty items relating to general knowledge of the public policy process, federalism, branches of the U.S. government, government departments involved in the policy process, interest groups, and nongovernmental organizations. All of these content areas are addressed by the PC curriculum. As was the case for the questions on the teacher instruments, the items were not overly aligned with the intervention and were based on established measures with known reliability. The civic knowledge items were combined into pretest and posttest indexes. Scores on the pretest and posttest indexes ranged from 1 to 19 points. The internal consistency reliability of the indexes based on Cronbach's α was acceptable for both study cohorts. (See Table 16.)

Table 16
Student Content Knowledge Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-19	.850	.871
Cohort 2	1-19	.734	.775

Cohort 1 students who received the PC intervention gained significantly greater knowledge than students in the control condition. The pretest mean for the PC students was 6.41 and the posttest mean was 9.06, representing an average improvement of 2.65 points. PC students experienced a 41% improvement in their knowledge scores. The pretest/posttest difference was statistically significant at $p \leq .01$. The control group pretest score was 5.56 and the posttest score was 6.64 for an average difference of 1.08 which was statistically significant at $p \leq .01$. The control group students' scores increased by 19%. (See Table 17.)

Table 17

Student Civic Knowledge by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,184	6.41	3.67	9.06	4.94	2.65	.00
Control	748	5.56	3.03	6.64	3.47	1.08	.00

The Cohort 1 intervention and control group pretest scores were not equivalent at baseline, as the control group students had lower scores. The ANCOVA model estimating the difference between the group posttest means adjusts for this nonequivalence at baseline. (See Table 18.) The adjusted posttest mean was 8.84 for the Project Citizen students and 7.02 for the control group students, for difference of 1.82. The difference was statistically significant at p≤.01. The effect size (Hedge's g) was .41, indicating a small to medium effect. The improvement index was +16.

Table 18
Student Civic Knowledge by Condition
Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	8.84	.11	1.82	.00	.41	+16
Control	7.02	.14				

The civic knowledge findings were similar for Cohort 2 and again showed that the PC students outperformed the control group. The pretest mean knowledge score for the PC group was lower than for the control group. The average civic knowledge score for the PC students increased by 3.1 points from 5.70 to 8.81. The mean difference was statistically significant at p≤.01. The average pretest score of the control group (6.42) was higher than that of the PC group, but the pretest/posttest mean difference was notably smaller at 1.23 points. The mean difference was statistically significant at p≤.01. The PC students' civic knowledge scores increased 55% compared to 19% for the control group. (See Table 19.)

Table 19
Student Civic Knowledge by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.

Project Citizen	1,125	5.70	3.21	8.81	3.70	3.10	.00
Control	869	6.42	3.24	7.65	3.69	1.23	.00

The ANCOVA model for Cohort 2 estimated the adjusted pretest/posttest difference in the mean knowledge scores of the PC and the control groups. (See Table 20.) The adjusted mean difference between the PC and control group scores was 1.62 points, and was statistically significant at $p \leq .01$. The Hedge's g of .44 suggests a small to moderate effect. The improvement index indicates an increase of +17 in the percentile rank of students in the intervention group compared to a typical student who scores at the median in the comparison group.

Table 20
Student Civic Knowledge by Condition
Adjusted Mean Posttest Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	9.01	.09	1.62	.00	.44	+17
Control	7.39	.10				

Civic Skills

Students' development of civic skills is a focal outcome of the PC curriculum intervention. Civic skills were measured by thirteen items asking students whether they were able to perform a variety of tasks if they faced a problem in their community. The items measure civic skills that are conducive to students' development of SEL competencies, especially their ability to work cooperatively on a problem, express themselves, and solve problems. For each item, students could respond: 1 I definitely could not, 2 I probably could not, 3 I'm not sure if I could, 4 I probably could, and 5 I definitely could.

Seven of these items tapped the ability to act to solve a problem. The problem-solving items asked if students would be able to: (1) identify the problem, (2) research the problem, (3) get other people to care about the problem, (4) work cooperatively with others to solve the problem, (5) develop a plan of action for addressing the problem, (6) evaluate alternative solutions to the problem, and (7) attend a meeting about the problem. These items were combined in an additive index of problem-solving skills. The problem-solving index ranged from 1 (definitely could not) to 29 (definitely could). The index meets WWC standards for reliability for both study years. (See Table 21.)

Table 21
Problem-Solving Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-29	.878	.844
Cohort 2	1-29	.897	.904

A second set of items measured students' ability to express and share their views. Students were asked if they felt they could: (1) express their views in front of a group of people, (2) write a letter to a local news outlet, (3) organize a petition, (4) contact a government official, (5) use social media to publicize the problem, and (6) use social media to organize people to take action to solve the problem. These measures were combined to form a civic expression index that ranged from 1 (definitely could not) to 25 (definitely could). The index is reliable for both cohorts. (See Table 22.)

Table 22
Expression Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-25	.892	.881
Cohort 2	1-25	.886	.891

An additive omnibus civic skills index was computed that combined all thirteen items. The index ranged from 1 (definitely could not) to 53 (definitely could) undertake the task. The index was highly reliable in both cohort years. (See Table 23.)

Table 23
Omnibus Civic Skills Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-53	.931	.937
Cohort 2	1-53	.919	.929

Civic Problem-Solving Skills

Students' civic problem-solving skills improved significantly due to their participation in PC. In Cohort 1, the average scores on the civic problem-solving skills index increased for students who took part in PC, while there was no change in scores from pretest to posttest for the control group students. (See Table 23.) The PC students' scores on the problem-solving index improved from a mean of 21.49 on the pretest to 21.92 on the posttest. The mean difference of .43 was small and statistically significant at p≤.01. There was a 2% increase in PC students' scores on the civic problem-solving index and no change for the control group.

Table 23
Student Civic Problem-Solving Skills by Condition
Difference of Means

Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,153	21.49	4.84	21.92	4.87	.43	.00
Control	748	20.37	5.35	20.31	5.36	.06	n.s.

An ANCOVA model was run to correct for the difference between the intervention and control group pretest scores at baseline in Cohort 1. (See Table 24.) The PC students' adjusted posttest mean score of 21.77 points was higher than the control groups' score of 20.60, with an adjusted mean difference of 1.17. The difference was statistically significant at p≤.01. The Hedge's g measure of effect size was .23, indicating a small effect. The improvement index marks a difference of +9 in the percentile ranking for an average PC student compared to an average student in the control group.

Table 24
Student Civic Problem-Solving Skills by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	21.77	.141	1.17	.00	.23	+9
Control	20.60	.177				

In Cohort 2, the scores on the civic problem-solving skills index of students in both the PC and the control group increased markedly from pretest to posttest. (See Table 25.) PC students' mean scores improved from 9.69 on the pretest to 20.91 on the posttest for a mean difference of 11.21 points. The pretest/posttest increase was somewhat smaller for the control group. The mean problem-solving score for the control group rose from 9.93 to 19.44, with a mean difference of 9.51 points. The difference of means was statistically significant at p≤.01 for both groups. PC students' scores on the problem-solving index increased by 116% compared to 96% for the control group.

Table 25
Student Civic Problem-Solving Skills by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,061	9.69	5.38	20.91	5.24	11.21	.00
Control	807	9.93	5.51	19.44	6.42	9.51	.00

The ANCOVA analysis found an adjusted mean difference between the PC (20.86) and control group (19.49) posttest scores of 1.37 that was statistically significant at p≤.01. (See Table 26.) The effect size (Hedge's g=.24) was small. The improvement index indicated a +9 difference in the percentile rank of an average PC versus control group student.

Table 26
Student Civic Problem-Solving Skills by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	20.86	.167	1.37	.00	.24	+9
Control	19.49	.191				

Civic Expression Skills

The Cohort 1 PC students' mean score on the civic expression skills index improved significantly from the pretest (14.37) to posttest (16.76). The pretest/posttest mean difference was 2.38, and was statistically significant at p≤.01. (See Table 27.) The average pretest (13.53) and posttest (14.09) scores were lower for the control group, with a mean difference of 1.36 that was statistically significant. The PC students' scores on the civic expression index increased by 16% compared to 4% for the control group.

Table 27
Student Civic Expression Skills by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,153	14.37	4.25	16.76	5.38	2.38	.00
Control	748	13.53	4.69	14.09	5.89	1.36	.00

The ANCOVA analysis found that the that the adjusted posttest mean for the Cohort 1 PC students was 16.91 compared to 15.14 for the control group students. The adjusted pretest/posttest mean difference was 1.77. The effect size of .33 was small to moderate, and the improvement index was +12. (See Table 28.)

Table 28
Student Civic Expression Skills by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	16.91	.168	1.77	.00	.32	+12
Control	15.14	.210				

The improvement in civic expression skills for students in Cohort 2 was notably larger than for Cohort 1. (See Table 29.) PC students' average scores on the civic expression index increased from 11.56 on the pretest to 15.58 on the posttest, a mean difference of 5.73 points. The control group students' mean scores changed from 11.66 on the pretest to 14.82 on the posttest. The mean difference was 3.15 points. The difference of means for both groups was statistically significant at p≤.01. The PC group students evidenced a 35% increase in their scores on the civic expression skills index while the control group had a 27% gain.

Table 29
Student Civic Expression Skills by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,012	11.56	5.96	15.58	5.73	4.01	.00
Control	759	11.66	6.06	14.82	5.65	3.15	.00

The ANCOVA model estimated the adjusted mean difference in average posttest scores between the PC (15.83) and control groups (14.84) to be .99. The difference was statistically significant at p≤.01. The effect size of .17 was small, and the improvement index was +6. (See Table 30.)

Table 30
Student Civic Expression Skills by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index

Project Citizen	15.83	.16	.99	.00	.17	+6
Control	14.84	.19				

Civic Skills Omnibus Index

The omnibus civic skills index combined all thirteen items. As indicated by the separate analyses of the PC students' civic problem-solving and expression skills, the scores on the combined index improved after experiencing the curriculum. The pretest/posttest improvement was notably better for Cohort 2.

The Cohort 1 PC students' pretest mean score was 34.87, their posttest score was 37.82, and the pretest/posttest mean difference was 2.95. The gain in skills was statistically significant at p≤.01. The increase in the control group students' scores was smaller than that of the PC students who had received the intervention. Their pretest mean index score was 32.90, the posttest score was 34.25, and the mean difference was 1.35. (See Table 31.) The scores of the PC students increased on the omnibus skills index by 9% compared to 4% for the control group.

Table 31
Omnibus Civic Skills Index by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,153	34.87	8.32	37.82	9.38	2.95	.00
Control	748	32.90	9.28	34.25	10.54	1.35	.00

The ANCOVA model that corrects for the difference between the intervention and control group pretest scores confirmed that the Cohort 1 PC students' adjusted posttest mean score pf 37.49 was higher than the control group mean of 34.29. The adjusted mean pretest/posttest difference was 3.20, which was statistically significant at p≤.01. The Hedge's g measure of effect size was .33, indicating a small to moderate effect. The improvement index was +13. (See Table 32.)

Table 32
Omnibus Civic Skills Index by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	37.49	.284	3.20	.00	.33	+13
Control	34.29	.359				

The increase in the average scores on the omnibus civic skills index in Cohort 2 for both the PC and control group students was large. The PC group's scores increased from 20.22 on the pretest to 35.13 on the posttest representing a mean difference of 14.90 points. The pretest/posttest difference was somewhat smaller for the control group. The average score for control group students changed from 20.42 on the pretest to 34.25 on the posttest, for a mean difference of 13.82 points. The difference of means was statistically significant at $p \leq .01$ for both groups. (See Table 33.) The PC students' scores on the omnibus civic skills index improved by 74% compared to 68% for the control group.

Table 33
Omnibus Civic Skills Index by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	924	20.22	10.74	35.13	10.81	14.90	.00
Control	712	20.42	10.85	34.25	10.24	13.82	.00

The ANCOVA model for Cohort 2 found a small difference in the adjusted mean posttest scores on the omnibus civic skills index for PC (35.09) and control (34.17) groups of 1 point. The effect size was minimal at .09. The improvement index indicated a small +4 difference in the percentile rank of an average PC versus control group student on the omnibus skills index. (See Table 34.)

Table 34
Omnibus Civic Skills Index by Condition
(ANCOVA) Adjusted Mean Difference and Effect Size

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	35.09	.31	1.02	.00	.09	+4
Control	34.17	.35				

Attention to Issues

Students' attention to issues was measured by an index consisting of three items: (1) How much attention do you pay to media about media about government and politics? (2) How much attention do you pay to issues that are affecting your community? (3) How much attention do you pay to issues that are affecting your school? The response categories for each item were 1 not much, 2 some, and 3 a lot. The index ranged from a low of 1 (not much attention) to a high of 7 (a lot of attention). The index reliability for both cohorts was modest. (See Table 35.)

Table 35
Student Issue Attention Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-7	.555	.598
Cohort 2	1-7	.611	.632

The Cohort 1 PC students became somewhat more likely to pay attention to issues following their participation in the program. (See Table 36.) The PC group students were slightly more inclined to follow issues than the control group students after the intervention. Students in the intervention and control groups had the same pretest mean scores of 2.68 on the index. The index scores of the PC students (2.98) and the control group students (2.80) improved on the posttest. The pretest/posttest differences were statistically significant at p≤.01. The PC group mean scores on the issue attention index increased by 12% compared to 4% for the control group.

Table 36
Student Issue Attention by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,153	2.68	1.14	2.98	1.18	.30	.00
Control	748	2.68	1.15	2.80	1.16	.12	.00

The ANCOVA analysis revealed a difference of .18 between the adjusted posttest mean scores of the intervention and control groups that was statistically significant. The effect size based on Hedge's g was small as was the improvement index of +5. (See Table 37.)

Table 37
Student Issue Attention by Condition
Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	2.98	.04	.18	.00	.15	+5
Control	2.80	.32				

For Cohort 2, the pretest/posttest mean difference in issue attention was small and positive for the PC intervention group students. The average score on the index increased from 3.83 to 3.92 for a mean difference of .09 that was statistically significant at p≤.05. PC students had a 2% increase in their mean scores on the issue attention index. The control group students' attention to issues declined slightly from pretest (4.01) to posttest (3.89). The mean difference of -.12 was statistically significant at p≤.02. (See Table 38.)

Table 38
Student Issue Attention by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,057	3.83	1.53	3.92	1.55	.09	.05
Control	841	4.01	1.52	3.89	1.53	-.12	.02

The results of the ANCOVA model indicated a small adjusted mean difference between the posttest scores of the PC and control group students that was not statistically significant. (See Table 39.)

Table 39
Student Issue Attention by Condition
Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	3.95	.04	.10	n.s.	--	--
Control	3.85	.05				

STEM Skills

The PC curriculum offered opportunities for students to acquire STEM skills as they research their policy problem and develop solutions. STEM-related activities included students collecting data from surveys, performing rudimentary statistical analyses, and gathering scientific evidence that they used to support their arguments. Students provided exhibits that required the use of STEM skills in their project portfolios. The acquisition of STEM skills was measured on the pretest and posttest with the following items: (1) My knowledge of math and science helps me to understand policy issues; (2) I see a connection between my math and science classes and my social studies and history classes; (3) I can use my math skills to work on problems in my community; (4) I can use my science skills to work on problems in my community; and (5) I can use my skills with technology to work on problems in my community. A STEM index was created that combined these five measures. The index ranged from a low score of 1, indicating that students did not perceive a connection between STEM and civics to a high score of 21, indicating that students saw a strong link. The index met WWC standards for reliability for both cohorts. (See Table 40.)

Table 40
Student STEM Skills Index Range and Reliability

	Index Range	Pretest Cronbach's α	Posttest Cronbach's α
Cohort 1	1-21	.855	.871
Cohort 2	1-21	.865	.880

PC students were more likely to report that they engaged in STEM-related activities than students in the control group. (See Table 41.) Pretest/posttest mean differences for the students who received the PC curriculum on the individual STEM items, while small, were statistically significant for students' knowledge of math helping them to understand policy issues (.14),

students seeing a connection between math and science and their social studies classes (.10) and using math skills to work on community problems (.06). The PC group's mean differences approached statistical significance for using science skills and using technology skills to solve community problems. The mean differences were near zero or negative—indicating that they decreased from pretest to posttest—for the control group on every item.

Table 41
Student STEM Skills by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Understand policy issues							
Project Citizen	1,153	3.15	1.03	3.29	1.05	.14	.03
Control	748	3.13	1.09	3.15	1.12	.02	n.s.
Connection to classes							
Project Citizen	1,153	3.27	1.09	3.37	1.10	.10	.00
Control	748	3.35	1.18	3.35	1.18	.00	n.s.
Use math skills							
Project Citizen	1,153	3.17	1.07	3.29	1.09	.06	.05
Control	748	3.27	1.12	3.13	1.14	-.14	.00
Use science skills							
Project Citizen	1,153	3.23	1.02	3.29	1.01	.05	.07
Control	748	3.28	1.07	3.21	1.09	-.07	.08
Use technology skills							
Project Citizen	1,153	3.62	1.00	3.67	1.02	.05	.07
Control	748	3.66	1.05	3.60	1.04	-.06	.09

The PC students' scores in Cohort 1 improved significantly on the STEM index from the pretest to the posttest. The mean pretest score was 12.45 which increased to 12.76, for a mean difference of .31 that was significant at $p \leq .01$. PC students demonstrated a 3% increase in their use of STEM skills. The average score on the STEM index decreased from pretest to posttest for the control group students from 12.69 to 12.47. The mean difference was -.22 and approached statistical significance. (See Table 42.)

Table 42
Student STEM Skills by Condition
Difference of Means
Cohort 1

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,153	12.45	4.19	12.76	4.31	.31	.01
Control	748	12.69	4.39	12.47	4.57	-.22	.11

The ANCOVA analysis of the STEM skills index found that the PC students had higher posttest scores than the control group when adjusting for pretest scores. (See Table 43.) The adjusted mean difference between the groups of .41 was statistically significant at p≤.04. The effect size was small (Hedge's g=.09), and the corresponding improvement index was +3.

Table 43
Student STEM Skills by Condition
Adjusted Mean Difference and Effect Size
Cohort 1

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	12.80	.12	.41	.04	.09	+3
Control	12.39	.15				
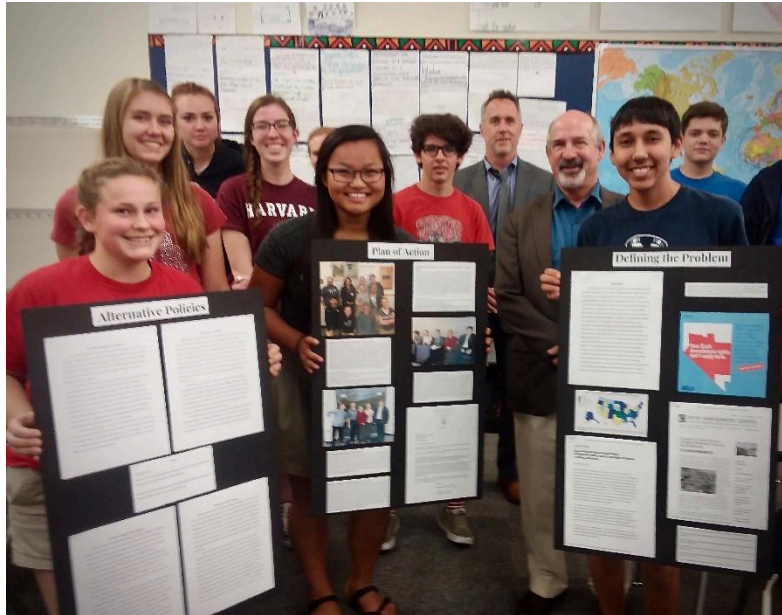
For Cohort 2, the difference of means tests performed on the individual STEM skills items again found statistically significant improvements in the PC students' mean scores from pretest to posttest on the STEM skills measures. The Cohort 2 pretest/posttest mean difference was notably larger than for Cohort 1 on seeing a connection between math and science classes and their civics class (.24). Significant pretest/posttest differences also were apparent for using

math and science skills to understand policy issues (.11) and using math skills (.09) and science skills (.07) to work on community problems. The increase in the Cohort 2 control group students' scores on the same items was smaller. The mean difference for using technology skills to work on community problems was small and nonsignificant for both groups. (See Table 44.)

Table 44
Student STEM Skills by Condition
Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Understand policy issues							
Project Citizen	1,063	3.10	1.06	3.21	1.06	.11	.00
Control	799	3.05	1.07	3.12	1.06	.07	.04
Connection to classes							
Project Citizen	1,065	3.19	1.17	3.43	1.11	.24	.00
Control	800	3.30	1.11	3.40	1.14	.10	.00
Use math skills							
Project Citizen	1,065	3.14	1.12	3.23	1.10	.09	.02
Control	799	3.07	1.11	3.15	1.11	.08	.04
Use science skills							
Project Citizen	1,065	3.19	1.10	3.26	1.08	.07	.03
Control	800	3.10	1.07	3.18	1.05	.08	.04
Use technology skills							
Project Citizen	1,065	3.57	1.11	3.61	1.05	.03	n.s.
Control	800	3.49	1.05	3.49	1.01	.00	n.s.

The mean STEM skills index score of students who participated in PC improved significantly from a pretest average of 12.16 to a posttest mean of 12.74. The difference of means of .57 was statistically significant at p≤.01. The PC group students' average STEM skills index score improved by 5% after the intervention. The control group students' mean score on the STEM skills index increased by .41 from 11.94 on the pretest to 12.35 on the posttest and was statistically significant at p≤.01. The percentage increase for the control group was 3%. (See Table 44.)

Table 44
Student STEM Skills by Condition

Difference of Means
Cohort 2

	n	Pretest $\bar{x}$	Pretest SD	Posttest $\bar{x}$	Posttest SD	$\bar{x}$ Diff.	Sign. Diff.
Project Citizen	1,063	12.16	4.55	12.74	4.62	.57	.00
Control	796	11.94	4.45	12.35	4.36	.41	.00

The ANCOVA model for Cohort 2 found a small difference (.29) in the adjusted posttest mean scores favoring the PD group over the control group that approached statistical significance. The effect size (Hedge's g=.17) was small and the improvement index was +6. (See Table 45.)

Table 45
Student STEM Skills by Condition
Adjusted Mean Difference and Effect Size
Cohort 2

	Adjusted Posttest $\bar{x}$	Adjusted Posttest SE	Adjusted $\bar{x}$ Group Difference	p	Effect Size (Hedge's g)	Improvement Index
Project Citizen	12.70	.12	.29	.12	.17	+6
Control	12.41	.15				

Students' Evaluations of Project Citizen

Students were asked to provide qualitative evaluations of their experience with Project Citizen. Many students indicated that the program made them more aware of how the public

policy process works. They realized that they could become involved and make a difference in their community. They noted that they had acquired skills, such as researching issues, teamwork, leadership, and public speaking. They gained a realistic perspective about what is involved in making change in a community, especially when officials are nonresponsive. Students also reported that they felt that Project Citizen was fun, especially during the pandemic when they appreciated having an active learning experience. A good number of students expressed gratitude toward their teachers for making the opportunity to participate in PC available to them. The following is a sample of student comments:

After working on Project Citizen, I've learned what public policy is and what I can do to change it. I also know how to be a better leader from it. I learned the process of making   an action plan and what to do when changing something.

I believe that Project Citizen was fun and helped me with politics. It also helped with my teamwork skills.

Although it was a lot of work, I think that the end result was good. It was fascinating to see how important each step of the project was in our final outcome.

As a citizen of the United States, you have a right to say what you think government should do about problems in your community. You also have a right to say what you   think about problems in your state, the nation, and about international problems. You   have the right to try to influence the decisions people in your government make about all   of those problems.

I am glad I was able to take part in this activity, as it gave me much insight on how to contact government officials (even if we can't get a response), and I learned that changing policy, or attempting to change policy at least, is very difficult and requires a lot of preparing and planning.

I absolutely loved it. This was my favorite part of my day also I think my teacher that was helping us should get credit. She made it easy for us to understand and I love this program. I think every kid should get an opportunity to try this out and for them to get to address a problem in Project Citizen

I thought it offered a look into how complicated it is to piece together policy. We took months interviewing people, hearing out different opinions, deciding on how to solve the issue, and how to express our opinions. It really showed us how much goes into deciding on public policy.
Project Citizen has opened my eyes to the vast world of politics and the legislative process. It was a lot of hard work and dedication that we had to put forth in order to accomplish our goal, but the presentation went well. I hope that other people will be able to see the work that was done, and I hope that they may be inspired to contact their local representatives and get more involved.

Constructive criticism of Project Citizen offered by students focused primarily on the amount of work that the program involved. Students felt that the number of forms and paperwork was excessive and would have preferred to have more time focusing on identifying and working on solving the problem. The way that PC was implemented in the classroom seems to have made a difference in the students' experience. Evaluations of the program were less favorable in classes where PC was given little weight in the final grade or was limited to a Friday afternoon activity. Some students admitted that they disliked politics in general and were not inclined to fully commit to the project. At the same time, there were students whose views of the political process shifted after realizing that they could influence policy.

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