

Preparing Students for Civic Engagement through Project Citizen

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ABSTRACT

This study examines the effectiveness of the Center for Civic Education’s Project Citizen teacher professional development program and curriculum intervention in producing positive student learning outcomes that support civic engagement. Through Project Citizen, students identify and research a problem in their community, explore solutions, consult with stakeholders, and develop an action plan. A three-year national study was conducted by the Civic Education Research Lab at Georgetown University from 2020-2023, during the height of the COVID-19 pandemic. The research employed randomized controlled trials of middle and high school students enrolled in Project Citizen and control group students who took a conventional civics class. The study confirmed the efficacy of project-based learning conveying civic skills and orientations conducive to civic engagement. Project Citizen students’ problem-solving and civic expression skills improved significantly after the intervention. They reported a greater desire to turn out to vote if given the opportunity and felt better prepared to take part in the civic life of their community. The gains in civic skills and propensity for engagement were greater for Project Citizen students than those in the control group.

Introduction

Project-based learning (PBL) can provide students with the opportunity to actively and cooperatively engage with real-world issues and problems. PBL has been lauded as a mechanism for imparting civic knowledge, dispositions, and skills, and providing a gateway to future civic engagement. It offers students an invitation to take part in the life of their community, conveys knowledge of how the system works, instills an authentic desire to work for the good of society, and conveys the competencies necessary for participation. Through PBL, students can develop civic-related social-emotional learning (SEL) competencies, such as critical thinking and collaborative skills, as well as facility with using STEM skills to address public policy concerns.

The Project Citizen Research Program (PCRP) supported the implementation and evaluation of the Center for Civic Education’s Project Citizen curricular intervention. Students identify a problem in their community or school, research the problem and policy-based solutions, consult with stakeholders, and develop an action plan. Through PCRP, the Center provided secondary school teachers with professional development (PD) that prepared them to instruct the Project Citizen curriculum in their classrooms. The Civic Education Research Lab (CERL) at Georgetown University conducted a three-year, large-scale national study of the PCRP from 2020–2023. The PCRP was funded by a grant from the Institute of Education Sciences (IES) of the U.S. Department of Education.¹

¹ Federal Award Number: R305A190360

The PCRCP examined student outcomes in the domains of civic knowledge, dispositions, skills, civic-related SEL competencies, and development of STEM skills in the civics context. This paper explores the effectiveness of Project Citizen in preparing students for civic engagement. The research is guided by the basic question: How effective is Project Citizen in fostering civic engagement in middle and secondary school students? Specifically, the study addresses the following questions: To what extent does Project Citizen impact students' acquisition of civic skills? And to what extent does Project Citizen influence students' sense that they are prepared to participate in civic affairs? CERL conducted research that compared teachers who took part in the Center's PD program to those who taught a conventional civics class. Data were collected on students who experienced Project Citizen and those who received a standard curriculum. The study focuses on data from the student surveys.²

Project-Based Learning

Project Citizen is PBL developed for the civics, social studies, American government, and history contexts. PBL is a student-centered, active-learning pedagogical approach that provides students with the opportunity to engage with real-world issues and propose solutions. It takes an inquiry-based approach where teachers guide students in asking questions, sharing ideas, exploring resources, developing propositions, and considering alternatives (Loveless, 2024). The Buck Institute for Education defines PBL as follows:

Project-based learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge (Buck Institute for Education, 2024).

PBL allows students to move from the theoretical or hypothetical to the practical. Material covered in lectures and textbooks can be translated into real world experiences. PBL is highly adaptable and can be designed to address state and common core standards (Halvorsen and Duke, 2017). Civic action integrated in the curriculum has been shown to invigorate student learning in history and social studies (Muetterties, DiGiacomo, and New, 2022). Students generally have positive views of classes that integrate PBL. They exhibit greater motivation to learn as they develop a stronger connection to the course content. PBL can initiate lifelong learning, as students acquire soft skills, such as networking and teamwork, analytical skills, and technical skills, including data analysis (Albert, 2019). Students whose classes employ PBL have been shown to have enhanced literacy skills in reading and writing comprehension (Wolpert-Gawron, 2018). The affirming impact of PBL on learning outcomes extends to high-need students, including students of color and students from lower income households (Vontz, Metcalf, and Patrick, 2000; Halvorsen and Duke, 2017). Evidence suggests that providing access to high-quality PBL can improve equity in education by closing persistent gaps in learning opportunities for underserved student populations (Lucas Education Research, 2021a; Terada, 2021).

²In addition to student outcomes, the PCRCP explored teachers' acquisition of civic content knowledge, pedagogical skills, and self-efficacy in relation to students' gains in civic knowledge, dispositions, skills, civics-related SEL competencies, and use of STEM for policy analysis. A complete report on the findings of the PCRCP research can be found at: https://www.researchgate.net/publication/378867385_PCRP_Final_Report

PBL can improve student outcomes in civics, social studies, and related fields. Learning-by-doing has been shown to increase knowledge retention and enhance the development of dispositions and skills across a range of disciplines (Larmer, 2018). Evidence suggests that students in project-based classes have greater gains in civic knowledge than those in traditional lecture-style courses (Kingston, 2018). A higher percentage of Advanced Placement (AP) students who are taught using PBL achieve passing scores on the AP U.S. Government and Politics test than their peers. AP students demonstrate a deeper understanding of the content and develop more sophisticated problem-solving skills (Parker, et al., 2013). PBL has been shown to significantly improve the AP performance of students in low-income, urban districts serving majority Black and Latine communities (Lucas Education Research, 2021b). The emphasis on authentic, active, and collaborative learning contributes to PBL's ability to increase students' civic orientations and related SEL competencies (Almulla, 2020; Lucas Education Research, 2021a). PBL can be a gateway to life-long civic engagement as it provides students with an invitation to take part in their community. It conveys knowledge of how the system works, instills an authentic desire to act for the good of society, and imparts the proficiencies necessary for participation. Students can develop SEL competencies, such as critical thinking, collaborative, and communication skills, that facilitate high-level civic engagement (Briggs, et al., 2018). In addition, students' facility with using science, technology, engineering, and mathematics (STEM) proficiencies can be advanced through PBL, such as when they are used to research and find evidence to support a policy position (Hanif, Wijaya, and Winaro, 2019).

At the same time, PBL is not without its critics who challenge its efficacy as a genuinely student-driven approach and argue that PBL requires substantial resources and can be difficult to implement in the classroom. There are concerns that PBL promotes activities at the cost of covering core content knowledge. At a time when standardized tests and learning objectives have become the norm, students in classes using PBL may not have the depth of knowledge to perform well on these required assessments. A recurrent theme is that PBL is difficult to do well, especially given constraints on teachers' time and resources. PBL poses challenges to classroom management, as students are expected to be drivers of the project while teachers act as facilitators and monitor progress. It can be hard to keep students focused on the project. Identifying a problem that is relevant, doable, and aligned with real-world circumstances can be difficult. Teachers may not be able to connect with cooperative community partners to facilitate the project. Typical issues associated with group work, such as division of labor and disagreements among participants, may be exacerbated, especially when a project is tough to manage or controversial (Ewenddy, Gailea, and Syafrizal, 2023). Students who lack skills, such as the ability to work collaboratively or to communicate effectively, will be disadvantaged even if they have a superior grasp of the subject matter (Aldabbus, 2018). Assessment of projects can be challenging, as teachers must provide students with continuous feedback while simultaneously motivating them to do independent work. The criteria for evaluating PBL outcomes is more complex, time-consuming, and open to subjective judgement than standardized testing, although the potential to find common ground exists (Miller, 2012).

Inquiry-Based Learning

Taking an inquiry-based learning approach to PBL can ignite student agency and address the criticism of PBL not being genuinely student driven. Inquiry-based learning is a student-

centered teaching method. Students design questions, search for information, and interpret the information for themselves. They create evidence-based arguments that support their interpretations. An inquiry approach requires active engagement of participants as they seek out information and convey their solutions to others. Students use a variety of skills essential for effective civic engagement, including critical-thinking, research, decision-making, and communication skills (Ford et al., 2023). Teachers facilitate and scaffold inquiry-based learning to foster student agency (Kim, 2022). Students engaged in inquiry increase their self-efficacy and sense of agency in areas such as setting goals and making choices (Ford et al., 2023).

Preparing Students for Engagement

Civic engagement can be defined as voluntary involvement in community affairs that is put forth in the public interest. It constitutes active participation that is collaborative and works toward addressing areas of local, national, and global concern.³ It encompasses a wide range of activities—overtly political and non-political—that promote the public good and are intended to improve the quality of life in communities and society (Carney, et al., 2023). To be actively engaged, people must develop the knowledge, skills, dispositions, values, and commitment to community that enable them to work for the public good. People who are civically engaged feel it is their responsibility to address the problems of the larger society (Ehrlich, 2000). An engaged citizen has the ability, agency, and opportunity to act through a variety of channels, including media (Delli Carpini, 2000; Bowen, Gordon, and Chojnacki, 2017; Kennedy, 2021). Civic engagement encompasses political participation—voluntary engagement that aims to influence government decisions and societal outcomes through manifest or informal means (Ekman and Amina, 2012; Arvanitidis, 2017). The concept of democratic engagement, which refers to the practices of engagement through the mechanisms of democracy at all levels of society (Warren, 2022), also is subsumed under the construct of civic engagement. Traditional forms of civic engagement include voting and participation in the electoral process, engaging in discussion and debate, participating in community affairs, volunteering, civic leadership, advocacy, office-holding, and protesting, among others.

Civic engagement is crucial to a thriving democratic polity (Hope, 2022). It can empower people to have a voice in decision-making and heighten their sense of political efficacy, promote government accountability, and build trust in government institutions, leaders, and community members (Villaman, 2024; Levy, et al., 2023). Democratic education has the potential to counter trends, such as declining trust, waning political efficacy, and a decreased sense of civic duty, especially among young people (Villaman, 2024; White, et al., 2023; Winthrop, 2020). The type and quality of education matters, as active civics pedagogies that promote experiential learning in an open classroom environment have the greatest potential to foster engagement through the development of the requisite knowledge, skills, dispositions, norms, and behaviors (Willeck and Mendelberg, 2022; Owen, Hartzell, and Sanchez, 2020; Owen and Irion-Groth, 2020; Kahne and Spote, 2008; Owen, 2024). Using pedagogies of citizenship, teachers can enable their classrooms to serve as important sites for discussion about what democracy means and models for what democratic participation entails (Cohen, Pope, and Wong, 2021). Students whose education includes active civic learning through PBL—learning by doing—are more likely to

³ Definition developed by the Media and Civic Engagement class, Georgetown University, spring semester 2024.

embrace democratic practices, like voting, and to have a greater sense of political efficacy and trust (Kiess, 2022; Hamilton, Kaufman, and Hu, 2020).

People need the requisite civic skills to engage meaningfully and effectively in a democratic society. Civic skills are comprised of a range of proficiencies required for democratic engagement. They encompass behaviors beneficial to the development of personal competencies that promote civic engagement (Winthrop, 2020). Most conceptualizations consider skills that involve communication, collaboration, critique, and decision-making to be important for civic engagement (Ata, 2019). The development of civic skills is essential for critical thinking that facilitates collective action (Civic Mission of Schools, 2011). Patrick (2002) proposed that civic skills are comprised of cognitive skills and participatory skills. Cognitive skills involve describing, synthesizing, and evaluating information pertinent to civic life. They include the ability to monitor the media, gather information, and critically evaluate issues and policies. Participatory skills are associated with following public events and issues as well as taking action to improve conditions in the communities. They consist of voting, listening to and processing diverse views on issues, speaking openly, expressing opinions, working collaboratively to solve problems, and advocating on behalf of a cause. Other perspectives incorporate the notions of cognitive and participatory skills while highlighting the need for critical reasoning skills that facilitate democratic decision-making. These views emphasize the need for citizens to develop negotiating and coalition building skills that can enable reaching consensus to affect positive change. Critical reasoning also involves making moral judgements when taking social action (Patrick, 2003; Kirlin, 2005). Civic skills are bolstered when students develop research, inquiry, communication, and leadership capabilities (Brammer, et al., 2011).

Conveying civic skills through classroom education is no small task, and the gains are typically smaller than for other outcomes, especially civic knowledge (Jamieson, 2013). However, rigorous and impactful civic education must incorporate civic skills (EAD, 2021). Research has demonstrated that quality civic education that employs active instructional strategies, including analysis of primary sources, simulation-based learning, role playing, and academic service learning, can successfully impart a range of civic skills (Halverson, Tucker, and Smith, 2024). Project-based activities and curriculum interventions encourage students to learn facts about history and civics while also developing a sense of civic identity, building civic capacity, and forging pathways to engagement (Bauld, 2023).

Project Citizen

Project Citizen is a civic education program for young people and adults that promotes active and responsible participation in local and state government. It exemplifies best active-learning instructional practices (see Larmer, 2018) and is designed to address the criticisms of PBL. The program teaches students what public policy is and helps them learn how to monitor and influence public policy. In the process, they develop support for democratic values and principles, tolerance, and feelings of political efficacy (Owen, 2024). The Center for Civic Education launched Project Citizen in 1992. It now impacts young people in all U.S. states and 75 other countries in K-12 schools, colleges, community-based programs, and other settings. The Center publishes textbooks that guide students through the Project Citizen curriculum and offers free online resources including digital worksheets, an interactive tool for learning how to put

together a project portfolio, scholar videos that convey information about the policy process, links to relevant web resources, and examples of successful projects. To ensure effective implementation, the Center offers a teacher's guide and a teacher PD program that increases their content knowledge, improves their capacity to effectively engage young people in Project Citizen, and fosters their professional collaboration with other educators. The Center also supports a network of volunteer Project Citizen state coordinators across the United States, who disseminate the program, offer teacher support, and organize student project showcases.

Project Citizen engages young people in authentic, cooperative, project-based and inquiry-based learning. Young people work as a class or youth group over a period of several weeks or months to develop and present a public policy project on a topic they choose. They identify a problem in their 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. While doing so, they increase their civic knowledge and apply a variety of skills essential for effective civic engagement, including teamwork, collaborative problem solving, civil dialogue, consensus building, and decision making (Owen and Irion-Groth, 2022).

Steps in the Curriculum

In Project Citizen, young people engage in a step-by-step process, guided by their teachers and the student textbook. Students conduct grassroots research on problems in their communities. They talk with community members and consult various sources of information to learn more about the problems and how they affect their community. Students often design and analyze surveys of community members affected by the problems. After students have gathered initial data, the teacher supports the class in coming to a consensus on the problem they would like to address. As they research alternative policy-based solutions to their selected problem, they interact with community members and leaders, further engage with media and other information sources, and use multiple modalities of communication, within and beyond their class or group. Students share their research with the whole class, and they collaboratively develop their class policy proposal. The proposal can be one of the alternatives they researched, combine aspects of different alternatives, or be an original design. Students are required to write a clear statement of their policy and analyze its constitutionality. They develop a portfolio or presentation that summarizes the problem, alternative policies, their proposed policy, and their action plan. The class then presents their work to others in a simulated or actual public hearing or showcase event conducted at their school or another local setting, such as a city council meeting. When used as performance-based assessment, the simulated hearing includes follow-up questions from evaluators, who may be education leaders, teachers, members of local non-profit organizations, and/or public officials. At the end of the project, each student writes a reflection on what they learned through their Project Citizen experience.

Collaborative Problem Solving

As teachers facilitate Project Citizen, they guide students in learning how to engage in inquiry and problem solving, rather than teaching them what to think. The Project Citizen textbook provides students with a framework for collaborative inquiry. In each step of the

Project Citizen process, teachers organize students into collaborative working groups and take measures to foster interpersonal communication and teamwork. They organize whole-class and group discussions that provide young people the opportunity to share their experiences, perspectives, evidence, and ideas with their peers. Presentation and reflection are also key elements of inquiry-based learning. Project Citizen students have opportunities to present, receive feedback, and reflect upon their research and policy proposals in a variety of oral and written formats inside and, oftentimes, beyond the classroom.

Civil Dialogue

Project Citizen requires students to communicate with one another to make collective decisions throughout the inquiry process. Educators cultivate communication that builds mutual understanding and cooperation. They set expectations for open and democratic discussions among students. Such expectations include taking turns to speak, listening and paying attention to others, assuming positive intentions, and posing questions that seek to deepen understanding and exploration of ideas presented. As students build their projects, they put ideas on the table and use civil dialogue and other tools to examine, organize, and consider the ideas for potential incorporation into the project.

Engaging Public Officials and Communities

As students develop and present their projects, they engage with their communities and civic life in a variety of ways. They build relationships with civic leaders as they discuss their policy concerns with them. This interaction can occur when researching and developing their policies as well as in the presentation of their policy proposals. In addition, students' action plans often involve public information campaigns and strategies to reach out to and discuss their policy concerns with local and state officials. In communities where Project Citizen is an established program in local schools, public officials expect to engage with students each year and have left space in the public meeting agenda or annual bill drafting for students' proposals.

Project Citizen participants across the country and the world have tackled a wide range of policy issues across the past three decades. They have addressed concerns in their schools, public health and safety, access to food, equity and diversity issues, environmental concerns, literacy, and democratic processes, among other issues. Some students have been successful in working with public officials to address community problems and enact their recommended policies. Students have successfully decreased street crime in their neighborhoods, improved district discipline and nutritional policies, altered community vehicular traffic patterns, expanded drug-free school zone boundaries, created anti-discrimination policies, and passed legislation protecting children from second-hand smoke. Students in New Delhi worked to provide support and safeguards for marginalized transgender individuals (Owen and Irion-Groth 2020). PCRPs' projects included a focus on pandemic-related issues such as youth mental health and responsible pet adoption.

The PCRPs Curriculum Intervention

The PCRCP student intervention consisted of two main components: (1) at least 20 hours of classroom instruction in Project Citizen and (2) development and presentation of a public policy portfolio. Some of the time developing the portfolio and preparing a presentation was undertaken during class. The amount of time spent in class was at the discretion of the teacher implementing the instruction. The underlying process targeted by the student intervention is the acquisition of civic knowledge, skills, and dispositions through the Project Citizen curriculum and its active, inquiry-based, project-based learning methods.

The primary student educational outcomes sought in the PCRCP included: (1) an increase in knowledge of the methods and procedures of governmental institutions, (2) an increase in civic skills, (3) an increase in the development of positive civic dispositions, (4) an increase in civics-related SEL competencies, and (5) the improvement of STEM knowledge. These elements, especially civic knowledge, skills, dispositions, and civics-related SEL competencies, are integral to students developing a propensity for civic engagement. The PCRCP research found positive outcomes in all of these areas for students who were taught Project Citizen (Owen, 2024). This paper focuses specifically on skills associated with problem-solving and civic expression, students' propensity to engage, and their preparedness to participate.

PCRCP Teacher Professional Development

Effectively employing PBL in the classroom requires that teachers have the requisite active learning pedagogical skills. Teachers use interactive, student-centered, cross-disciplinary instructional approaches that integrate independent and group work. Their need to master relevant civics content may exceed what is required for a traditional lecture and textbook heavy approach given the student-driven aspect of PBL and the range of potential issues and policies that can be addressed.

The necessity for quality PD for teachers implementing Project Citizen in their classrooms has been documented in the U.S. and abroad (Owen and Irion-Groth, 2020; Owen, 2023; Ozturk, 2022; Ozturk, Rapoport, and Ozturk, 2021; Root and Northup, 2007). PCRCP teachers received 48 hours of PD sessions divided between a summer institute and follow-up sessions during the academic year. The PD began with 36-hour summer institutes at sites across the country organized by the Center's network of state coordinators, with sessions led by scholars and mentor teachers. Teachers participated in the institutes before implementing Project Citizen with their students. During the academic year in which they were implementing the curriculum, teachers participated in shorter follow-up PD sessions. Mentor teachers led the follow-up sessions and supported a professional learning community of the participating teachers in their project site.

The Project Citizen PD program was aimed at developing teachers' capacity to work with students on all aspects of the curriculum. Scholars were consulted to enhance teachers' content knowledge of the U.S. Constitution, government institutions, and the public policy process. Mentors were engaged to help teachers develop effective pedagogies for instructing Project Citizen and improve their capacity to engage young people in the curriculum. In addition to more standard knowledge of American government and institutions, Project Citizen teachers must be familiar with how the public policy process, interest groups, and non-governmental organizations

work. They should be able to teach students core research skills, such as working with primary source documents, using evidence to support arguments, and evaluating alternative hypotheses and explanations. Teachers were encouraged to integrate STEM techniques in their Project Citizen classes, such as survey research and basic data analysis so that their students could make the connection to policy making (Ross and Fried, 2022).

Mentor teachers worked with teacher participants to align their teaching with grade-appropriate state and local standards in civics and government as well as considering Project Citizen's alignment to appropriate English language arts, math, technology, and science standards. During the PD, teachers reviewed a variety of online tools helpful for Project Citizen and created and presented a public policy portfolio in a collaborative group. On the final day of the summer institute, teachers divided into groups and made four-minute prepared statements about their portfolio and responded to questions from a panel of evaluators. Participants had the opportunity to experience and debrief this experience prior to engaging their students in a public policy project.

Prior Research on Project Citizen

Project Citizen offers students the opportunity to learn first-hand about how government and the public policy process work as they identify, research, and propose solutions to an issue or problem in their school or community. Evaluators have noted that the Project Citizen intervention can be adapted to a wide range of classroom contexts which explains its widespread international use (Atherton, 2000). A comparative study of the effectiveness of Project Citizen in Indiana (U.S.), Latvia, and Lithuania found that the curriculum had positive, statistically significant impacts on civic knowledge, dispositions, and skills in all three countries (Vontz, Metcalf, and Patrick, 2000). A study conducted in Taiwan employed a quasi-experimental design where twelve teachers each instructed one class using Project Citizen and another using traditional, discipline-based civics instruction. The findings demonstrated that Project Citizen students significantly outperformed students in the traditional civics class in terms of their level of political interest, commitment to the rights and responsibility of citizenship, and development of core civic skills (Liou, 2004). Research in Indonesia employed a quasi-experimental design to test whether Project Citizen could be used to promote values-based education mandated by the country's National Education System. The study found that Project Citizen was an effective model for developing democratic character traits, including critical thinking, positive interaction, discussion, and collaboration skills, and promoting decision-making that is in the public interest. The character orientations developed in the context of citizenship education carried over to the students' daily lives (Kabatia, Irwan, and Firman, 2021).

Studies conducted in the U.S. and in other countries have found support for PC's ability to convey civic orientations. An early assessment employed case studies in the U.S. that documented Project Citizen students' "success stories." Students carried out projects that helped homeless teens, got a traffic light installed at a dangerous intersection, and developed a method for conducting research on the World Wide Web that was widely adopted (Tolo, 1998). The curriculum was lauded as a "springboard" that provided American students with an entrée to community service opportunities by providing them with the requisite dispositions and skills for engagement (Atherton, 2000). Using a mixed method approach, a study of a middle school

Project Citizen class in California found that the program improved students' civic literacy, increased their sense of political efficacy, and helped to develop collaborative skills (Morgan, 2016). Research fielded in Idaho indicated that high school students who participated in Project Citizen had higher levels of political efficacy and a stronger sense of civic responsibility than college students who had not taken part in the program (Fry and Bentahar, 2013). A large-scale program evaluation found that middle and high school students who participated in Project Citizen made greater improvements in civic development, including civic knowledge, civic discourse skills, and public policy problem-solving skills than students in a control group. Teachers who had more experience teaching the curriculum had better student outcomes than those new to the program. The study found that Project Citizen had similar outcomes regardless of students' gender, native language, and level of participation in extra-curricular activities. Non-White students made greater gains in persuasive writing ability, but racial/ethnic differences on other indicators were negligible (Root and Northup, 2007). The present research on the PCRCP found that Project Citizen students made statistically significant gains in civic knowledge, dispositions, skills, and SEL competencies as well as acquiring civics-relevant STEM skills (Owen and Irion-Groth, 2020; Owen, 2025).

Research Design

The PCRCP study employed multi-site, school-level RCTs based on pretest/posttest surveys to assess the impact of the Project Citizen curriculum intervention on students. The RCT design provided for randomized assignment of teachers and their students to Project Citizen intervention and control groups at the middle school (grades 6-8) and high school (grades 9-12) levels. A protocol was filed with the Georgetown University Institutional Review Board (IRB) for the student study which was granted exemption.⁴

The initial intention was to field the study during three typical school years. The COVID-19 pandemic upended those plans. After consultation with our program officer at IES, the Center and CERL made the decision to go ahead with the implementation of the Project Citizen program and to conduct the research. The Center quickly adapted the Project Citizen teacher PD program for a virtual format. Center staff worked with state coordinators and mentor teachers to develop curriculum innovations that would enable teachers the flexibility to teach Project Citizen under uncertain conditions that were continually in flux. The research had the added dimension of evaluating the program's effectiveness for three years that were heavily impacted by the pandemic. Each cohort of the study experienced a different set of circumstances related to the mode in which the PD and curriculum were delivered, the impact of the pandemic on teachers' and students' wellbeing, and wider societal conditions. In Year 1, the PD program was delivered entirely online, which mostly was the case for the student curricular intervention. The summer PD institutes were held in person in Year 2. While most schools returned to in-person instruction, many of the students enrolled in the study had periods of hybrid learning due to outbreaks of the virus. Schools primarily were in-person full-time in Year 3, but the effects of the pandemic on student learning and absenteeism persisted.

The student intervention measured the effectiveness of the Project Citizen classroom instruction on students' acquisition of knowledge of the methods and procedures of

⁴ Georgetown University Institutional Review Board: Student Study IRB ID: STUDY00002026.

governmental institutions related to public policy and their development of civic skills and dispositions. Students took pretests at the outset of the Project Citizen or their conventional civics curriculum and posttests at the conclusion of their class. The tests were administered during class time by their teacher using a secure online platform. Teachers were instructed to use the methods established by their institution for performing online testing.

Sampling

The population of interest in the study is middle and high school students who take a class where the teacher has implemented the Project Citizen curriculum. A hierarchical design was employed where schools (clusters) were randomly assigned to treatment and control groups. The school was the appropriate unit of randomization as Project Citizen can be implemented as a school-based project that involves more than one teacher and/or class. The schools in the sample were public and private middle and high schools nationwide serving grades 6 through 12 that are representative of the schools in their district. All qualified teachers instructing civics, social studies, American government, or American history courses within a school were invited to enroll in the study. All students of teachers in the Project Citizen and control groups were recruited for the research. Schools and their teachers were recruited for each cohort through the Center's network of state coordinator and mentor 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 middle and high school civics teachers who were instructing courses in which Project Citizen could be incorporated in the ensuing academic year. The students in the study represented diverse populations, including students at risk of failure. 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, many of the participating teachers served these students. Close to 90% of students in the sample were from schools that served large numbers of high-need students, a population that was especially vulnerable during the pandemic.

A total of 70 schools were recruited for each study cohort; 35 schools were randomly assigned to the Project Citizen condition and 35 to the control group. A total of 210 schools were enrolled over the three years and 180 completed the study. A total of 237 teachers enrolled in the study, and 196 stayed. A combined total of 6,521 students enrolled in the study and 5,415 stayed. The pandemic presented challenges for keeping schools, teachers, and students enrolled in the PRCP. The common reasons for teachers leaving a study, such as changing positions, new teaching assignments, switching schools, curriculum shifts, and personal matters, were augmented with pandemic-related causes. Steps were taken to curb attrition that had some success, but the pandemic effects on study participation were apparent. In cohort 1, overall school attrition was 19% and differential attrition was 9%. In cohort 2, overall attrition was 16% and differential attrition was 9%. In cohort 3, overall attrition was 9% and differential attrition was 5%. The school samples in cohorts 1 and 2 met the What Works Clearinghouse (WWC) liberal attrition standard. The cohort 3 school sample met WWC's conservative attrition standard.⁵

⁵ What Works Clearinghouse. "WWC Standards Brief: Attrition Standard," Institute of Education Sciences. [WWC STANDARDS Brief: Attrition Standard \(ed.gov\)](https://www.ies.ed.gov/wwc/standards-briefs/attrition-standard)

Statistical Methodology

Statistical analyses were conducted on the pretest/posttest student outcome data to determine if there were statistically significant changes that were aligned with the Project Citizen intervention. Contingency table analysis, paired samples t-tests, and ANCOVA models were used in the analysis.

Difference of means tests (paired samples t-tests) were performed to identify within group shifts in the pretest and posttest outcome measures for the Project Citizen and control group students for each cohort. The middle and high school student samples for each cohort were analyzed separately. The pretest and posttest mean scores and standard deviations, the difference of pretest/posttest means and significance test, the percentage change in pretest/posttest means, the effect size (Hedge's *g*), the improvement index, and the pretest/posttest correlation and significance test were reported. WWC's improvement index was computed from Hedge's *g*. It represents the average expected change in the percentile rank if an average group member receives either Project Citizen (intervention group) or a standard civics class (control group).⁶

Hierarchical linear models were estimated using analysis of covariance (ANCOVA) to determine if there were statistically significant differences in the adjusted posttest scores of the intervention and control group teachers and students. ANCOVA was an appropriate model for this analysis as it adjusts for non-equivalence in intervention and control group scores at baseline. For the teacher analysis, the dependent variables were posttest scores. Pretest scores were entered as a covariate. Intervention/control group was treated as a fixed factor. Separate ANCOVA models were estimated for middle and high school students. Posttest outcome measures were the dependent variables. Pretest outcome measures and a variable coded for the students' school were entered as covariates. Intervention/control group was a fixed factor. Effect size for the difference of adjusted posttest means between the Project Citizen and control groups tests was estimated by Hedges' *g*. In the ANCOVA models, the adjusted means and unadjusted standard deviations were used in computing the effect sizes.⁷ WWC's improvement index was calculated from Hedge's *g*. In the ANCOVA analysis, the improvement index 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.⁸

Hypotheses

The logic model for the PCRCP specifies that the teacher PD program and implementation of Project Citizen will produce increases in students' civic competencies. This paper tests hypotheses related to students' acquisition of civic skills relevant for engagement and their propensity for future participation. The following hypotheses were tested in this study:

⁶ Institute for Education Sciences. 2022. What Works Clearinghouse, Procedures and Standards Handbook, version 5, U.S. Department of Education, pp. 186-187.

⁷ Institute for Education Sciences, 2022. What Works Clearinghouse, Procedures and Standards Handbook, version 5, pp. 135-36.

⁸ Institute for Education Sciences. 2022. What Works Clearinghouse, Procedures and Standards Handbook, version 5, U.S. Department of Education, pp. 186-187.

H₁: The civic skills of students who were taught the Project Citizen curriculum will increase significantly.

H₂: Students who were taught the Project Citizen curriculum will have greater increases in civic skills than students who were taught a traditional civics curriculum.

H₃: The propensity for future civic engagement of students who were taught the Project Citizen curriculum will increase significantly.

H₄: Students who were taught the Project Citizen curriculum will have a greater propensity for future civic engagement than students who were taught a traditional civics curriculum.

Analysis

The PCRCP compared the impact of Project Citizen versus a standard civics class that relies more heavily on textbooks, lectures, and traditional forms of discussion and does not employ PBL on middle and high school students. Project Citizen is designed to impart a range of civic skills to students by working on an issue in their community. Students' ability to work collaboratively and cooperatively to solve a problem is a central premise of Project Citizen. Having students express and share their views also is an important element of the curriculum. The analysis assesses the effectiveness of Project Citizen in conveying these civic skills sets. The extent to which people believe that they are prepared to take part in civic life can be a determinant of their inclination to engage (Arvanitidis, 2017; Levy and Akiva, 2019). The extent to which students' perceptions of how prepared they felt to engage in civic life before and after the Project Citizen curricular intervention was examined. Finally, students' propensity to engage in civic life after their civics class by voting and getting involved in their community was analyzed.

Problem-Solving Skills

Both middle and high school students in the intervention and control groups had relatively high scores on the measure of problem-solving at the outset. Project Citizen students made statistically significant gains after experiencing the curriculum. The improvement in problem-solving skills was greater for middle schoolers who took Project Citizen than those in a standard civics class across all cohorts. High school students had greater gains than the control group students in cohorts 1 and 2.

Students were asked if they were able to perform a variety of tasks if they faced a problem in their community. These tasks were integral to the Project Citizen curriculum. Students indicated if they felt 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. For each item, students could respond: 1 I definitely can't, 2 I probably can't, 3 I'm not sure if I can, 4 I probably can, and 5 I definitely

can. These items were combined in an additive index of problem-solving skills. The problem-solving index ranged from 1 (definitely can't) to 29 (definitely can). The internal consistency reliability of the pre/post indexes (Cronbach's α) was strong at .87 or greater for all study years.

The pretest/posttest increases in problem-solving skills for Project Citizen students in middle school were modest, but they were greater than for the control group. (See Table 1.) Students' mean pretest scores for the intervention and control groups were at the higher end of the scale, especially in cohorts 1 and 2. The increases in pretest/posttest mean scores for the Project Citizen students were .57, .85, and .93 across the three cohorts. These differences were statistically significant. The percentage change for the Project Citizen group in each cohort was small at 3%, 4% and 5%, respectively. The effect sizes (Hedge's g) were .12, .14, and .14, which corresponded to improvement index scores of +5, +6 and +6 percentile points. In comparison, the pretest/posttest mean differences were not statistically significant for the control group in cohorts 1 and 2. The difference of means of .61 was statistically significant for the control group in cohort 3. The pretest/posttest percentage change was 3% and the improvement index was +3 percentile points.

Table 1
Middle School Students' Problem-Solving Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 20.87 | 19.82 | 19.12 | 19.60 | 17.69 | 17.64 |
| Pretest SD | 5.27 | 5.29 | 6.10 | 5.90 | 6.08 | 6.03 |
| Posttest \bar{x} | 21.45 | 19.85 | 19.89 | 19.96 | 18.62 | 18.25 |
| Posttest SD | 5.00 | 5.06 | 5.53 | 5.02 | 6.05 | 5.83 |
| \bar{x} Difference | .57 | .03 | .85 | .36 | .93 | .61 |
| Sign. Difference | .02 | NS | .00 | NS | .00 | .04 |
| Percentage Change | 3% | <1% | 4% | 2% | 5% | 3% |
| Effect Size | .12 | .01 | .14 | .06 | .14 | .08 |
| Improvement Index | +5 | +1 | +6 | +2 | +6 | +3 |
| Pre/Post Correlation | .44 | .52 | .49 | .41 | .43 | .26 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 303 | 325 | 309 | 404 | 445 | 314 |

The ANCOVA analysis examined the difference in adjusted posttest mean scores for the middle school Project Citizen and control group students. The adjusted posttest mean difference was small and statistically significant for cohort 1. However, the difference of mean scores between the groups was not statistically significant for the subsequent cohorts. (See Appendix, Table A1.)

The trends for high school students resembled the middle school findings. (See Table 2.) High school students' pretest scores were near the upper end of the index, indicating that they generally felt capable of taking action to solve a problem in their community prior to their civics class. The improvement in Project Citizen students' mean scores on the problem-solving index

was modest and statistically significant for all three cohorts. The difference of means was .36 for cohort 1, .42 for cohort 2, and .65 for cohort 3. The percentage change and improvement index scores were small across the board. The effect sizes (Hedge’s *g*) for the Project Citizen students’ problem-solving skills were .08, .08, and .12, corresponding to improvement index scores of +3, +3, and +5 percentile points. The control groups’ pretest/posttest mean differences were not statistically significant for cohorts 1 and 2. Cohort 3 was the only instance where the increase in the control group’s scores was slightly higher than that of the Project Citizen group, although the improvement index was one percentile point lower.

Table 2
High School Students’ Problem-Solving Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|-------------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest $\bar{\chi}$ | 21.91 | 21.02 | 21.11 | 20.86 | 19.73 | 19.20 |
| Pretest SD | 4.50 | 5.33 | 4.75 | 4.83 | 5.21 | 5.53 |
| Posttest $\bar{\chi}$ | 22.27 | 20.79 | 21.54 | 20.73 | 20.39 | 19.90 |
| Posttest SD | 4.57 | 5.64 | 5.06 | 5.31 | 5.63 | 5.69 |
| $\bar{\chi}$ Difference | .36 | -.23 | .42 | .13 | .65 | .70 |
| Sign. Difference | .02 | NS | .05 | NS | .00 | .00 |
| Percentage Change | 2% | -1% | 2% | <1% | 3% | 4% |
| Effect Size | .08 | -.04 | .08 | .02 | .12 | .10 |
| Improvement Index | +3 | -2 | +3 | +1 | +5 | +4 |
| Pre/Post Correlation | .52 | .37 | .38 | .48 | .47 | .27 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 631 | 287 | 420 | 311 | 501 | 325 |

The ANCOVA analysis for high school students revealed that the adjusted posttest mean scores for the Project Citizen group were significantly higher than the control group scores for cohorts 1 and 2. The percentage difference was 5% in cohort 1, with an effect size (Hedge’s *g*) of .27 that corresponded to an improvement index of +10 percentile points. In cohort 2, the percentage difference was 8%, the effect size was .34, and the improvement index was +13 percentile points. The difference in adjusted Project Citizen and control group posttest means was not statistically significant in cohort 3. (See Appendix, Table A2.)

Civic Expression Skills

Students’ gains in civic expression skills were greater than for problem-solving skills. Students’ average pretest scores on the civics expression measure were near the center of the distribution for all conditions and cohorts. In contrast, they were toward the high end of the problem-solving index at the outset. The civic expression skills of both middle and high school students who received the Project Citizen intervention improved significantly. The gains for middle school students in the control group were smaller across cohorts, and nonsignificant in cohort 1. The civic expression skills of high school students in the control group did not change significantly from pretest to posttest in cohorts 1 and 2. The improvement in the high school

control group’s average civic expression scores was comparable to the Project Citizen students’ scores in cohort 3.

The surveys included a battery of six items measuring civic expression skills. 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. The responses to the individual items were 1 I definitely can’t, 2 I probably can’t, 3 I am not sure if I can, 4 I probably can, and 5 I definitely can. The six items were added to form a civic expression index that ranged from 1 (definitely can’t) to 25 (definitely can). The index reliability (Cronbach’s α) was high at over .86 or greater for all cohorts and grade levels.

Middle school students’ scores on the civic expression index hovered around the midpoint of the scale at the outset of the study. Students who took part in Project Citizen had notable gains on this measure. The increases in their scores were greater than those of the control group students. (See Table 3.) The pretest/posttest improvements in Project Citizen students’ scores on the civic expression skills index were 1.22, 1.50, and 1.50, and were statistically significant across the three cohorts. The percentage change was 9% for cohort 1, 11% for cohort 2, and 13% for cohort 3. The effect sizes (Hedge’s g) were similar at .23, .24, and .22 for the three cohorts, and the improvement index score was +9 percentile points across the board. The pretest/posttest mean differences were notably smaller for the control group at .40, .66, and .81, and were statistically significant for cohorts 2 and 3, but not cohort 1. The percentage change was 3% in cohort 1, 5% in cohort 2, and 7% in cohort 3. The effect sizes were .07, .11, and .10, with corresponding improvement index scores of +3, +4, and +4 percentile points.

Table 3
Middle School Students’ Civic Expression Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|-------------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest $\bar{\chi}$ | 14.29 | 13.85 | 13.24 | 13.58 | 12.02 | 11.86 |
| Pretest SD | 5.98 | 6.11 | 6.31 | 6.27 | 6.23 | 6.15 |
| Posttest $\bar{\chi}$ | 15.52 | 14.25 | 14.75 | 14.24 | 13.53 | 12.67 |
| Posttest SD | 5.82 | .56 | 5.79 | 5.59 | 6.20 | 6.16 |
| $\bar{\chi}$ Difference | 1.22 | .40 | 1.50 | .66 | 1.50 | .81 |
| Sign. Difference | .00 | NS | .00 | .02 | .00 | .03 |
| Percentage Change | 9% | 3% | 11% | 5% | 13% | 7% |
| Effect Size | .23 | .07 | .24 | .11 | .22 | .10 |
| Improvement Index | +9 | +3 | +9 | +4 | +9 | +4 |
| Pre/Post Correlation | .58 | .54 | .45 | .46 | .38 | .21 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 289 | 315 | 300 | 389 | 439 | 316 |

The ANCOVA analysis for middle school indicated that the adjusted mean difference in posttest civic expression skills was statistically significant in cohorts 1 and 3. The percentage

difference between the Project Citizen and control group adjusted posttest mean scores for cohort 1 was 6%, the effect size was .17, and the improvement index was +7 percentile points. The findings for cohort 3 were similar, as there was a 6% difference in the adjusted posttest means scores between the groups, an effect size of .15, and an improvement index of +6 percentile points. The difference of adjusted posttest means in cohort 2 was small and nonsignificant. (See Appendix, Table A3.)

High school students' scores on the civic expression skills index improved significantly for the Project Citizen group in every cohort. (See Table 4.) In cohort 1, the pretest/posttest mean difference was 1.08 for Project Citizen students, representing a 7% increase. The effect size (Hedge's *g*) was .24 and the improvement index was +7 percentile points. The Project Citizen group's mean difference in cohort 2 was 1.24, the percentage change was 8%, the effect size was .21, and the improvement index was +8. The difference of means was not statistically significant for the control group in cohorts 1 and 2. In cohort 3, the control group mean difference (1.35) exceeded that of the Project Citizen group (1.06). The difference of means was statistically significant for both groups. The percentage change for the Project Citizen students was 8% compared to 10% for the control group. The improvement indexes were .17 and .20, respectively, and corresponded to improvement index scores of +7 and +8 percentile points.

Table 4
High School Students' Civic Expression Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 16.32 | 15.33 | 15.32 | 15.33 | 13.74 | 13.00 |
| Pretest SD | 5.24 | 5.83 | 5.45 | 5.65 | 5.81 | 6.20 |
| Posttest \bar{x} | 17.41 | 15.67 | 16.57 | 15.42 | 14.80 | 14.36 |
| Posttest SD | 4.99 | 5.99 | 5.51 | 5.62 | 6.12 | 6.27 |
| \bar{x} Difference | 1.08 | .34 | 1.24 | .09 | 1.06 | 1.35 |
| Sign. Difference | .00 | NS | .00 | NS | .00 | .00 |
| Percentage Change | 7% | 2% | 8% | <1% | 8% | 10% |
| Effect Size | .24 | .05 | .21 | .02 | .17 | .20 |
| Improvement Index | +9 | +2 | +8 | +1 | +7 | +8 |
| Pre/Post Correlation | .61 | .44 | .43 | .47 | .48 | .44 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 627 | 285 | 417 | 313 | 497 | 319 |

The ANCOVA analysis demonstrated that the Project Citizen high school students' average scores on the civic expression skills index were significantly higher than the control groups' scores for cohorts 1 and 2. The percentage difference in the groups' scores was 7% in cohort 1 and 11% in cohort 2. The effect size in cohort 1 was .25 corresponding to an improvement index of +6 percentile points. In cohort 2, the effect size was .31 and the improvement index was +12 percentile points. The difference in adjusted posttest means between Project Citizen and control group students was nonsignificant in cohort 3. (See Appendix, Table A4.)

Perceptions of Civic Skills

The study examined the extent to which students felt prepared to engage in civic life based on their perceptions of their civic skills. Middle school students who participated in Project Citizen felt that their civic skills increased significantly across all three cohorts. There was no change in the control group students' belief that they had the skills to engage. High school students in both the Project Citizen and control groups became more confident about their ability to engage post intervention. The Project Citizen students' positive view of their civic skills increased more than that of the control group students.

Students' perception of their civic skills was measured by combining their scores on three items. Students were asked how much they agreed with the following statements: (1) I have a pretty good understanding of the important political issues facing our country, (2) I can help organize people to solve a problem in my community, and (3) I can find the government official or branch of government that is responsible for solving a problem in my community. The respondents could 1 strongly disagree, 2 disagree, 3 neither agree nor disagree, 4 agree, and 5 strongly agree. The three items were combined to form an additive index that ranged from 1 (low perceived civic skills) to 13 (high perceived civic skills). The civic skills index reliability (Cronbach's α) was acceptable across all three cohorts and grade levels at .74 or greater.

Middle school students who had taken Project Citizen had more positive perceptions of their civic skills after they received the curriculum. (See Table 5.) The pretest/posttest mean differences of .58, .93, and .46 were statistically significant across all three cohorts. The percentage change was 8% for cohort 1, 13% for cohort 2, and 6% for cohort 3. The effect sizes (Hedge's g) were small to medium at .24, .33, and .15. The improvement index scores were +6, +13, and +6 percentile points, respectively. In contrast, the differences in the mean pretest/posttest scores of the control group students were small and nonsignificant.

Table 5
Middle School Students' Perceptions of Their Civic Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 7.70 | 7.64 | 7.23 | 7.94 | 7.33 | 7.11 |
| Pretest SD | 2.39 | 2.56 | 2.63 | 2.68 | 2.50 | 2.54 |
| Posttest \bar{x} | 8.28 | 7.79 | 8.16 | 8.07 | 7.79 | 7.15 |
| Posttest SD | 2.51 | 2.59 | 2.36 | 2.48 | 2.62 | 2.61 |
| \bar{x} Difference | .58 | .15 | .93 | .12 | .46 | .04 |
| Sign. Difference | .00 | NS | .00 | NS | .00 | NS |
| Percentage Change | 8% | 2% | 13% | 2% | 6% | <1% |
| Effect Size | .24 | .06 | .33 | .05 | .15 | .01 |
| Improvement Index | +6 | +2 | +13 | +2 | +6 | 0 |
| Pre/Post Correlation | .52 | .50 | .39 | .47 | .33 | .23 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 314 | 351 | 347 | 433 | 504 | 381 |

The ANCOVA analysis found that the adjusted mean posttest scores on perception of civic skills for middle school students who took part in Project Citizen were significantly higher than those of the control group students in cohorts 1 and 2. The percentage difference was 5% for both cohorts. The effect sizes were small, .16 for cohort 1 and .19 for cohort 2, with improvement index scores of +6 and +8 percentile points. The difference in adjusted mean posttest scores between the Project Citizen and control groups was nonsignificant in cohort 3. (See Appendix, Table A5.)

High school students' perceptions of their ability to engage competently in civic life improved significantly after participating in Project Citizen across all three cohorts. (See Table 6.) The difference in pretest/posttest means was .59, .80, and .71. The percentage change was 7% for cohort 1, 10% for cohort 2, and 9% for cohort 3. The effect sizes (Hedge's *g*) were small to moderate at .25, .33, and .38, respectively. The associated improvement index scores were +6, +13, and +15 percentile points. The perceived civic skills scores of high school students in the control group increased significantly in cohorts 2 and 3, but not in cohort 1. The pretest/posttest mean differences were notably smaller than for the Project Citizen group students, as were the percentage change, effect size, and improvement index scores.

Table 6
High School Students' Perceptions of Their Civic Skills by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 8.29 | 8.31 | 7.87 | 7.78 | 7.56 | 7.82 |
| Pretest SD | 2.41 | 2.77 | 2.48 | 2.55 | 2.18 | 2.28 |
| Posttest \bar{x} | 8.89 | 8.43 | 8.67 | 8.27 | 8.26 | 8.36 |
| Posttest SD | 2.36 | 2.75 | 2.36 | 2.56 | 2.334 | 2.35 |
| \bar{x} Difference | .59 | .12 | .80 | .48 | .71 | .53 |
| Sign. Difference | .00 | NS | .00 | .00 | .00 | .00 |
| Percentage Change | 7% | 1% | 10% | 6% | 9% | 7% |
| Effect Size | .25 | .04 | .33 | .19 | .38 | .20 |
| Improvement Index | +6 | +1 | +13 | +7 | +15 | +8 |
| Pre/Post Correlation | .56 | .50 | .48 | .47 | .33 | .36 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 642 | 293 | 440 | 323 | 533 | 347 |

The ANCOVA analysis of perceived civic skills found that the difference in adjusted posttest means was significantly higher for the Project Citizen group than the control group in cohorts 1 and 2, but not in cohort 3. The mean difference was .46 for cohort 1 and .53 for cohort 2. These differences were small, with percentage differences of 5% and 6%, effect sizes (Hedge's *g*) of .19 and .22, and improvement index scores of +8 and +9 percentile points. (See Appendix, Table A6.)

Likelihood of Voting

Students' inclination to engage civically increased during their Project Citizen experience. They were more likely to indicate that they would turn out to vote in elections in the future. The findings were more prominent for high school students, who were nearly or already eligible to vote, than middle schoolers. The findings were stronger for middle and high school students who were enrolled in Project Citizen than those in the control group.

Students were asked about their likelihood of voting if they had the opportunity. They responded to the survey item: If you were able to vote in elections, how likely is it that you would turn out to vote? The response categories were 1 unlikely, 2 somewhat likely, and 3 very likely.

The likelihood of middle school students who participated in Project Citizen voting if they had the opportunity increased from pretest to posttest in each cohort. (See Table 7.) The percentage of Project Citizen middle schoolers who would very likely turn out increased from 56% to 63% in cohort 1, 50% to 53% in cohort 2, and 44% to 52% in cohort 3. The pre/post differences were statistically significant. The pattern was mixed for middle school students in the control group. In cohort 1, the percentage of control group students stating that they were very likely to vote increased from 53% to 59%. However, the percentage declined from pretest to posttest in subsequent cohorts. These changes in the control group also were statistically significant.

Table 7
Middle School Students' Likelihood of Voting

| Middle School Project Citizen Students | | | | | | |
|--|----------|----------|----------|----------|----------|----------|
| Likelihood of Voting | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Very Likely | 56% | 63% | 50% | 53% | 44% | 52% |
| Somewhat Likely | 33% | 27% | 32% | 42% | 36% | 38% |
| Unlikely | 11% | 10% | 18% | 5% | 20% | 10% |
| n | 314 | 314 | 347 | 347 | 504 | 504 |

| Middle School Control Group Students | | | | | | |
|--------------------------------------|----------|----------|----------|----------|----------|----------|
| Likelihood of Voting | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Very Likely | 53% | 59% | 51% | 47% | 46% | 41% |
| Somewhat Likely | 29% | 24% | 33% | 39% | 35% | 42% |
| Unlikely | 18% | 17% | 16% | 14% | 19% | 17% |
| n | 351 | 351 | 433 | 433 | 381 | 381 |

Given their proximity to voting age, high school students expressed a greater probability of voting than middle schoolers. The likelihood of high school students enrolled in Project Citizen voting if they had the opportunity increased after they completed the curriculum for

every cohort. (See Table 8.) The percentage of Project Citizen students who responded that they were very likely to vote was high at over 60% from the outset. The percentage changed from 69% to 72% in cohort 1, 63% to 69% in cohort 2, and 66% to 76% in cohort 3. The prospect of control group students being very likely to turn out increased in cohort 1 (from 53% to 59%) and cohort 3 (from 64% to 69%) but declined in cohort 2 (from 61% to 53%). The pre/post differences were statistically significant for the Project Citizen and control groups.

Table 8
High School Students' Likelihood of Voting

| High School Project Citizen Students | | | | | | |
|--------------------------------------|----------|----------|----------|----------|----------|----------|
| Likelihood of Voting | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Very Likely | 69% | 72% | 63% | 69% | 66% | 76% |
| Somewhat Likely | 32% | 21% | 24% | 24% | 22% | 20% |
| Unlikely | 13% | 7% | 13% | 7% | 12% | 4% |
| n | 642 | 642 | 439 | 439 | 533 | 533 |

| High School Control Group Students | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|----------|
| Likelihood of Voting | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Very Likely | 53% | 59% | 61% | 53% | 64% | 69% |
| Somewhat Likely | 29% | 24% | 28% | 36% | 18% | 22% |
| Unlikely | 18% | 17% | 12% | 11% | 18% | 9% |
| n | 293 | 293 | 323 | 323 | 347 | 347 |

Prepared for Engagement

Students felt more ready to engage in public life after taking a civics class. The trend was more evident for high school students than middle schoolers. Project Citizen high schoolers expressed the greatest propensity for engagement. The high school control group's likelihood of engaging increased over the course of the study, but not as much as for the Project Citizen students.

Students reported on how equipped they felt to be civically engaged. They recorded their agreement with the statement: I am well-prepared to participate in political and public life. The response categories were 1 strongly disagree, 2 disagree, 3 neither agree nor disagree, 4 agree, and 5 strongly agree. Strongly disagree/disagree and strongly agree/agree were combined into single categories for the contingency table analysis.

Middle school students' belief that they were prepared for engagement in political and public life increased after experiencing the Project Citizen curriculum. (See Table 9.) The percentage of Project Citizen middle school students who agreed that they were prepared to engage increased from 37% to 41% in cohort 1, from 30% to 39% in cohort 2, and from 40% to

46% in cohort 3. The pre/post changes were statistically significant for all cohorts. There was little to no change in the pre/post program trends for the control group middle school students.

Table 9
Middle School Students' Preparation for Engagement

| Middle School Project Citizen Students | | | | | | |
|--|----------|----------|----------|----------|----------|----------|
| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Agree | 37% | 41% | 30% | 39% | 40% | 46% |
| Neither | 40% | 39% | 41% | 41% | 40% | 36% |
| Disagree | 23% | 20% | 29% | 20% | 20% | 18% |
| n | 314 | 314 | 347 | 347 | 504 | 504 |

| Middle School Control Group Students | | | | | | |
|--------------------------------------|----------|----------|----------|----------|----------|----------|
| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Agree | 38% | 38% | 39% | 36% | 39% | 37% |
| Neither | 35% | 35% | 41% | 44% | 40% | 41% |
| Disagree | 27% | 27% | 20% | 20% | 21% | 22% |
| n | 351 | 351 | 433 | 433 | 381 | 381 |

Difference of means tests were performed on the preparation for engagement item using the five-point scale. The pretest/posttest mean differences on this item for middle school students were small and nonsignificant with one exception. (See Table 10.) In cohort 2, the mean for the Project Citizen students increased significantly, with a pretest/posttest difference of .27. The percentage change was 9%, the effect size (Hedge's *g*) was .22, and the improvement index was +9 percentile points.

Table 10
Middle School Students' Preparation for Engagement by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 3.19 | 3.17 | 2.95 | 3.23 | 3.20 | 3.17 |
| Pretest SD | 1.06 | 1.08 | 1.06 | 1.08 | 1.04 | 1.03 |
| Posttest \bar{x} | 3.28 | 3.13 | 3.22 | 3.23 | 3.28 | 3.16 |
| Posttest SD | 1.03 | 1.09 | .98 | .97 | 1.03 | 1.02 |
| \bar{x} Difference | .08 | -.03 | .27 | .00 | .08 | -.01 |
| Sign. Difference | NS | NS | .00 | NS | NS | NS |
| Percentage Change | 3% | -1% | 9% | 0 | 3% | 0 |
| Effect Size | .07 | .02 | .22 | .00 | .06 | .01 |
| Improvement Index | +3 | +1 | +9 | 0 | +2 | 0 |

| | | | | | | |
|----------------------|-----|-----|-----|-----|-----|-----|
| Pre/Post Correlation | .42 | .38 | .29 | .48 | .30 | .28 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 314 | 351 | 347 | 433 | 504 | 381 |

Project Citizen high school students felt more prepared to engage in politics and public life after taking part in the program. (See Table 11.) Half or more of the Project Citizen students indicated that they were prepared to engage after the curriculum intervention. The percentage of Project Citizen students who agreed that they were prepared to engage increased from 45% to 54% in cohort 1, from 36% to 50% in cohort 2, and from 44% to 51% in cohort 3. The number of Project Citizen high schoolers who did not feel prepared dropped in each cohort. These pre/post intervention differences were statistically significant. The percentage of control group students who indicated that they were ready to engage increased from 38% to 44% in cohort 2 and from 42% to 49% in cohort 3. The differences were statistically significant. There was no change in cohort 1.

Table 11
High School Students' Preparation for Engagement

| High School Project Citizen Students | | | | | | |
|--------------------------------------|----------|----------|----------|----------|----------|----------|
| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Agree | 45% | 54% | 36% | 50% | 44% | 51% |
| Neither | 35% | 34% | 42% | 37% | 38% | 34% |
| Disagree | 20% | 12% | 22% | 13% | 18% | 15% |
| n | 642 | 642 | 439 | 439 | 533 | 533 |

| High School Control Group Students | | | | | | |
|------------------------------------|----------|----------|----------|----------|----------|----------|
| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
| | Pretest | Posttest | Pretest | Posttest | Pretest | Posttest |
| Agree | 47% | 48% | 38% | 44% | 42% | 49% |
| Neither | 30% | 35% | 39% | 38% | 37% | 37% |
| Disagree | 23% | 17% | 23% | 18% | 21% | 14% |
| n | 293 | 293 | 323 | 323 | 347 | 347 |

Difference of means tests demonstrated that the average scores on the preparation for engagement item increased for both Project Citizen and control group students. (See Table 12.) The trend was more pronounced and consistent for the Project Citizen high schoolers than the control group. The pretest/posttest mean differences were statistically significant for the Project Citizen high school students in all three cohorts. In cohort 1, the mean difference was .23, the percentage change was 7%, the effect size was .22, and the improvement index was +9 percentile points. The finding was somewhat stronger in cohort 2, with a mean difference of .31, representing a 10% change. The effect size was .28 corresponding to an improvement index score of +11 percentile points. In cohort 2, the mean difference was .20, the percentage change was 6%, the effect size was .18, and the improvement index was +7 percentile points. The control group students' pretest/posttest values for preparation for engagement were significant

for cohorts 2 and 3 only. The mean differences were smaller than for the Project Citizen high school students.

Table 12
High School Students' Preparation for Engagement by Condition
Difference of Means

| | Cohort 1 | | Cohort 2 | | Cohort 3 | |
|----------------------|----------|---------|----------|---------|----------|---------|
| | PC | Control | PC | Control | PC | Control |
| Pretest \bar{x} | 3.34 | 3.32 | 3.18 | 3.17 | 3.20 | 3.30 |
| Pretest SD | 1.05 | 1.18 | 1.01 | 1.03 | .92 | .94 |
| Posttest \bar{x} | 3.57 | 3.42 | 3.49 | 3.34 | 3.40 | 3.40 |
| Posttest SD | 1.00 | 1.08 | .99 | 1.03 | .93 | .94 |
| \bar{x} Difference | .23 | .10 | .31 | .17 | .20 | .10 |
| Sign. Difference | .00 | NS | .00 | .00 | .00 | .03 |
| Percentage Change | 7% | 3% | 10% | 5% | 6% | 3% |
| Effect Size | .22 | .08 | .28 | .16 | .18 | .08 |
| Improvement Index | +9 | +3 | +11 | +6 | +7 | +3 |
| Pre/Post Correlation | .51 | .49 | .38 | .44 | .28 | .30 |
| Sign. Correlation | .00 | .00 | .00 | .00 | .00 | .00 |
| n | 642 | 293 | 440 | 323 | 533 | 347 |

Conclusion

PBL has the potential to achieve positive outcomes in students' civic learning of content knowledge and beyond. Importantly, the findings of this study offer encouraging evidence that Project Citizen was effective in producing positive student outcomes related to civic engagement under challenging pandemic conditions. Conveying civic skills conducive to engagement in civic life through classroom instruction is notoriously difficult (Jamieson, 2013; Owen and Irion-Groth, 2022). The gains in civic skills along with the more positive orientations that students exhibited toward voting and participation, while modest in some instances, are noteworthy even without the complications of the pandemic.

The research showed support for hypotheses tested in the analysis. Consistent with the goals of Project Citizen, middle and high school students' problem-solving and civic expression skills improved significantly after experiencing the curriculum. Students gained confidence in performing the civic tasks, including identifying problems in their community and working with others to solve them. They became more inclined to express a strong intention to turn out to vote in elections if given the opportunity in the future. Their perceptions of their capacity to take part in civic life increased. With a few exceptions, the gains on these indicators were greater for Project Citizen students than their counterparts in the control group who were taught a conventional civics curriculum.

Project Citizen exhibits promise in empowering young people, including marginalized populations, for effective political participation. Its uses extend to many settings, including colleges, youth groups, and other groups seeking to increase their political involvement and to

improve their communities. Future avenues for research and advancement include an exploration of under what conditions Project Citizen, and other inquiry- and project-based civics programs, are most effective in increasing civic engagement outcomes for underserved populations, such as multilingual learners and individuals with disabilities. Further specialized training and support can be provided to educators working with these populations to address students' specific learning needs as they are engaged in civics. In addition, deeper exploration can be undertaken to examine how interaction with public officials and the larger community fosters civics and civic-related SEL outcomes and what effects this curriculum has on civic engagement in the years following participation in the program. Of particular interest is the impact of civic education on students' civic engagement into adulthood.

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APPENDIX

Table A1
ANCOVA Analysis of Middle School Students' Problem-Solving Skills

| Cohort 1 | | | | | | | |
|---|---------------|-----------------|-----------------------|-------------|---------------------|------------------|-----|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 20.87 | .30 | 21.45 | .29 | 21.14 | .24 | 303 |
| Control | 19.82 | .29 | 19.85 | .28 | 20.13 | .24 | 325 |
| Adj. $\bar{\chi}$ Group Diff. | | | | | | | |
| | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| | 1.01 | .34 | .00 | 5% | .20 | +8 | |
| Source | | | | | | | |
| | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 157.14 | 1 | 157.14 | 8.65 | .00 | .02 | |
| School | 44.97 | 1 | 44.97 | 2.47 | NS | .00 | |
| Pretest Prob-Solve | 494.60 | 1 | 494.60 | 253.01 | .00 | .29 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 19.12 | .34 | 19.89 | .32 | 20.12 | .29 | 309 |
| Control | 19.60 | .29 | 19.96 | .25 | 19.96 | .36 | 404 |
| Adj. $\bar{\chi}$ Group Diff. | | | | | | | |
| | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| | .16 | .76 | NS | 5% | .03 | +1 | |
| Source | | | | | | | |
| | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 2.21 | 1 | 2.21 | .10 | NS | .00 | |
| School | 1.03 | 1 | 1.03 | .05 | NS | .00 | |
| Pretest Prob-Solve | 2903.03 | 1 | 2903.03 | 128.62 | .00 | .20 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 17.69 | .29 | 18.62 | .28 | 18.63 | .35 | 445 |
| Control | 17.64 | .34 | 18.25 | .32 | 18.23 | .46 | 314 |
| Adj. $\bar{\chi}$ Group Diff. | | | | | | | |
| | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| | .39 | .70 | NS | 2% | .07 | +3 | |
| Source | | | | | | | |
| | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 9.60 | 1 | 9.60 | .31 | NS | .00 | |
| School | .23 | 1 | .23 | .01 | NS | .00 | |
| Pretest Prob-Solve | 3560.08 | 1 | 3560.08 | 115.01 | .00 | .13 | |

Table A2
ANCOVA Analysis of High School Students' Problem-Solving Skills

| Cohort 1 | | | | | | | |
|-------------------------------|---------------|-----------------|-----------------------|-------------|---------------------|------------------|-----|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 21.91 | .18 | 21.02 | .31 | 22.14 | .17 | 631 |
| Control | 22.27 | .18 | 20.79 | .33 | 21.10 | .15 | 287 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| 1.03 | .31 | .00 | 5% | .27 | +10 | | |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 209.18 | 1 | 209.18 | 11.06 | .00 | .02 | |
| School | 189.38 | 1 | 189.38 | 10.01 | .00 | .01 | |
| Pretest Prob-Solve | 4856.63 | 1 | 4856.63 | 256.75 | .00 | .22 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 21.11 | .23 | 21.54 | .24 | 21.58 | .24 | 420 |
| Control | 20.86 | .27 | 20.73 | .30 | 19.78 | .53 | 311 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| 1.79 | .64 | .00 | 8% | .34 | +13 | | |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 171.34 | 1 | 171.34 | 7.82 | .01 | .02 | |
| School | 48.42 | 1 | 48.42 | 2.12 | NS | .00 | |
| Pretest Prob-Solve | 3909.17 | 1 | 3909.17 | 91.37 | .00 | .15 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 19.73 | .23 | 20.39 | .25 | 20.40 | .32 | 501 |
| Control | 19.20 | .31 | 19.90 | .31 | 19.91 | .44 | 325 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | Sig. Difference | Percentage Difference | Effect Size | Improvement Index | | |
| .48 | .66 | NS | 2% | .09 | +4 | | |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 14.28 | 1 | 14.28 | .525 | NS | .00 | |
| School | 3.69 | 1 | 3.69 | .156 | NS | .00 | |
| Pretest Prob-Solve | 3930.89 | 1 | 3930.89 | 144.56 | .00 | .14 | |

Table A3
ANCOVA Analysis of Middle School Students' Civic Expression Skills

| Cohort 1 | | | | | | | |
|-------------------------------|---------------|---------|-----------------------|---------|---------------------|------------------|-------------------|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 14.29 | .35 | 15.52 | .34 | 15.35 | .28 | 289 |
| Control | 13.85 | .34 | 14.25 | .32 | 14.40 | .26 | 315 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .95 | .39 | | .01 | | .17 | | +7 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 134.65 | 1 | 134.65 | 5.94 | .01 | .01 | |
| School | 111.06 | 1 | 111.06 | 4.90 | .03 | .01 | |
| Pretest Expression | 6319.09 | 1 | 6319.09 | 278.85 | .00 | .32 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 13.24 | .36 | 14.75 | .33 | 14.78 | .32 | 300 |
| Control | 13.58 | .28 | 14.29 | .28 | 14.51 | .39 | 389 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .26 | .55 | | NS | | .05 | | +2 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 5.76 | 1 | 5.76 | .23 | NS | .00 | |
| School | 6.65 | 1 | 6.65 | .26 | NS | .00 | |
| Pretest Expression | 3990.57 | 1 | 3990.57 | 156.82 | .00 | .24 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 12.02 | .29 | 13.53 | .29 | 13.57 | .37 | 439 |
| Control | 11.86 | .34 | 12.67 | .35 | 12.64 | .48 | 316 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .92 | .74 | | .00 | | .15 | | +6 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 53.89 | 1 | 53.89 | 1.55 | NS | .00 | |
| School | .72 | 1 | .72 | .02 | NS | .00 | |
| Pretest Expression | 2713.83 | 1 | 2713.83 | 78.11 | .00 | .10 | |

Table A4
ANCOVA Analysis of High School Students' Civic Expression Skills

| Cohort 1 | | | | | | | |
|-------------------------------|---------------|---------|-----------------------|---------|---------------------|------------------|-------------------|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 16.32 | .21 | 17.41 | .19 | 17.24 | .17 | 627 |
| Control | 15.33 | .34 | 15.56 | .35 | 16.04 | .26 | 285 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| 1.20 | .32 | | .00 | | 7% | | +6 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 279.49 | 1 | 279.49 | 14.03 | .00 | .02 | |
| School | 66.08 | 1 | 66.08 | 3.31 | .07 | .00 | |
| Pretest Expression | 7656.38 | 1 | 7656.38 | 384.33 | .00 | .30 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 15.32 | .26 | 16.57 | .26 | 16.61 | .26 | 417 |
| Control | 15.33 | .31 | 15.42 | .32 | 14.87 | .56 | 313 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| 1.74 | .67 | | .00 | | 11% | | +12 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 163.48 | 1 | 163.48 | 6.68 | .01 | .01 | |
| School | 27.77 | 1 | 27.77 | 1.13 | NS | .00 | |
| Pretest Expression | 2922.07 | 1 | 2922.07 | 119.45 | .00 | .18 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 13.75 | .26 | 14.80 | .27 | 14.68 | .34 | 497 |
| Control | 13.00 | .34 | 14.36 | .35 | 14.55 | .47 | 319 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .12 | .71 | | NS | | 1% | | +1 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | .92 | 1 | .92 | .03 | NS | .00 | |
| School | .28 | 1 | .28 | .01 | NS | .00 | |
| Pretest Expression | 6662.33 | 1 | 6662.33 | 220.87 | .00 | .21 | |

Table A5
ANCOVA Analysis of Middle School Students' Perceptions of Their Civic Skills

| Cohort 1 | | | | | | | |
|----------------------------|---------------|---------|-----------------------|---------|---------------------|------------------|-------------------|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 7.70 | .13 | 8.28 | .13 | 8.24 | .12 | 314 |
| Control | 7.64 | .14 | 7.79 | .14 | 7.83 | .12 | 351 |
| Adj. \bar{x} Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .41 | .17 | | .02 | | 5% | | .16 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 27.13 | 1 | 27.13 | 5.66 | .02 | .01 | |
| School | 31.57 | 1 | 31.57 | 6.59 | .01 | .01 | |
| Pretest Confidence | 1127.56 | 1 | 1127.56 | 235.35 | .00 | .27 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 7.23 | .14 | 8.16 | .13 | 8.33 | .13 | 347 |
| Control | 7.94 | .13 | 8.07 | .12 | 7.88 | .16 | 433 |
| Adj. \bar{x} Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .45 | .23 | | .05 | | 5% | | .19 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 19.12 | 1 | 19.12 | 3.98 | .05 | .01 | |
| School | 9.90 | 1 | 9.90 | 2.06 | NS | .00 | |
| Pretest Confidence | 512.14 | 1 | 512.14 | 106.72 | .00 | .16 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 7.33 | .11 | 7.79 | .11 | 7.66 | .15 | 504 |
| Control | 7.11 | .13 | 7.15 | .14 | 7.31 | .19 | 381 |
| Adj. \bar{x} Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .34 | .31 | | NS | | 4% | | .13 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 7.83 | 1 | 7.83 | 1.22 | NS | .00 | |
| School | 5.27 | 1 | 5.27 | .84 | NS | .00 | |
| Pretest Confidence | 498.43 | 1 | 498.43 | 79.16 | .00 | .08 | |

Table A6
ANCOVA Analysis of High School Students' Perceptions of Their Civic Skills

| Cohort 1 | | | | | | | |
|-------------------------------|---------------|---------|-----------------------|---------|---------------------|------------------|-------------------|
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 8.29 | .09 | 8.89 | .09 | 8.89 | .08 | 642 |
| Control | 8.31 | .16 | 8.43 | .16 | 8.42 | .12 | 293 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .46 | .14 | | .00 | | .19 | | +8 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 42.49 | 1 | 42.49 | 10.01 | .00 | .01 | |
| School | 22.58 | 1 | 22.58 | 5.32 | .02 | .01 | |
| Pretest Confidence | 1821.51 | 1 | 1821.51 | 429.32 | .00 | .32 | |
| Cohort 2 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 7.86 | .12 | 8.67 | .11 | 8.67 | .11 | 440 |
| Control | 7.79 | .13 | 8.27 | .14 | 8.13 | .23 | 323 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .53 | .28 | | .05 | | .22 | | +9 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 15.67 | 1 | 15.67 | 3.47 | .06 | .01 | |
| School | 4.55 | 1 | 4.55 | 1.01 | NS | .00 | |
| Pretest Confidence | 629.99 | 1 | 629.99 | 139.73 | .00 | .20 | |
| Cohort 3 | | | | | | | |
| | Pretest | | Posttest (Unadjusted) | | Posttest (Adjusted) | | n |
| | Mean | SE Mean | Mean | SE Mean | Mean | SE Mean | |
| PC | 7.56 | .09 | 8.26 | .11 | 8.46 | .13 | 533 |
| Control | 7.82 | .11 | 8.36 | .12 | 8.11 | .18 | 347 |
| Adj. $\bar{\chi}$ Group Diff. | SE Difference | | Sig. Difference | | Effect Size | | Improvement Index |
| .34 | .27 | | NS | | .15 | | +6 |
| Source | SS | df | Mean Square | F | Sig. | Partial η^2 | |
| PC/Control | 7.40 | 1 | 7.40 | 1.53 | NS | .00 | |
| School | 12.65 | 1 | 12.65 | 2.61 | NS | .00 | |
| Pretest Confidence | 574.44 | 1 | 574.44 | 118.42 | .00 | .12 | |