An implementation model for community-academic partnership to promote health literacy

Lessons from the New York Vaccine Literacy Campaign

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Executive Summary

Objective

This white paper outlines the structures and implementation procedures of the New York Vaccine Literacy Campaign (VLC), an initiative at the City University of New York Graduate School of Public Health & Health Policy (CUNY SPH) launched in May 2021 to respond to the COVID-19 vaccine communication challenges faced by community-serving organizations. This paper presents the VLC as a model for partnering with community-serving organizations to promote health literacy and offers a road map for other academic institutions looking to establish similar programs.

Introduction and Background

Disruptions in routine vaccination coverage emerged as an issue at the onset of the COVID-19 pandemic, as the scheduling of routine medical visits plummeted through periods of lockdown and overwhelmed health systems struggled to re-incorporate missed care.[1] While issues like decreased access to care and fear of exposure instigated the initial drop in routine vaccine coverage, the unique pandemic communication environment complicated public views on vaccination. The development of COVID-19 vaccines plunged the public into a play-by-play of scientific discovery, clinical trials, and the financial and political decisions of stakeholders leading the charge. This information environment became quickly muddied by a flood of mis- and disinformation offering answers to the many questions from the public. For some populations, this information environment confirmed already significant mistrust in the health care system, medical professionals, and government programs due to historical instances of racist malpractice.

As trusted messengers, community workforces were overburdened by the demands of navigating COVID-19 information, especially in the early days of the pandemic and the vaccine roll out.[2] Through partnership and collaboration, the VLC aimed to mitigate these demands by providing community-serving workforces with resource navigation, material development, and data collection and analysis. Community-academic partnerships offer a strategic model through collaborative activities, fostering mutual respect, and recognition of the expertise of both academia and community members to generate meaningful and sustainable solutions to a variety of health issues.

The VLC Model and Framework

The VLC grounded its approach in models of community assessment, planning, partnership, and community-based participatory research. A Community Engagement Advisory Council initially aided in identifying early outreach and engagement opportunities with community-based organizations (CBOs). Central to the VLC model was the understanding that community partners were the trusted messengers and the VLC's role was to provide support, resources, and tools to build their capacity and

remedy communication challenges. At the same time, CUNY SPH provided a direct line to scientific and public health expertise where and when needed.

Four main pillars structured the VLCs operations. The full report provides key examples of each program component from the VLC's CBO partnerships in action.

1. Partnership development and outreach
Each partnership between the VLC and a CBO was unique, tailored to the specific needs and preferences of the CBO partner. The VLC prioritized being present and dependable, allowing the CBO to dictate the nature and frequency of interactions. Some partners preferred regular meetings for updates and resource requests, while others focused on specific time-bound projects. Throughout, the VLC provided technical support, evidence-based information, communication materials, and public health expertise. Projects were approached iteratively, with open channels for feedback and adjustments as needed.

For academic institutions looking to replicate this program, it is advised to first assess existing outreach networks and seek input from stakeholders. If such networks don't exist, time should be dedicated to building those relationships before seeking funding and starting implementation. Additionally, having team members with community engagement experience is essential for setting realistic project goals and expectations with potential partners.

2. Broad and tailored communications
The VLC developed an e-newsletter to disseminate timely public health information to community organizations, covering health data, policy updates, resources, events, and partner announcements. Collaborating with initiatives like the New York Academy of Medicine and CUNY SPH's Harlem Health Initiative, the newsletter addressed COVID-19-related updates and broader community health topics. The process involved building a readership list, establishing content guidelines, and coordinating with program staff and partners for contributions.

Over two years, the VLC organized quarterly webinars in close collaboration with community organizations, focusing on community concerns and the delivery of timely public health information. These webinars featured diverse panelists, including experts from academia, medical practitioners, health communication professionals, and community members with relevant experiences. Dedicated team members coordinated with partners and participants, and a moderator map ensured smooth execution. Promotion strategies included e-newsletters, event boards, email blasts, and incentives like raffles for attendees.

3. Data collection and analysis
The VLC employed various data collection methods to meet partner needs, including quarterly surveys conducted by a vendor and collaboration with Healthfirst to survey their members' households. These surveys provided county-level data on COVID-19 vaccination sentiments, reasons for vaccine hesitancy, COVID-19 experiences, and access to services. The VLC presented the data in concise reports, including demographic breakdowns, and made them accessible through an online dashboard for community partners.

In its second year, the VLC identified data needs in collaboration with partners and designed quantitative data collection efforts without a survey vendor. Identifying these needs required a discussion of what data sources partners regularly used and what they regularly struggled to find or collect. The VLC responded first by identifying secondary sources if possible.

The VLC viewed partner collaborations, workshops, and other interactions as key opportunities for gathering qualitative data. Overall, data collection did not always follow modes often associated with academic purposes but rather took creative approaches to prioritize community perspectives, hyper-local information, and the measurement needs voiced by our partners.

4. Resource creation
The VLC developed tailored resources to meet information and communication gaps identified by CBO partners. These materials ranged from factsheets and resource roundups to social media assets, and communication toolkits. Each resource was developed in response to partner requests or to address vaccine policy or recommendation changes and underwent iterative review and revision in collaboration with partner organizations. Resources were grounded in plain language principles to increase accessibility.[3] Adapting a resource to keep it relevant required consistent input from partner organizations to understand the use and usefulness within their target population. The VLC found that this iterative and collaborative process ensured that the vaccine education resources were impactful and remained updated.

The VLC employed the principles of co-design to create specific communication campaigns. Co-design involves collaboratively designing a product with stakeholders, emphasizing their input in determining components and user experience. In community-academic partnerships, the academic partner provides support, technical assistance, and ideally, funding for resource production and stakeholder compensation. While the process typically starts with stakeholders identifying issues and co-designing solutions, in the case of the VLC, the initial goal was to promote vaccine education and access, with specifics determined through co-design.

Key elements for successful co-design workshops include scheduling, planned activities, evaluation considerations, and flexibility for diverse outcomes. The process is a discovery, and the resulting products are shaped by and for the community stakeholders.

Assessing Program Impact

The VLC implemented monitoring and evaluation metrics that could assess the reach and outcomes of various health communication activities. Each effort included a discussion with our partners on what metrics would be most useful to them regarding our collaborations.

Any academic organization aiming to assess the impact of their community engagement initiatives must be innovative in their approach to ensure the evaluations are mutually beneficial to their partners. For example, in a post-webinar survey, a partner may wish to show that participants were made aware of their services and implied a high level of willingness to attend future events whereas the academic team may want to prioritize measuring self-reported changes in knowledge. Determining these metrics ahead of time ensures both parties are provided with the data they need to measure program impact.

Conclusion

Forming and sustaining academic-community partnerships to combat health communication and literacy issues formalizes an important exchange of knowledge and practice. Academic institutions can provide health information, scientific expertise, and other resources free from bureaucratic or political barriers. Community organizations provide insights into health behaviors, attitudes, and beliefs of the communities they serve. They also understand the problems and potential solutions best. Taking steps to ensure these partnerships are mutually beneficial, reduce the demands on community-based workforces, are sustainable, and consistently community-led can go a long way to mitigate gaps in health literacy and improve community health broadly.

Introduction

In a rapidly changing information environment, like the one during the first year of the COVID-19 pandemic, mass communications often led to the alienation of individuals who did not receive messaging tailored to their beliefs, priorities, language, or literacy levels. This paper outlines the structures and implementation procedures of the New York Vaccine Literacy Campaign (VLC), an initiative at the City University of New York Graduate School of Public Health & Health Policy (CUNY SPH) launched in May 2021 to respond to the COVID-19 vaccine communication challenges faced by community-serving organizations. This white paper focuses primarily on the second phase of the VLC (August 2022-May 2023) when the program shifted to promote vaccine literacy for routine vaccinations. We offer a brief background on the theoretical concepts behind our approach and outline key implementation and operational components. We present the VLC as a model for partnering with community-serving organizations to promote health literacy and offer considerations for other academic institutions looking to establish similar programs.

Defining vaccine literacy

Vaccine literacy is a component of health literacy, but one worth separate consideration and intervention given the distinction of vaccines as preventative (i.e., often administered in the absence of disease) and the psychosocial and political elements that have historically impacted vaccine decision-making and availability. And like the evolution of health literacy as seen in the changing definition prioritized by the Healthy People 2030 goals,[24] vaccine literacy is defined as the assessment of an individuals' knowledge and understanding, but not separate from the systems that influence equitable access to resources, clear and correct information, and opportunities for education.[25]

Vaccine literacy is facilitated by eight tenets:[26]

1. Individual knowledge informed by clear, trustworthy, up-to-date evidence
2. Ability to discern fact from fiction
3. Listening, encouraging questions, and dialogue
4. Providing understandable, trustworthy, up-to-date answers to questions
5. Understanding risks and benefits of vaccination for self and society
6. Successful education, access, and systems for vaccination
7. Prudent policies that incentivize vaccination and equity
8. Transparency, clarity, and confidence in vaccine quality, safety, and efficacy

Background

The pandemic's influence on vaccine communication and equity

Disruptions in routine vaccination coverage emerged as an issue at the onset of the COVID-19 pandemic, as the scheduling of routine medical visits plummeted through periods of lockdown and overwhelmed health systems and supply chains struggled to re-incorporate missed care.[1] The World Health Organization and UNICEF estimated that 25 million children across the world missed their routine vaccines in 2021 with over 100 countries reporting significant reversals in childhood vaccination rates.[4] In the United States, 2021-2022 immunization data for children – both on routine vaccine coverage in kindergarteners[5] and on routine vaccination rates for infants through 24 months showed pervasive immunization disparities and an overall 2% drop in coverage.[6] In New York, this global trend in vaccination coverage carried implications as once nearly eradicated diseases found opportunities for community spread witnessed in the 2022 appearance of polio cases.[7]

While issues like decreased access to care and fear of exposure instigated the initial drop in routine vaccine coverage, the unique pandemic communication environment complicated public views on vaccination. The development of COVID-19 vaccines plunged the public into a play-by-play of scientific discovery, clinical trials, and the financial and political decisions of stakeholders leading the charge. This information environment became quickly muddied by mis- and disinformation flooding in to offer answers to the many questions from the public. In February 2021, the KFF COVID-19 Vaccine Monitor reported that almost a third of the US population were hesitant about the vaccine and would "wait and see" to get vaccinated.[8] And while COVID-19 vaccine acceptance gradually improved, widespread misinformation continued to impact public vaccine sentiments – nearly 8 in 10 adults said they believed a false statement about the COVID-19 vaccine or were unsure if it was true.[9] The reliance on non-credible sources[10] (often found on social media) for information, lack of trust[8] in the safety of the vaccines,[11] and decreased confidence[9] in government institutions due to polarization facilitated the influence of false or misleading information.[12]

For some populations, this information environment confirmed already significant mistrust in the health care system, medical professionals, and government programs due to historical instances of racist malpractice such as the Tuskegee Syphilis Study,[13] forced sterilizations,[14] unequal access to quality healthcare,[15] and high maternal mortality[16] among women of color. This distrust compounded by inequitable access to vaccination and healthcare contributed to initially lower rates of vaccination among racially marginalized groups as well as disproportionate COVID-19 hospitalizations and deaths.[17]

Ensuring routine vaccination rates remain resilient through pandemics and other health emergencies is paramount for sustaining adequate population immunity levels against vaccine-preventable disease. Strategies to recover routine vaccination require a multi-pronged approach accounting for the complexities of vaccine decision-making and the realities of inequitable access. Community-academic partnerships offer such a model through collaborative strategies, fostering mutual respect, and recognition of the expertise of both academia and community members to generate meaningful and sustainable solutions.

Building effective community-academic partnerships

Partnerships between academic institutions and community organizations can play a crucial role in addressing socioeconomic and health-related challenges. Academic institutions as research and information generating hubs can serve as key resources for the communities in which they are located by providing research support, evidence-based intervention development and training, and a discerning eye to sources of news and information.[18,19] Partnerships with community-serving organizations in turn bolster the public's trust of the institution and provide opportunities for mutual learning, knowledge co-creation and skill sharing. Additionally, through these collaborations, students benefit by becoming more informed of community needs and goals, health inequities, and gaps in research, and in turn, bring these perspectives into their careers.[20]

Throughout the COVID-19 vaccine rollout, community-academic partnerships played an important role in vaccination education and distribution efforts. This was especially seen in projects addressing vaccine concerns among historically marginalized Black, Indigenous, and People of Color (BIPOC) communities.[2,21,22] Effective partnerships sought to support and amplify trusted community messengers as key communicators in a cluttered information environment.

Community-Based, Faith-Based, and Social Service Organizations

Community, faith, and social service organizations are trusted messengers in the communities where they work, often serving marginalized communities and those disproportionately affected by health inequities. These organizations are pivotal in consistently meeting the resource, data, education, and advocacy needs of the communities they serve.[2,22] Faith-based organizations can reach communities that may be especially distrusting of health or government institutions, or those that are harder to reach through conventional channels of communication.[23]

Community Frontline Health Workforce

Community frontline health workforces (e.g., local clinics and pharmacies, healthcare providers, pharmacists, and community health workers) also play an essential role in supporting vaccination

uptake and combatting vaccine mis- and disinformation. Members of this workforce build trust with community members through consistent interaction, delivering essential services, and are trained to disseminate health and vaccine information.[22]

As trusted messengers, these community workforces were overburdened by the demands of navigating COVID-19 information, especially in the early days of the pandemic and the vaccine roll out.[2] Through partnership and collaboration, the VLC aimed to mitigate these demands by providing community-serving workforces with resource navigation, material development, and data collection and analysis.

The New York Vaccine Literacy Campaign

Program Model and Evolution

The concept for the New York Vaccine Literacy Campaign (VLC) was born out of the early days of the COVID-19 pandemic. Survey and mixed-methods research lead by a team of faculty and staff at CUNY SPH identified the need for consistent monitoring of public attitudes and experiences to assess social and health impacts.[27] The distribution of survey reports led to frequent conversations with local organizations who flagged the need for communication materials tailored to the local-level and for key audiences. This was especially true regarding information about the COVID-19 vaccines, which swarmed with misinformation and early evidence of widespread concerns and potential vaccine hesitancy.[28]

The VLC grounded its approach in models of community assessment, planning, partnership, and community-based participatory research (See Theoretical Concepts). Initially advised by a Community Engagement Advisory Council made up of community advocates and activists, who aided in identifying early outreach and engagement opportunities, the VLC sought to set program priorities in partnership with community-based organizations (CBOs). Central to the VLC model was the understanding that community partners were the trusted messengers and the VLC's role was to provide support, resources, and tools to build their capacity and remedy communication challenges. At the same time, CUNY SPH provided a direct line to scientific and public health expertise where and when needed.

Theoretical Concepts

Health Belief and Behavior Models
The theory of planned behavior (TPB) and the health belief model (HBM) are strong predictors of vaccine attitudes and useful in vaccine uptake efforts.[29–31] TPB emphasizes vaccination behaviors as attributable to an individual's attitudes toward vaccination, subjective norms supporting vaccination, and perceived ability to get vaccinated. HBM attributes likelihood of vaccination to an individual's perceived susceptibility and severity of disease risk, perceived effectiveness of the vaccine, and their ability to overcome barriers to vaccination.

PRECEDE-PROCEED
PRECEDE (Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation) and PROCEED (Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development) builds upon the previously mentioned models to offer a population-centered participatory framework for health promotion and program evaluation. This widely used model offers strategies for identifying problems, root causes and structural barriers, population priorities, determining objectives and interventions, and guides implementing interventions, and evaluating processes, impact, and outcomes.[32,33]

Community-based Participatory Research
Community-based participatory research (CBPR) centers community members as co-researchers to establish community leadership in the project design and development.[34–36] CBPR requires reflexivity on the part of the academic partner to acknowledge biases, power dynamics, and preconceived notions that may impact the implementation and outcomes of any project. Later in this paper, we share in detail the processes used to conduct a series of co-design workshops with teens, a methodology rooted in CBPR.

In the early stages of the VLC, outreach to community-serving organizations revealed they were inundated with vaccine-related questions and felt overwhelmed and under-prepared to tackle such an issue.[2] As a result, the VLC honed its model in its second year to build more robust community projects, collect data at the neighborhood-level, and focus on routine vaccination while continuing to provide communications on COVID-19 vaccine updates when necessary.

The following sections describe the implementation of the VLC while providing insights for replication for other institutions.

Program Pillars and Operations

The VLC operated with four key pillars categorizing activities and implementation priorities. While the program's focus and reach evolved, the pillars largely stayed the same providing continuity in approach and structure.

1. Partnership Development and Support

Establishing community In-roads

As previously mentioned, the Community Engagement Advisory Council established important connections for the VLC to start CBO outreach and engagement. In addition, at CUNY SPH, the Harlem Health Initiative acts largely as the community-engagement navigator for projects and programs at the school. The Harlem Health Initiative has a deep network throughout New York City, and especially in Harlem driven primarily by the decades of community outreach and advocacy work of its director Deborah Levine, LCSW. The VLC was managed by staff with professional experience in community education as well as training in partnership development and outreach. Training in data collection methodologies as well as health communication also allowed the VLC to contribute additional value as a partner.

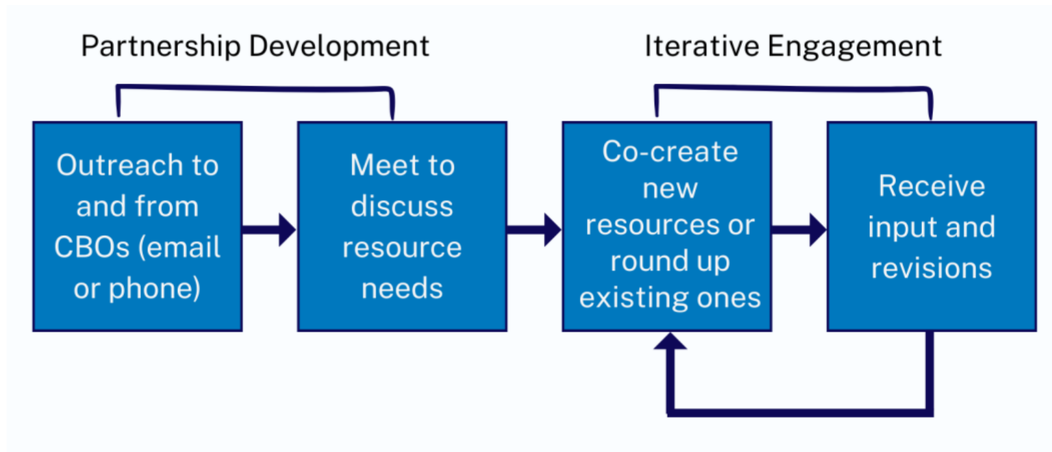
An academic institution that wishes to establish a similar program could look first to existing community outreach networks at their school to gauge early input from stakeholders on the needs and priorities for a health literacy program. If no such contacts or partnerships exist, the institution will need to spend adequate time building those relationships prior to seeking funds or beginning any implementation efforts. It is also paramount that the academic team includes personnel with community engagement experience to set expectations and realistic project goals in conversation with potential partners.

Partnership Engagement Procedures

Each partnership between the VLC and a community-based organization was unique in its development, implementation elements, and outcomes. Being a present and reliable partner was the cornerstone of the VLC's principles of engagement and meant that the nature of each partnership was driven by the parameters set by the CBO partner. For example, some partners desired meetings at regular intervals to ensure timely check-ins and the ability to request updated resources or pivot project development. Other partners suggested highly specific time-bound projects, such as webinars with a key audience and topic already determined. In both cases, the VLC remained the flexible, available partner to provide technical assistance, scientifically backed information, communication

materials and public health expertise. We approached each project iteratively and aimed to create a feedback loop of communication to allow for revision and course corrections where necessary (Figure 1).

Figure 1. VLC Partnership Engagement Procedures



2. Broad and Tailored Communications

Newsletter Development

The VLC regularly published an email newsletter to share timely public health information with community organizations. The newsletter content included topline health data and news, policy updates, resource spotlights, upcoming events, funding opportunities, and community partner announcements. Integral to developing and sustaining the newsletter, the VLC collaborated with other initiatives that shared our mission to compile, review and distribute information to CBOs. During our first phase, the VLC partnered with the New York Academy of Medicine (NYAM), a health policy and advocacy organization, to produce a monthly newsletter focusing on COVID-19-related updates aimed at a CBO audience. Each edition revolved around a specific theme, considering the prevailing state of the pandemic and the corresponding time of year (i.e., “back to school” health). In our second year, the VLC partnered with other initiatives within CUNY SPH’s Harlem Health Initiative (HHI) to create a more comprehensive biweekly *Community Health Equity Bulletin*. The newsletter reported on news, data, and policy briefs, as well as events, webinars, and funding opportunities regarding community health, vaccine equity, mental health, and cannabis equity.

Partner Highlight: NYC Department of Health and Mental Hygiene, Center for Health Equity and Community Wellness

The VLC collaborated with the New York City Department of Health and Mental Hygiene's Center for Health Equity and Community Wellness to create and distribute timely social media content regarding seasonal vaccines and updated recommendations. City agencies can be slowed down by bureaucratic processes, hindering the prompt dissemination of proprietary creative content. Recognizing this challenge, the NYC DOHMH approached the VLC to design social media assets to distribute through to their community partners. These "unbranded" materials allowed CBOs to add their own logos or other identifiers and post to their social media accounts. A medical professional at the Center vetted the assets and selected appropriate, attention grabbing and accessible statistics to include in the posts. The content promoted COVID-19 and flu vaccination recommendations and other protective measures such as masking, social distancing, and precautions during gatherings. The VLC responded to the urgency of timely vaccine messaging and bridged the need for the Center's network of over 100 community and faith-based organizations. The social media assets were made available through an shared online folder and promoted through the Center's newsletter, with a readership of over 1000 individuals. Community organizations reported the assets were well received by their members, fit their messaging needs, and were easy to access and distribute widely.

Initial newsletter development requires assembling a readership list and identifying a design and content formula. It is also helpful to establish a relationship with your institution's communications team for publication and distribution, if possible. Setting a cadence for meeting with program staff and partners to discuss content and meet deadlines ensures equal contribution from all involved parties. The frequency of the newsletter depends on the capacity of program staff and readership engagement. A monthly or bi-weekly cadence was manageable for a small team like the VLC but required two team members to be dedicated to the task. Subscribing to listservs can provide consistent sources of updates and resources. Finally, using an email marketing platform allows for the review of metrics to determine newsletter engagement. Brief assessments, such as a survey form, can be embedded in the newsletter to evaluate reader satisfaction, content quality and additional topics for program assessment.

Webinar and Presentation Development

Throughout its two years of operations, the VLC hosted one to two webinars per quarter. The subject matter, target audience, and content were developed in close collaboration with a community organization(s). The objectives of the webinars were grounded in addressing community concerns and communicating timely public health information. As a primary step, the community organization determined the target audience to whom to tailor the presentation's content and messaging. Next, potential panelists were considered with the aim to recruit subject matter experts from diverse

backgrounds and experiences. CBO partners always had final sign-off on panelist choices. The VLC's typical webinar panel consisted of public health experts from academia (often affiliated with CUNY SPH), medical practitioners and health communication professionals that practiced within the webinar topic, and community members with relevant lived experiences.

Preparing for a successful webinar required at least one dedicated team member to organize the procedures and communicate regularly with CBO partners and panel participants. A moderator map which included scripted elements, team roles, panelist bios, and estimated time stamps ensured well-organized collaboration and a streamlined "run of show". Our webinars often included testimonials from community members and followed a conversational format between panelists and moderators. Other important considerations when planning an event included budgeting for live translation services to allow for a broader and more inclusive reach. Successful promotion avenues included e-newsletters, local and institutional event boards (virtual or in-person), email blasts, and local community board listservs. Lastly, incentives were used to encourage attendance and engagement through the entire webinar. The VLC often offered a raffle at the conclusion of the webinar and attendee names were drawn to receive an online gift card via email.

3. Data Collection, Analysis and Reporting

The VLC used various data collection methodologies to respond to the data needs of our partners. In the first year of the initiative, the program worked with a survey vendor to field quarterly surveys. These data were collected and reported at the county level, providing population representative snapshots of public sentiments on COVID-19 vaccination and other mitigation measures. This effort included a collaboration with Healthfirst, the largest provider of Medicaid and Medicare in New York, to field the same survey among their patient's households. The survey vendor collected, cleaned, and weighted the data and provided topline and crosstabulation tables. The VLC wrote short reports to include the most salient points involving vaccination status, including of the updated bivalent booster; reasons for not receiving the vaccine, including among parents who have not vaccinated their children; experiences with COVID-19; and access to health and social services. We also reported crosstabulations of these data with relevant demographic information, including age, race, insurance status, and education level. Data were organized by topic sub-headers and displayed in bullet point form and figures for quick review and replicability. The data were also displayed on an online dashboard which allowed community partners to navigate the results by county.

Considerations for working with a survey vendor

Working with a survey vendor has its advantages and its drawbacks. The ability of an institution to work with a survey vendor may simply come down to the project's budget, so depending on the data needs of your community partners, allocating sufficient funds to hire a survey vendor may be necessary and should be determined early. Other key considerations include:

1. *Speed and efficiency of data collection:* Most survey vendors can field a survey, compile, and clean data, and run results quite quickly. This saves your team capacity and captures a timely snapshot of community needs and attitudes. Without a vendor, promoting your survey, collecting the data, cleaning and then producing results can take weeks, if not months depending on the size and expertise of your team.
2. *Modes of data collection:* Most survey vendors recruit participants through online panels and databases of mobile and landline phone numbers. Some use social media advertising and some even offer in-person survey collection (i.e., "door knockers"). Each mode comes with its own costs and data quality considerations.[37,38] Importantly, some modes may not be available in the geographic region or for the specific sample you are seeking for your survey collection.
3. *Target sample and audience:* Not all vendors will be able to meet your requirements regarding sample size, location, diversity, primary language, and demographics, while others may offer a high level of customization. These are important discussions to have when seeking quotes to ensure your resulting data set meets your expectations, needs, and budget.
4. *Data security and fraud detection:* Survey providers have mechanisms to prevent fraud and "bots" from infiltrating online survey responses. If you plan to field your survey online, this peace of mind is highly valuable and can save your team from hours of painstaking data cleaning. There are manual steps you can take to protect your online survey and will vary depending on the platform. Note: Incentivized surveys (i.e., participants are entered into a raffle, or given a gift card) are highly vulnerable to fraud and bots.

Whichever data collection methodologies your institution chooses to employ, transparency in how and from whom the results were collected will be an important part of the reporting process.

In preparation for the VLC's second phase, we conducted an evaluation of the data reports and dashboard to better understand if they were meeting our partner's needs. Through key informant interviews with 10 partners, it became clear that organizations needed data collected at the neighborhood or zip code level to better reflect the geography in which they plan and implement their work. Local-level data would also aid in grant proposal writing to best illustrate community needs. Most admitted to never using the dashboard and found the VLC's communication resources more directly applicable to their needs. Lastly, at the time (summer 2022) the need for COVID-19 vaccine sentiments was waning as many of these community organizations were losing or phasing out their COVID-19 specific work. This feedback significantly helped design and hone the next phase of the VLC.

In our second year, we identified data needs in collaboration with partners and designed quantitative data collection efforts without a survey vendor. Identifying these needs required discussing what data partners regularly used (if anything) and what they regularly struggled to find or collect. The VLC responded first by aiding in identifying secondary sources if possible. For example, the VLC included salient NYC data on vaccination rates and seasonal flu and RSV cases in our bi-weekly e-newsletter following partner feedback that short data briefs would assist them in setting project targets. If secondary sources were unavailable, then the VLC considered whether a proprietary data collection was an appropriate next step. One such effort was our Harlem Vaccine Attitudes and Access survey, which was programmed into an online survey platform and distributed primarily via email with promotion through our newsletter and social media.

The VLC viewed partner collaborations, workshops, and other interactions as key opportunities for gathering qualitative data. The partner highlights below share two instances where qualitative data collection informed projects and reports. Overall, data collection did not always follow modes often associated with academic purposes but rather took creative approaches to prioritize community perspectives, hyper-local information, and the needs voiced by our partners.

Partner Highlight: ARC XIV A. Philip Randolph Senior Center

The A. Philip Randolph Senior Center, one of three ARC XIV centers in upper Manhattan, partnered with the VLC on multiple occasions to bring vaccine education to seniors, and to gather input, opinions, and experiences from long-standing residents of Harlem. The center offered a full monthly schedule of programming to its members ranging from educational opportunities, physical activities, and opportunities to learn more about local programs. First, the VLC met with the director of the center after being connected through a local community board's senior task force. This initial conversation led to developing various ways the VLC could contribute to the center's programming. The senior center leadership sought educational events but also aimed to create opportunities to highlight and amplify senior voices. Over a six-month period, the VLC collaborated with the center in two key ways

1. *Presentations and workshops:* The first presentation conducted at the center, *Understanding Immunity, and the Role of Vaccination,* explained the different ways immunity is built by the body, what happens to immunity as we age, and the role vaccines play in providing protection. The presenters reviewed the recommended schedule for flu, pneumococcal, and shingles vaccines for older adults and included instances where additional vaccinations may be indicated. Audience members then asked additional questions and provided feedback on the presentation for future tailoring and improvements. The second presentation entailed the screening of three short videos the VLC compiled from conversations with local community leaders, health professionals, and elected officials (See Community Conversations Video Series). The seniors offered their feedback on the videos and their advice for promotion and distribution.

2. *Data collection:* When discussing the fielding of the Harlem Vaccine Attitudes and Access survey with the senior center leadership, it was suggested that in-person administration of the survey, as opposed to an emailed survey link, would be a more successful strategy to reach older adults. A two-hour window was scheduled to offer the survey (on paper) to center members and VLC staff assisted with survey completion for those who requested help. Each participant received a gift card for their time. Once collection was complete, the VLC shared the final report with the center. Lastly, to gather pandemic experiences, vaccine sentiments, and recommendations for health communication from older adults, the VLC lead focus groups at the senior center as exploratory qualitative data collection. A report was shared with the center following summary analysis.

Project Highlight: Community Conversations Video Series

A video project was born out of conversations with organizers at East Harlem Community Organizations Active in Disasters[39] that identified the need to highlight local expert perspectives on preventative health access and why routine vaccination is a key component of community health. We conducted a series of key informant interviews to gather the perspectives of trusted community organizers, health experts, and local elected officials on the role of vaccination within a community health equity framework, their personal decision making around the COVID-19 vaccine specifically, and their views on what communities need to better access healthcare resources. These interviews were edited into short, shareable videos and posted on the school's YouTube channel. The series was shared on various social media platforms through CUNY SPH and Harlem Health Initiative's accounts, and further distributed through the biweekly newsletter. The videos were also screened for local community boards and seniors at the A. Philip Randolph Senior Center which provided opportunities to receive community feedback. Viewers shared positive impressions, stating key insights from the featured speakers fostered trust and relatability. Particularly noteworthy was the enthusiastic reception from viewers who recognized their local community leaders and elected officials in the videos. The testimonial-style format made the videos approachable and easy to digest, resonating strongly with viewers who agreed to share the videos with family members and friends who expressed vaccine concerns.

Video editing required most of the interview content to be cut, so we approached the full interview content as data to then conduct a thorough content analysis. This analysis was written up as a report on Promoting Vaccination for Community Health to be shared with community-based partners, health clinics, community district boards, and Manhattan-based elected leaders.

3. Resource Creation

Communication Materials and Toolkit Development

The VLC developed tailored resources to meet the information and communication needs identified by CBO partners. These materials ranged from factsheets and resource roundups to social media assets, and communication toolkits. Each resource was developed in response to partner requests or to address vaccine policy or recommendation changes and underwent iterative review and revision in collaboration with partner organizations. Program staff met with partner organizations multiple times to understand their specific needs and target audiences, and to implement partner feedback into the

Partner Highlight: Hunger Free NYC

Hunger Free NYC[40] provides food assistance navigation, eligibility screening for SNAP and WIC benefits, as well as community organizing, and advocacy for sustainable food access for low-income New Yorkers. Early during the COVID-19 vaccine roll out, their Benefits Access Team – a group that works closely with community members to review and establish food assistance eligibility – were inundated with community questions and concerns. Their newly established COVID-19 Vaccine Outreach Team contacted the VLC to discuss how we could support their communications and client interactions. Over the course of 18 months, Hunger Free and the VLC collaborated on several projects including webinars, tailored factsheets and a comprehensive COVID-19 vaccine guidebook.

The COVID-19 Vaccine Family Guidebook

This guidebook (in the form of a shared online slide deck) was developed to aid the Benefits Access and WIC teams with client-facing information and statistics regarding the COVID-19 vaccine. Initially, the teams related that they needed quick access to basic information on COVID-19 disease risk; New York-specific case data; easy ways to describe how vaccination works, especially the mRNA mechanisms; data on vaccine safety and the protection it provides; and steps for making an appointment. Overtime, the guidebook evolved to include age-specific dosage recommendations, COVID-19 testing and treatment guidance, explanations of variants, and a robust section on understanding vaccine safety during pregnancy and breastfeeding.

Pregnant and breastfeeding people remained a priority population for the Hunger Free team, especially among their WIC clients, who tended to be immigrants with a broad range of healthcare access, English-language proficiency, and health literacy levels. We consistently updated the pregnancy/postpartum section to better explain what happens to immunity during pregnancy, what vaccines are recommended for this time and why, how antibodies provide protection to newborns, and included up-to-date statistics on vaccine safety during pregnancy and breastfeeding. New iterations of this guidebook section were presented to the WIC outreach team for feedback. The final section was broadly distributed and promoted in clinical settings where the WIC team conducts client relations.

final assets. Resources were grounded in plain language principles to increase accessibility.[3] Adapting a resource to keep it relevant required consistent input from partner organizations to understand the use and usefulness within their target population. The VLC found that this iterative and collaborative process ensured that the vaccine education resources were impactful and remained updated.

Co-Designing Communication Resources

Put simply, co-design is the practice of designing a product through collaborative and equitable partnership processes with stakeholders. Drawing from principles of Community-Based Participatory Research[34] and human-centered design[41], co-design acknowledges stakeholders as the drivers of determining the product components and desired user experience. In the case of a community-academic partnership, the academic partner takes on a supportive role, providing technical assistance, logistical support, background data and research where needed, and ideally, funding to produce the designed resources and to compensate stakeholders for their participation. The co-design process in its purest form would start *carte blanche* and ask community stakeholders "what issue would you like to take on? What solutions do you think we could design together?" For the VLC, however, our partners were aware that promoting vaccine education and access was the starting goal – how, where, and to whom this promotion would occur was determined through the co-design process.

While there are many ways to approach implementing co-design workshops, a few key elements within the process can aid in directing the flow of information and the evolution of the project. First, determine a schedule and cadence of workshops that will ensure optimal attendance for the stakeholders' participants. Second, create a loose plan of activities and the supplies needed to start from a freeform space, evolve into prototype planning, and ultimately result in a product. Consider what evaluation components would be beneficial for your institution and your partners (i.e., demonstrate increased knowledge among participants). Most important, it is especially imperative for the academic partner to remain flexible and open to a variety of outcomes. True co-creation requires the relinquishing of any preconceived notions of what *should* be created. The design process is a discovery, and the end products are therefore from and for the community stakeholders. The partner highlight below describes in detail how the VLC co-designed with a group of teens to create a suite of Human Papillomavirus (HPV) vaccine education materials. The focus of these workshops was pre-determined through conversations with the STEM program director from the Boys and Girls Clubs of Harlem,[42] but the teens drove the content and designs of the communication resources.

Partner Highlight: Boys and Girls Clubs of Harlem Teen HPV Education

Through a series of co-design workshops, the VLC collaborated with a group of thirteen teens, ages 16-18, at the Boys and Girls Club of Harlem to create educational resources about HPV vaccination. Over the course of six workshops, the teens discussed their own perceptions and questions about HPV vaccination, their preferred sources and platforms for health information, and what messages and messengers helped them feel confident about vaccination. They designed a suite of communication materials that empowered their personal decision-making and facilitated effective peer communication about HPV and HPV vaccination.

Introductory Workshop - This session intended to recruit teens to join the series and provide an overview of the co-design procedures. The teens were first asked to offer word associations regarding HPV and HPV vaccination, and it was clear immediately that none of the teens were familiar with HPV and were confused about the topic. The first session pivoted largely into an educational presentation from the VLC on HPV transmission, infection, related cancers, and vaccination. We closed with a rapid activity to demonstrate what to expect at subsequent workshops: each participant wrote down or sketched their answers on a sticky note to the prompt "*what are some reasons why someone your age may not be vaccinated for HPV?*" The sticky notes were read aloud to the group and then the teens identified emerging categories of barriers. After, in small groups, they brainstorm possible solutions to tackle each category.

Workshop 1 - The first workshop began with an educational presentation given how many questions the teens still had about HPV and HPV vaccination following the first session. We also established codes of conduct to promote open dialogue and respect. For the co-design activity, we reviewed the barriers determined the week prior and discussed whether to change, add or remove barriers. Once the group reached consensus on the barriers identified, we again sorted them into categories (i.e., lack of education). Four categories were agreed upon and in small groups, the teens listed possible solutions that could mitigate each category such as hosting Q&A sessions for teens and local doctors, integrating HPV education into health classes in high school, or social media advertisements. Following the workshop, the teens received an online survey that asked them to reflect further on each barrier category.

Workshop 2 - The workshop began with reviewing the codes of conduct and again confirming full consensus. Then the VLC shared a slide with all the teens' solutions from the last workshop with additions compiled from the reflection survey. In small groups, the teens discussed resources or materials that could be created to incorporate these solutions. They were encouraged to think through the design elements of each of their ideas, such as the content, messaging, format, and distribution media. For example, one team came up with the idea to film short testimonial videos with people who had to be treated for HPV-related cancers. These videos would then be shared on social media through advertising or accounts that were likely to be viewed by teens. Each group shared their ideas and received feedback. The post-workshop survey included a table that listed the resource ideas compiled from the workshop. The teens were asked to review the resources and describe "what you would like to create in order to help teens feel informed, comfortable, and confident about HPV vaccination?" in an open response format.

Workshop 3 - All resource ideas were presented to the group with survey additions and the teens were asked to vote for which materials they wanted to, and realistically could, create together. The list was whittled down to three main ideas. The teens were split up into three groups to further explore each resource idea through prototype planning. They described the user/audience experience; the character, content, and feel of the

resource; who would be involved in the creation and distribution; and what steps were needed to create the product. The groups then presented their ideas to the full group. The follow-up survey asked the teens to provide feedback on each prototype.

Workshop 4 - Via survey feedback, three materials were deemed most important by the teens – a poster to be distributed in school and clinic settings; a brochure with similar content that could be handed out in high schools); and social media assets. We first discussed some ideas around this group of materials as a package and then broke out into small groups to determine text, graphics, and references to include as the content. Each group used tablets to search the internet for compelling messages and designs. They were also able to copy from the educational presentations used during the introductory and first sessions. Following the workshop, the VLC compiled the teens' ideas and created prototypes of each component using their graphic and messaging elements.

Workshop 5 - The teens were presented with the first drafts of the brochure, poster, and social media carousel. They provided edits and suggestions and made changes to the formatting and messaging content.

Final Workshop - This last meeting was used to review the near final versions of the suite of HPV educational materials. Based on feedback from workshop 5, the VLC created a simple website to house the educational content and share the poster and social media assets for downloading and sharing. The brochure then became a simple document, with mostly figures and QR codes to drive teens to the website. The teens provided constructive feedback to improve the website and discussed their plan for distribution and promotion.

Evaluation: The VLC included opportunities for evaluation throughout the workshop series. Each post-workshop survey included questions to track the teens' satisfaction and engagement with the workshop activities and content. The first and final survey included knowledge and confidence questions to assess whether participation in the workshops contributed to an increased ability to communicate about HPV infection, cancers, and vaccination. Lastly, the VLC team kept thorough fieldnotes from each workshop to adequately reflect on the activities, teen engagement, and note areas for improvement.

Assessing Program Impact

Setting up systems for program monitoring and evaluation chart ongoing program milestones, identify gaps in outreach and resource creation, and provide evidence of program successes and shortcomings. The VLC chose monitoring and evaluation metrics that could assess reach and potential outcomes of various health communication activities. Each effort included a discussion with our partners on what metrics would be most useful to them regarding our collaborations. Through record keeping and consistent assessment the following metrics were routinely assessed:

1. Number of partnerships established; tracked in a database
2. Types of partner organizations; tracked and quantified, assessed for diversity
3. Quantity of collaborations with partners (i.e. number of webinars); tracked in a database

4. Quality of collaborations and satisfaction with resulting resources; assessed through surveys and partner feedback
5. Participant changes in confidence, knowledge and willingness to vaccinate; assessed through pre- and/or post-project surveys
6. Quantity and reach of events, webinars, and materials; tracked and recorded through attendance, viewership counts, newsletter readership, and material downloads

Like the creativity required regarding data collection efforts (See "Data Collection, Analysis, and Reporting"), any academic organization aiming to assess the impact of their community engagement initiatives must be innovative in their approach to ensure the evaluations are mutually beneficial to their partners. For example, in a post-webinar survey, a partner may wish to show that participants were made aware of their services and implied a high level of willingness to attend future events whereas the academic team may want to prioritize measuring self-reported changes in knowledge. Determining these metrics ahead of time will help ensure both parties are provided with the data they need to measure program impact.

Conclusion

This white paper aims to create a road map for academic institutions to develop partnerships with community-based organizations to strategically address health literacy issues at the community-level. Academic-community partnerships can build capacity for community-serving workforces by emphasizing community perspectives and priorities while reducing the challenges of providing timely information collection, tailoring and distribution. As integrated above, the priorities and procedures of these partnerships should be set by the community organizations involved to ensure all activities and products serve the community adequately.

Despite the best planning and intentions, two issues may prove difficult to navigate without proper foresight. First, navigating and developing complementary collaboration with already overstretched and under-resourced community-based workforces. This requires clear communication on the part of the academic partner to expect and insist on taking on the overwhelming bulk of the implementation work, while operating with the full input and guidance of the community partner. The VLC was emphatic in our belief that we were providing a service to reduce the health communication demands on community-serving organizations. In the instances where more time and effort was required of our partners and/or community members (i.e., months-long co-design projects) compensation was provided for their participation.

The second issue, partnership sustainability, is more challenging to tackle as outside forces of funding, grant cycles, and personnel turnover may prove to be unpredictable barriers. Academic institutions have an unfortunate history of entering communities for time-bound, deliverable-based initiatives, only to establish partnerships and then disappear when funding ends. To mitigate these harms, in the short term, it is paramount to be fully transparent with community partnership about time and funding constraints. To plan ahead, academic institutions can consider multiple pathways to sustaining the support and collaboration they provide to the community. After establishing a proof of concept, the ideal goal would be to institutionalize the program in a permanent form. The VLC aimed to mitigate this harmful practice by connecting partners to other projects within the school for continued engagement. We also evolved program foci to appeal to renewed and additional funding sources and sought multi-year grants for project continuity.

Forming and sustaining academic-community partnerships to combat health communication and literacy issues formalizes an important exchange of knowledge, and practice. Academic institutions can provide health information, scientific expertise, and other resources free from bureaucratic or political barriers. Community organizations provide insights into health behaviors, attitudes, and beliefs of the communities they serve. They also understand the problems and potential solutions best. Taking steps to ensure these partnerships are mutually beneficial, sustainable, and community-led can go a long way to mitigate gaps in health literacy and improve community health broadly.

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