

Brown Boosts Immunity: A Community-Centric Approach to Project-Based Service-Learning in Higher Education

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Abstract

Service-learning models serve as noteworthy curriculum paradigms that can help students engage with their communities while continuously learning. This article recounts the implementation of a service-learning model within a student initiative aimed to help combat vaccine hesitancy and promote the uptake of vaccinations within the Rhode Island community. Through a collaborative effort between students, faculty, and the university, the student initiative was able to construct a credit-bearing course to help assess and alleviate vaccine hesitancy within Rhode Island. This article highlights the journey the organization took to develop a service-learning model within the course, the project details, and the impact of their project on the community. A detailed analysis of the service-learning model's impact on students as well as key takeaways of the project are also highlighted below.

Keywords: service-learning, community outreach, vaccine hesitancy, Brown University collaborations, public health



The onset of the COVID-19 pandemic has led experts in the medical and public health spheres to address health and vaccine concerns within communities. Students at Brown University have had access to accurate medical and scientific knowledge supplied by trusted individuals. Brown also continuously encourages its students to engage with the community in impactful ways. In fact, one of Brown's liberal learning goals is to "engage with your communities" (Harriet W. Sheridan Center for Teaching and Learning, n.d., para. 15). Brown's mission is to ensure that a student's general education will be enriched by the many kinds of work that the student participates in outside the classroom. The support of the university in keeping us safe and educated during a pandemic, alongside its commitment to community engagement, put us students of Brown in a position to aid

the community. Within this context, students at Brown decided to start an initiative to combat vaccine hesitancy.

The COVID-19 pandemic highlighted an urgent need for community-based outreach that provides high-quality resources to promote vaccine confidence. Uptake of the COVID-19 vaccines in particular presents unique challenges. Causes for these unique challenges include the accelerated timeline for emergency approval for COVID-19 vaccines, as well as uncertainty regarding their potential side effects (Dohr, 2021). These circumstances have led to individuals' hesitancy to get vaccinated.

Before beginning our work, we realized that we would need to learn the needs of our community and adapt our outreach based on those needs. This cycle of constant learning and engagement led us to adopt a service-learning model. A service-learning model

can be carried out in many ways, such as discipline-based service-learning and capstone courses. Our curriculum integrated a project-based service-learning model. Project-based service-learning “is a form of active learning where students work on projects that benefit a real community or client while obtaining a rich learning experience.” (Cooper & Kotys-Schwartz, 2013, p.1)

Early on, we acknowledged that our work was going to be informed by service activity. Research has shown that service-learning models can help meet the real needs of community and build sustainable partnerships between faculty, students, university, and the community (Basinger & Hunter, 2014; Fletcher et al., 2012). Furthermore, service-learning models, such as project-based service-learning, have been shown to create a lasting positive impact on students’ educational experience (Bringle & Hatcher, 1995). Lastly, a service-learning paradigm runs parallel to the mission of our university to enrich one’s general education by coupling education and community engagement. For these reasons, a project-based service-learning model was adopted in our efforts to meet the needs of our community, while simultaneously enriching students’ educational experiences.

With the adoption of this model for our work, we formed the student initiative Brown Boosts Immunity (BBI), whose objective is to increase vaccine uptake in Rhode Island by promoting vaccine confidence in the community. In addressing this need, we also aimed to connect university students to meaningful community engagement experiences in the form of service-learning. In this article, we will highlight how a project-based service-learning model was incorporated into BBI, as well as how the early stage impact of BBI on both the community and student level was assessed. Early stage impact was assessed quantitatively through social media and physical outreach statistics. Early stage impact was also assessed qualitatively, via feedback solicited from BBI’s student members and community partners.

Methodology

The work of Brown Boosts Immunity began once it was formalized as a Group Independent Study Project (GISP): “co-operative inquiries in which participating students bear major responsibility for both

the planning and conduct of the work. GISPs carry regular course credit and provide an opportunity for academic pursuits which might not be available in regular courses” (Brown University, n.d. para. 6). From among numerous possible routes for continuing the work of BBI from its initial fall semester into the subsequent spring semester (e.g., student organization), we opted for a GISP for several reasons. One major benefit was that students would be under the guidance of a faculty member. Due to her knowledge and expertise, Professor Toni-Marie Achilli proved to be an invaluable advisor for all students in Brown Boosts Immunity. Second, the GISP’s credit-bearing nature added an element of accountability to our project’s work, which many student organizations lack. Third, GISPs are required to have an academic component integrated into their curriculum. Given the needs-sensitive nature of our project’s work, incorporating academic learning in the forms of primary literature readings and reflections allowed students to continuously adapt to the evolving nature of our work. The GISP, through its integration of an academic component, established the learning component of our project-based service-learning approach to our work. Furthermore, unlike a traditional course, the GISP emphasized a direct community engagement component that allowed students to more deeply engage with academic material, while also connecting them to meaningful real-world experiences.

As a first step in this community engagement component of the GISP, we set out to assess the community’s needs by meeting with local community leaders. One particular collaboration that was integral to assessing the community’s needs was with the Rhode Island Department of Health (RIDOH). Medical director Dr. James McDonald gave us insight into the perception of vaccines in Rhode Island, and connected the team to the head of communications of Immunization at the RIDOH. Collaborations with numerous other community leaders were also critical in aligning our work; however, the team realized that the most accurate assessment of community needs would come from the community members themselves.

We created an anonymous questionnaire to gather information on the community’s vaccine perceptions, both on traditional vaccines and the novel COVID-19 vac-

In turn, we decided to emphasize three major components in our work: (1) creation of educational materials, (2) social media, and (3) community outreach. In parallel to these components, the GISP was divided into three task forces: Educational Materials, Social Media, and Community Outreach. Educational Materials was responsible for the creation of educational content, to be distributed on a variety of platforms. Social Media was responsible for creating a social media campaign and a website. Community Outreach was responsible for engaging directly with community members, leaders, and partners. Students in the GISP were assigned to a task force based on personal interest and project needs. Each task force consisted of five students who met weekly to collaborate on projects specific to their task force. In addition, all students completed weekly readings and reflections. The work of the individual task forces is described in more detail below.

Educational Materials

One community need that our survey identified was the need for educational content on vaccines that was accurate, accessible, and relevant. The survey revealed that some Rhode Islanders felt they lacked reliable access to trustworthy information on vaccines. This lack of access to vaccine information may represent one contributing factor to vaccine hesitancy and the consequent decline in vaccine uptake. To combat this contributor to vaccine hesitancy, the Educational Materials task force aimed to create educational content that delivered accurate and relevant vaccine information in an engaging way. By doing so, this task force hoped to empower community members to make informed decisions regarding vaccinations of themselves or their family members.

To maximize impact, all of the educational content developed by the Educational Materials task force was designed to target at least one distinct determinant of vaccine hesitancy. Literature on the determinants of vaccine hesitancy frequently points to two major contributors: reduced dread of vaccine-preventable diseases and lack of trust in the pharmaceutical-industrial complex (Salmon et al., 2015). Furthermore, COVID-19 vaccines in particular face unique challenges because of the continually shifting landscape in the current stages of early vaccine rollout. Thus, the three guiding principles that the Educational Materials

task force adopted to guide content creation were (1) to appropriately communicate the true risks of vaccine-preventable disease; (2) to maintain a high degree of accuracy and transparency in all of our claims, while avoiding politicization of our message; and (3) to deliver timely updates on COVID-19 vaccine information.

Prior public health campaigns have shown that the use of “small media,” such as infographics, brochures, and stickers, can serve as a salient supplement to mobilize communities with public health interventions (Randolph & Viswanath, 2004). Over the duration of the GISP, students in the Educational Materials task force designed eight complete infographics, which were distributed both in print and digitally by Brown Boosts Immunity. Of these eight infographics, one infographic was designed specifically to communicate the true risks of vaccine-preventable disease (Guiding Principle 1), three infographics to deliver accurate and transparent information about the vaccine development pipeline (Guiding Principle 2), and four infographics to provide timely information on important and relevant developments in COVID-19 vaccine rollout (Guiding Principle 3). Figure 2 contains an example of an infographic designed by the Educational Materials task force, titled “What to Expect When You Get Your COVID-19 Vaccine.” In line with Guiding Principle 3, this infographic in particular aimed to address some of vaccine recipients’ most frequent questions, such as those regarding appointment logistics and side effects.

In addition to “small media,” Brown Boosts Immunity used a website to spread its message. One purpose of creating a website was to have a central resource that community members could access for trustworthy and relevant information on vaccines. To this end, students in the Educational Materials task force designed four complete webpages on the Brown Boosts Immunity website. These pages were designed in line with the same guiding principles discussed earlier. The most central of these pages was the “Learn page,” which was designed to be easily accessed from the home page. This Learn page, in line with Guiding Principle 1, served as a trove of general information about vaccines, such as how they work, what they contain, and what their impact has been. Incorporated into the Learn page was a list of carefully curated, hyperlinked

resources that could be used to verify the information presented on our website, which served to confer transparency to the information we present, in line with Guiding Principle 2.

The other webpage designed by the Educational Materials task force was the “COVID-19” page, which presents a comparison of the COVID-19 vaccines currently available in the United States, as well as

Figure 2. Sample Infographic: “What to Expect When You Get Your COVID-19 Vaccine”

WHAT TO EXPECT WHEN YOU GET YOUR COVID-19 VACCINE

BEFORE VACCINATION

- Check your eligibility
- Avoid getting other vaccines for 14 days before your COVID-19 vaccine
- See if you have any risk factors that might indicate that you shouldn't get the vaccine

AT THE VACCINATION SITE

- Keep your mask on at all times
- Maintain social distancing
- You will get a vaccination card that states which vaccine you received, the lot number of the vaccine, the date, and the vaccination site
- If you are getting your second dose, make sure to bring your vaccination card with you
- You will be monitored for about 15 minutes after your vaccination to make sure that you have no allergic reactions

AFTER VACCINATION

- You may have side effects such as pain at the injection site, headache, and fatigue
- Avoid getting other vaccinations for 14 days after your COVID-19 vaccine
- Schedule your second dose on time if you received a two-dose vaccine
- Continue social distancing and wearing your mask whenever you interact with people outside of your pod who are not fully vaccinated
- Most COVID-19 vaccines will not protect you immediately. For the two dose vaccines, most people's immune systems will fully respond within two weeks after receiving the second dose

BROWN BOOSTS IMMUNITY

Note. “What to Expect When You Get Your COVID-19 Vaccine,” one of the infographics designed for the Brown Boosts Immunity campaign by the Educational Materials task force, presents answers to questions that are highly relevant to COVID-19 vaccine recipients.

important developments that are discussed in the news. In line with Guiding Principle 3, this addition to the website provided community members with timely and relevant updates on COVID-19 vaccination in particular.

Social Media

The Social Media task force had three main responsibilities: (1) working on graphic design to enhance the appearance of our website and social media pages, and to assist the Educational Materials and Community Outreach task forces; (2) contributing to the creation and design of our website, which served as a hub for vaccination information and background information about Brown Boosts Immunity; and (3) creating an Instagram account and regular content to facilitate the growth of that account.

Graphic design was a continuous focus for the Social Media task force from its beginning, since the work of the task force was heavily visually based. The graphic design work was guided by responses to our questionnaire, which indicated the community's desire for easy-to-read graphics. In order to facilitate content creation, we developed a style guide that compiled a set of design criteria, including HEX color codes, BBI logo use restrictions, and general organizational tips to be implemented in all posts. All of our designed content adhered to these style guidelines in order to uphold our campaign's formality and professionalism. The social media team's graphic design work also involved the creation of eye-catching, uniformly designed Instagram posts, and the creation of stickers that could be distributed to local vaccination clinics and doctors' offices. Graphic design work laid the framework for the rest of the social media team's projects, and played a major role in facilitating continuity, structure, and aesthetically appealing content in Brown Boosts Immunity's social media presence.

Whereas the Educational Materials task force was mainly involved in creating the informational vaccine content for the Brown Boosts Immunity website, the Social Media team's responsibility was to create and design the website itself. The Social Media team was focused on establishing an online presence for Brown Boosts Immunity, and utilizing the website helped to establish the Brown Boosts Immunity brand. The website included a page highlighting members of BBI alongside their reasons for vaccinating,

and also displayed two of BBI's campaign hashtags—#Immunity4RICommunity and #VaccinateTheOceanState—to garner social media traction. These hashtags were adopted by Rhode Island governor Daniel McKee: In both social media posts and press conferences, the governor used the phrase “vaccinate the Ocean State,” an expression originating from the Brown Boosts Immunity campaign.

The Social Media team was also tasked with creating and managing the Brown Boosts Immunity Instagram page. Despite frequently publishing educational content to our Instagram page, the aim of Brown Boosts Immunity wasn't to supersede the CDC, the WHO, or other large-scale public health entities with a broader reach than ours. Rather, the Instagram page provided equivalently informative content in a more digestible format, as well as original content designed specifically for a Rhode Island audience. The informational content created by the Social Media task force included Fun Fact Fridays that dealt with interesting vaccine facts, and vaccine-related infographics that were generally more research-based and complex. Testimonials were frequently featured as part of Testimonial Tuesday and showcased community members discussing their choice to vaccinate or their experience receiving the COVID-19 vaccine. Representative samples are shown in Figure 3.

These testimonials spotlighted positive experiences with vaccines in order to dispel vaccine fears, and to encourage our audience to view vaccination as an essential step to take to protect their community. We featured Brown students, Rhode Island healthcare workers, and members of the general Rhode Island community. Our community-focused content also included Weekly Debriefs, which followed a two-slide format, with the first slide showcasing important headlines from that week (see Figure 4) and the second slide featuring a 60-second clip in which a member of BBI explained what the headlines meant in simpler terms and their relevance to our audience. Weekly Debriefs let us make our social media content more personal and more unique in terms of what we could offer as Brown students. Their creation, and the content creation by the Social Media task force in general, was informed by literature regarding the importance of adding personal touches to content involving public

Figure 3. Examples of Fun Fact Friday, Infographic, and Testimonial Tuesday Posts



Note. Left: Example of a Fun Fact Friday post highlighting provaccine sentiments from Benjamin Franklin. Center: Example of an informational graphic on the history of vaccination. Right: A representative example of a Testimonial Tuesday post, in which individuals discussed their experience getting vaccinated.

Figure 4. Weekly Debrief Example



Note. First slide of a Weekly Debrief Instagram post. The first slide features the main headlines that will be explained thoroughly in the short video on the second slide.

health communication (European Centre for Disease Prevention and Control, 2016).

Community Outreach

The need for community outreach stemmed from the group's desire to disseminate the tangible work of the Educational Materials and Social Media task forces. One of the initial goals of our team was to get "RI VACCINATED" stickers into COVID-19 and flu vaccination clinics, as well as primary care offices (Figure 5). The motivation behind these stickers came from the theory of crowd psychology that inspired the "I Voted" stickers, which have helped promote incredible voter turnout in recent presidential elections (Thompson, 2012). Our team envisioned that, with their COVID-19 vaccine, people would be given the "RI VACCINATED" stickers to wear, which would enable unvaccinated members of their community to see these stickers. Seeing that members of their community trust the vaccine increases overall vaccine

confidence because it helps establish vaccination as a norm, leading other community members to want to conform with the community's norm of receiving a vaccine (Moscovici & Zavalloni, 1969). BBI reached out to the Wellness Company, a Rhode Island medical services company, in order to streamline our distribution efforts and get easy access to a large number of vaccination clinics. We then expanded to primary care offices because we knew from our literature review that "communication with a caring, trusted, and concerned provider is the most important factor in eventual parent vaccine acceptance" (Dunn et al., 2018, p. 4).

In addition to targeting primary care providers and pediatricians, we knew that if our campaign was to be effective in the long term, we needed to target young adults and other college students. A study by Johns Hopkins Bloomberg School of Public Health analyzed various health behavior intervention campaigns aimed at adolescents and intended to influence peer crowds, and

Figure 5. Stickers Designed and Distributed by Our Team

Note. Pictured are two examples of the stickers distributed to vaccination sites and clinics throughout the state. Both of these stickers are Rhode Island specific. The blue sticker on the left has the anchor, which is an iconic Rhode Island symbol, with the Providence skyline in the background. The red sticker on the right is a view of Beavertail State Park.

found that when campaigns targeted a younger demographic they diminished risky behavior in the future (Moran et al., 2017). Dr. Meghan Moran, an associate professor from Johns Hopkins, stated, “We know that young people identify strongly with groups along subcultures and these groups vary on their health behavior, too. . . . [Developing] campaigns that incorporate the style of the group . . . can increase their effectiveness” (Johns Hopkins Bloomberg School of Public Health, 2015, para. 3). In order to target these younger age groups, we reached out to university sports teams and asked their members to post about why they support widespread vaccination. The women’s hockey team was very receptive, reposting our social media posts and allowing us to collect additional testimonials. By spreading our message to these diverse groups, we were able to connect with new subgroups and further grow our campaign.

Furthermore, with COVID-19 vaccination clinics starting to ramp up, we were also given the unique opportunity to engage with the community and spread our message in real time. Members of our team attended multiple dates for vaccination clinics at a Johnston vaccination site (Figure 6), a Pawtucket vaccination site, and Clinica Esperanza’s vaccination site. At those locations, we helped spread our educational materials promoting vaccine confidence, passed out our stickers, collected video and written testimonials, and performed whatever tasks the clinic needed help with in order to make their clinics run smoothly. We were also able to communicate and form connections with city officials such as the

mayor of Johnston, a state senator for the Pawtucket district, and even the governor of Rhode Island. As a result of these connections, we were able to create a short compilation video of the testimonials we gathered and distribute it to school superintendents throughout the state. This further spread our message and also boosted our social media presence.

Impact on Community

The GISP’s three task forces utilized university resources and worked in tandem to grow the campaign and accomplish our goal of providing digestible information about vaccines for the community. While planning for the future of the campaign, we concurrently looked back to analyze the work of our campaign to determine whether our project showed signs of having a meaningful impact within the community. First we analyzed the quantitative data of our distribution network for our stickers and flyers, as well as the statistics from our social media account. We further analyzed our early stage impacts qualitatively by collecting feedback from Brown Boosts Immunity’s student members and community partners.

Quantitative

Our strategic partnership with the Wellness Company allowed us to distribute over 22,500 “RI VACCINATED” stickers, as well as additional educational flyers, to 100 flu clinics and 60 COVID-19 vaccination clinics across the state. In addition to measuring distribution of physical materials, it was

Figure 6. Experience in the Johnston Vaccine Clinic



Note. Pictured are members of the Brown Boosts Immunity team talking about the importance of civic engagement with Governor McKee (D-RI) and Mayor Polisenia (D-Johnston, RI). Mayor Polisenia has been a key community leader ally to us.

important to measure our digital impact. Our community engagement with the Brown Boosts Immunity social media and website has grown tremendously since the creation of the Instagram page on November 15, 2020. With a total of 39 posts, Brown Boosts Immunity has garnered 587 followers and counting, 34.9% of which currently reside in Providence; another 14.9% reside in cities across Rhode Island (Warwick, Cranston, and Pawtucket). Although the BBI campaign is based in Rhode Island, approximately half of our total followers come from other states. The Brown Boosts Immunity Instagram has a strong reach primarily to young adults between the ages of 18 and 24 (35.8%) and adults between the ages of 25 and 34 (21.2%).

As of the week of April 18, 2021, our Instagram has reached 683 accounts with a 50.9% increase to 1,070 impressions compared to the previous week. The growth of our posts as discussed in the social media project details parallels the increased engagement in terms of likes, comments, reach (number of unique profiles that viewed the post) and impressions (times post was displayed in someone's feed regardless of engagement/views). Table 1 highlights the category of posts and their average engagement.

Our social media growth increased the number of people exposed to our educational materials, which included compiled facts, statistics, pandemic updates, testimonials, and more. Comments left on the page indicate that vaccine hesitant people were engaging with our posts and were taking the time to read our vaccine information and personal testimonials. The Instagram statistics, viewer comments, and thousands of stickers distributed reflect the widespread distribution and reach of our materials. Thus, it is clear that our project helped increase vaccine confidence through the Rhode Island community and showed early signs of having a meaningful impact on the community.

Qualitative Analysis

In addition to the quantitative analysis, we assessed early stage impacts on the community by feedback from community partners. Personal communications and interviews with community partners were performed in order to better understand the impact of our campaign, and to see if others perceived our campaign as making a meaningful impact on the community.

Given the amount of time we spent at the clinics, we looked to community leaders working at those clinics for feedback. The

Table 1. Instagram Account Interactions

Post category	Average likes	Average impressions	Average reach
General educational materials ^a	34.5	385.1	311.5
Weekly Debriefs	36	477.3	369.9
Testimonials (video & image)	33.3	447.8	335.8
Clinic outreach highlights	48.5	577	441

Note. Statistics were gathered using the Instagram Insights feature on the @BrownBoostsImmunity profile. *Reach* refers to the number of unique profiles that viewed the post, and *impressions* are the times the post was displayed in someone's feed regardless of engagement/views.

^a Includes Pfizer/Moderna comparison, impact of vaccines, and similar information.

staff greatly appreciated our help, with the Johnston chief of police, Chief Joseph Razza, stating that “having [the students] there was a true show of support. Having [the younger] generation interact with the elderly population, [had] a calming effect. We appreciate the support!” (J. Razza, personal communication, April 20, 2021). Our team also collected testimonials to include in a promotional video, which the mayor of Johnston distributed to schools throughout the state. The mayor, Joseph Polisena, later stated in an interview that “I thought it was great. It [showed] the adults and the younger people about how important the vaccination clinics are to keep . . . their loved ones safe. I thought it was fantastic” (J. Polisena, personal communication, April 20, 2021).

In addition to the video, our “RI VACCINATED” stickers were very well-received at the COVID-19 and flu clinics. The immunization program manager at one of our major partners, the Wellness Company, even stated:

They are a big hit . . . clients love having a choice—picking their favorite—and asking their co-workers which one they got! Many choose not to put the sticker on, as they are SAVING theirs as a memento. You would get a kick out of how excited they are—just like little kids again. Thank you so much for your efforts, it’s paid off. (L. Volpe, personal communication, January 12, 2021)

To further evaluate our impact on the community, team members conducted interviews with infectious disease experts who witnessed our work firsthand, Dr. Dioscaris Garcia and Dr. Karen Tashima. In the interview, Dr. Garcia pointed to the Weekly Debriefs as particularly impactful, stating that people converse with him about vaccine-related topics using the information from our posts (D. Garcia, personal communication, April 21, 2021). Dr. Tashima called our materials “really well done, very informative, and well researched” (K. Tashima, personal communication, April 21, 2021). She commented on the campaign’s student-run, multidisciplinary approach, and emphasized that hearing about vaccine hesitancy from young people could make a difference.

In sum, through the interactions our team members and partners saw in the community, it was clear that we were enacting a paradigm shift in our community. This was the goal of our campaign, and our qualitative analysis indicates that our work to spread accurate information about vaccines and spark conversations had the intended effect. Our community partners agreed with our assessment of early stage impact, which concluded that our campaign was making meaningful impacts on the community.

Impact on Students

In addition to the outward-facing impact that Brown Boosts Immunity had on the Rhode Island community, the community engagement aspect of the GISP was very influential on all of the students who par-

anticipated. To measure the impact of the community engagement component of the GISP on the students in the course, a short reflection form was sent to all GISP members at the end of the semester. This reflection asked members to look back on their experience taking a more nontraditional, project-based learning course at Brown, and to compare their initial expectations for the course with their actual experience.

Responses were overwhelmingly positive, and revealed that students felt that seeing their efforts in the classroom translate into real effects in their community was deeply important and inspiring to their own educational goals. Even with the diverse areas of study represented by the students of the GISP—including majors such as public health, health and human biology, visual arts, and neuroscience, among many others—all students felt as though they benefited from the experiences that they gained through the GISP. Many students had unique motivations for joining the GISP, often aligned with their area of study and their career goals, and the responses to the survey revealed that students felt they gained experiences that were in line with their personal educational goals. For example, those studying public health gained experience in developing a public health campaign; those studying the life sciences deepened their understanding of and ability to communicate information regarding vaccines; those studying visual arts built on their skill set by working on the graphic design of small media, such as infographics and stickers, as well as a website.

One major motivation that students, regardless of their area of study, reported for taking this course was the appeal of its service-learning model. One student said, “I wanted to be an agent of change in the community of Providence . . . I wanted to learn the essential soft and hard skills of what is [sic] like to promote public health advice and reports to the general public” (R. Paredes, personal communication, April 12, 2021). At the conclusion of the semester, many students appreciated the benefits of this GISP’s approach to community engagement, with another participant stating, “I absolutely benefited from this interdisciplinary approach because having the chance to see my learning manifest into tangible community outreach efforts made me even more passionate about the topics I was studying” (D. Melia, personal communi-

cation, April 8, 2021). The GISP’s service-learning model aimed to enable students to utilize the knowledge they gained in a traditional classroom and apply those lessons in community engagement. The opportunity to harness those lessons “to benefit the community [and] ignite real change” in the Rhode Island community was consistently referred to in the students’ reflections as a key benefit of this GISP (E. Epstein, personal communication, April 8, 2021).

One example of the ways students were able to meaningfully engage with their community was volunteering at COVID-19 vaccination clinics. The two main responsibilities that students were given were (1) to distribute our small media materials (i.e., stickers and infographics) and (2) to schedule second-dose appointments for first-time vaccine recipients. The students who participated in this volunteering opportunity described the experience as particularly significant. One student who worked on designing the stickers said, “Seeing people’s faces light up as they received the stickers I was starting to work on just last semester was a super rewarding moment for me” (E. Epstein, personal communication, April 14, 2021). Many other students echoed this sentiment and pointed out that transforming this project “from just an idea we had, to a tangible output that we were able to give to the community” was a particularly memorable aspect (M. Polavarapu, personal communication, April 14, 2021). Another student said, “Seeing the results of our hard work translated into actual impact was a great motivator to work harder” (P. Faherty, personal communication, April 15, 2021).

Ultimately, in our review of student experiences, we found that constructing a GISP that dedicated much of its class time to real-world projects and volunteering opportunities allowed the GISP participants to engage meaningfully with the Rhode Island community and with the course material. The nontraditional course structure of the GISP provided a means for students to enhance their engagement with the academic material, and in turn strengthened their motivation to learn about vaccines and vaccine-related issues in a way that was complementary to their educational goals.

Future Directions

Brown Boosts Immunity has great potential to continue its endeavors in vaccine advocacy in regard to the COVID-19 pandemic

and general vaccine hesitancy. COVID-19 vaccine hesitancy is still a significant issue and will need to continue to be addressed. As the supply of vaccines becomes larger than the demand, Brown Boosts Immunity intends to play a major role in promoting vaccine confidence. Now that younger age groups have become eligible, we hold the long-term goal of expanding the audience of our social media and educational materials to students at elementary, middle, and high schools, as well as different colleges throughout the state of Rhode Island. Building these connections now will also allow us to use that partnership in the future to encourage vaccine confidence in all vaccines, not just the COVID-19 vaccine.

Vaccine hesitancy and the urgency of COVID-19 vaccinations have taken up a lot of the time and effort of Brown Boosts Immunity; however, vaccine hesitancy is not limited to COVID-19. It is important to continue the fight against vaccine hesitancy even outside the context of the pandemic. There are many lives to be saved if more people gain confidence in flu, HPV, measles, and other vaccines. For that reason, sticker and educational material distribution will not halt when COVID-19 herd immunity is reached. We will continue to use partnerships made during this pandemic to extend our outreach to clinics and get our materials into primary care offices. In the coming months, it is our hope to reach out to our current partners to learn what materials could be most beneficial.

One of the most important partnerships to continue will be the Wellness Company. The Wellness Company has already used our stickers in over 100 flu clinics in addition to the 60 COVID-19 vaccine clinics. The Wellness Company has the infrastructure to help us reach the most people possible. This is why the Community Outreach team maintains an open line of communication with the Wellness Company and will continue to do so even after the pandemic.

In addition to community outreach long-term goals, we plan to grow and develop our social media presence. We hope that improvement of overall quality of posts and design will help us achieve this goal. Throughout the existence of our social media, we have created our own graphic designs, and we continue to improve our skills. Additionally, it is important for us to adapt to the needs and wants of our audience and shift our strategies to get

maximum engagement with our posts. By measuring indicators of engagement such as likes, comments, and views, we can take stock of which posts and designs perform well. Our posts have had an upward trend of engagement, and we hope to continue that growth pattern. Finally, we aim to increase our following on Twitter and Facebook because we realize that different age groups and demographics may use different social media platforms.

Long-Term Analysis

For long-term analysis, we plan to reach out to our various community partners in order to assess the campaign's continuous impact in vaccination clinics across Rhode Island. We anticipate that by sending surveys to our partners, we can get their overall impressions to guide our future directions. Through these surveys we hope to assess the impact we had and how to improve our strategies to influence future directions. We also intend to measure future impact through the ongoing work of student volunteers on site at the vaccination clinics. Although available literature on vaccine hesitancy has nicely guided our efforts, it is not a substitute for being on the front lines and assessing the community's needs there.

Recommendations

For others looking to pursue similar service-learning community-based projects in their own university or community, we have several recommendations for organizing and carrying out the tasks that the GISP took on. Our goals within the Rhode Island community were to increase overall rates of vaccination, improve vaccine literacy and knowledge regarding the safety and efficacy of vaccines, and change sentiments regarding vaccination from hesitance to pride and confidence. We noted that employing a service-learning approach proved useful in accomplishing these goals, and we have detailed possible ways to implement a similar approach elsewhere.

First, we would recommend that individuals at other universities find a way to engage directly with the community of interest, preferably in an arrangement that allows for regular, routine interaction. Brown Boosts Immunity's volunteering within local vaccine clinics was integral to our project goals, both in terms of physically assisting with vaccine administration and with the distribution of flyers, educational materi-

als, stickers, and promotional materials. Our presence within local vaccine clinics allowed us both to facilitate the actual distribution of vaccines by assisting patients and clinic staff and to promote feelings of vaccine pride with our stickers and “Why I Vaccinate” posters by individual patients (Figure 7). Similar projects at other universities should consider establishing partnerships with specific sites within their community, like the vaccine clinics that Brown Boosts Immunity assisted, as one of the most effective ways of performing community outreach, and of spreading word of their program within their community.

Moreover, we recommend that other projects produce tangible material goods, like stickers or flyers, to be spread within their community. Our materials allowed us to remain connected with the community even when we weren’t physically working with and aiding its members. We further recommend carefully considering the locations within a community where these physical goods are distributed. Although the reach of both our stickers and our infographics was extensive, we eventually concluded that we were lacking representation in some key demographic areas, like those with a greater proportion of Spanish-speaking residents. In light of this realization, the team expanded to Clinica Esperanza and other Spanish-speaking clinics, and targeting this demographic will be a continued focus

for Brown Boosts Immunity in the future. Other projects should ensure their distribution network does not mistakenly exclude a key group within their community.

We also suggest that others looking to enact a similar service-learning project establish a virtual or online presence to complement in-person outreach. In meeting the needs of our community, it was important to consider how we could serve the community in both hands-on work and the virtual realm, which allowed us to reach significantly more individuals. Other projects should note that they will reach a far broader network of people within their community through a combination of in-person and online outreach work. In addition, we would recommend customizing this virtual presence to the needs of the community of interest. For example, our social media team polled our Instagram followers regarding the content they wanted to see most, and subsequently designed our content based on their responses. Thus, our original social media content was uniquely curated to our community’s interests. In establishing a more personal social media presence, we increased our campaigns’ relevance to Rhode Island citizens and differentiated ourselves from larger public health organizations. Any successful community-based campaign should endeavor to demonstrate what their campaign offers to their local community that a larger organization cannot provide.

Figure 7. “Why I Vaccinate” Posters



Note. Two examples of educators holding their custom “Why I Vaccinate” posters. Brown Boosts Immunity members who volunteered at vaccine clinics approached teachers after they’d received their vaccine and encouraged them to write down their reason for getting vaccinated. Teachers were then photographed posing with their custom signs, and were later featured on our social media pages.

Our final recommendation is to ensure that any project with similar aims be designed with sustainability and longevity in mind. Projects should be built to continue beyond single semesters, even if formatted as a semester-long course in a manner similar to Brown Boosts Immunity. Demonstrating the continued commitment to the project even after the initial GISP ended, members of BBI designed and ran a similar but adapted GISP during the spring 2022 semester. As an additional example of BBI's efforts to maintain continuity after the first semester-long GISP had ended, GISP members applied, and were accepted, to present at an event hosted by the Association of American Colleges and Universities (AACU) called Project Kaleidoscope (PKAL). Here, the students presented the concept of centering a class around service-learning and gave a concrete example of how professors who attended the event could structure their class in a similar way to the GISP. We would strongly recommend that other projects consider how they could continue to provide valuable education and support to their community on the time scale of years rather than months.

Conclusion

Taking a step back and analyzing the Brown Boosts Immunity campaign from the outside reveals a number of lessons that can serve as valuable resources in implementing future student-led community engagement efforts. One of the primary lessons is how impactful students can be in recognizing and addressing significant sociopolitical issues such as vaccine hesitancy. Developing and participating in a Group Independent Study Project has revealed that interdisciplinary cooperation among students is an incredibly valuable strategy in responding to said issues. A particular emphasis on having a team with diverse academic backgrounds equips a community engagement initiative with a versatile and adaptable frame of reference. The promising signs of early stage impact that Brown Boosts Immunity was able to deliver to both the Rhode Island community and the student community indicate that there is great value in leveraging a project-based service-learning model, both as a means of serving the larger community and as a means of enriching students' educational experiences at the university level.



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