Knology

PBS NewsHour: Health Literacy and Student Reporting Labs

Year 4 Evaluation Report

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Executive Summary

Evidence from the most recent year of the PBS NewsHour Health Literacy and Student Reporting Labs (SRL) project shows that the program is continuing to accomplish its primary goals: to increase awareness on public health matters by reporting stories on health, biomedicine, and behavioral health; and to engage youth in health science journalism. The need for timely, accurate information and news was made abundantly clear in 2020 with the emergence of COVID-19, and the conflicting narratives that caused widespread confusion in the early days of the pandemic. This situation has also highlighted the importance of training the next-generation of health and science communicators to provide timely, accurate information in their stories.

Our evaluation of this year's data largely replicates what was done in previous years. Specifically, we collected qualitative and quantitative data from the US public, and SRL instructors and students. Specifically, we surveyed news audiences on their responses to a sample set of four health science news stories. We also analyzed data from student and teacher surveys, student group interviews, as well as student-produced news stories.

As with previous years, our analysis of data from broadcast audiences showed that the public views NewsHour as a reliable source of health science news and trusts the reports that the organization provides. In fact, we saw significantly increased engagement with health news content at the peak of the pandemic. Also similar to previous years, Year 4 audiences were more likely to describe and discuss NewsHour content than to email it or share it on social media.

Furthermore, people were more likely to talk about stories that resonated with them, whether that was based on personal experience or the experiences of someone close to them. Their primary reasons for talking about these stories were also consistent with those reported by Year 3 audiences - a desire to share specific actionable information as well as to maintain social relationships. Audiences in Year 4 also liked and disliked some of the same things about stories that Year 3 did. For example, several noted that hearing personal stories was one of their favorite aspects of news stories while health stories that included people suffering made audiences uncomfortable, this aspect was reported as their least favorite.

As in prior years, Health SRL participants became more knowledgeable about health topics and were interested in developing their journalism skills as a result of their involvement. Teachers said that working on health stories helped their students improve in several areas including their research, writing, and communication skills. Several students emerged from the program wanting to learn more about mental health topics or expressed interest in learning more about a broad range of health topics, including psychology, sociology, and working with people with disabilities.

In addition to the planned curriculum, COVID-19 meant that Year 4 SRL participants also got a taste of how journalists respond in times of crises and adapt to evolving circumstances. With school districts closed and all learning moved online to limit the spread of the virus, many SRL program participants were unable to complete their projects for various reasons.

However, some participants completed assignments using NewsHour's "Making sense of coronavirus through storytelling and media making" lesson plan. Many students submitted video diary accounts of their lives under lockdown including details of their transition to online learning, things they miss about being in school, and healthy practices their families have adopted. Some students decided to report on organizations or events focused on local responses to COVID-19. Stories covered local efforts to support families with pets during lockdown, and the impacts of the lockdown on a beach community that relies on tourism.

Many of the recommendations offered in this report are similar to those from Year 3. Access to clear explanations of topics in the health and research domains is perhaps even more important now than ever before. NewsHour's work ensures that fact-based information grounded in research percolates into the public arena, and helps to combat misinformation. Through Health SRL, NewsHour is expanding paths for future health communicators and equipping young people with tools to tell clear and accurate stories.

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Introduction

In 2016, the National Institutes of Health funded the PBS NewsHour Health Literacy and Student Reporting Labs (SRL) initiative, a five-year project to increase public awareness of health topics and train the next generation of science and health communicators. Specific project aims were to:

- Provide critical health information to PBS NewsHour's broadcast and digital audiences so they can become knowledgeable advocates for their families and communities;
- Create an innovative health science curriculum to support a more health science literate and motivated community of youth science communicators; and
- Promote interest in careers in the health science workforce and help youth and the public understand the relevance to the quality of life issues in their communities.

PBS NewsHour is accomplishing these aims through two distinct programs. Its **nightly news broadcast** includes stories about trends and concerns in clinical, biomedical, and behavioral research, and explores the industries involved in promoting health. NewsHour also has the potential for active engagement through social media platforms and its web presence.

Through its SRL initiative, NewsHour trains middle and high school students to produce video reports from teenage perspectives, and prepares them for careers as science communicators. The **Health Science SRL program**, which is funded by the same grant, offers schools a health science reporting curriculum and connections to public media mentors. Teachers and mentors help participating students shape their stories, and discuss health science communication career ideas and opportunities. Each year, teachers in seven to nine schools create teams of five to ten students within their classrooms and guide them through the process of developing health science stories. Each team typically produces at least one story.

Evaluation Activities

As in previous years, we used a mixed methods approach to collect and evaluate data from the three audiences targeted by the project: the US public, SRL youth, and SRL educators. Since Year 1, Knology has coordinated ongoing formative evaluation of news stories using feedback data from quarterly surveys of a national panel of adults. Each survey solicits reactions to one NewsHour health science broadcast or online story about an emerging health issue. We continued our formative evaluation activities with this group in Year 4.

We assessed the impact of the SRL initiative in Year 4 using various methods. Specifically, we deployed retrospective-pre/post surveys to SRL participants, including a control group who did not work on health science stories, at the end of the year rather than using a pre/post survey. We conducted small group interviews with video-conferencing software to document the experiences of student participants, and their perspectives on the benefits and

challenges of creating health science news stories. We analyzed students' pitch sheets to get a sense of their baseline understanding at the start of their participation. And we interviewed teachers from the participating classes to get their perspectives on the story-production process and their feedback on the NewsHour curriculum and its implementation. This year, we also added a new evaluation activity: for the first time, we reviewed the themes in public-facing student work. Due to the disruption caused by COVID-19 pandemic, many teachers and students in schools in Health SRL programs across the country were unable to complete work on their initial projects. We describe the impact of the pandemic on Health SRL programs as well as on our data collection efforts in this report.

This Report

This report covers formative evaluation activities and findings from Year 4 of this project. We collected public feedback on four PBS NewsHour health science stories and data from participating SRL students and teachers through surveys and interviews. Each chapter has distinct headings for the evaluation of both broadcast audiences and SRL participants. In the discussion and conclusion, we have synthesized the findings across all activities to assess movement toward the project aims, and to provide recommendations for Year 5.

Methods

We collected data about health science news from three target audiences: the US public, SRL youth, and SRL educators. In Year 4, we tested four broadcast stories with the public, and collected data from SRL students and teachers at seven schools. We asked both open-ended and closed-ended questions to assess the project and provide recommendations for the future. Specific activities are described below. School closures across the country due to the COVID-19 pandemic meant that some teachers and students who were participating in Health SRL could not complete work on their initial projects. We also had to modify our data collection activities as a result of the pandemic.

Health Science Broadcast Stories

Knology used Prolific Academic (Palan & Schitter, 2018) to deploy four surveys (Appendix A) to a national panel of adults between January 2020 and May 2020. Each survey tested reactions to one health science broadcast story (Table 1) including the likelihood that respondents would share the story or seek out additional information. These stories were also available online. Links to each story are provided in Appendix A.

Table 1:   Stories tested in Year 4 and number of people surveyed.

Story Title	Air Date	Survey Date	Length	*N*
Can ultrasound be used to fight Alzheimer's?	Oct. 11, 2019	Jan. 2020	9:42	101
Researchers still striving to understand cause of vaping-related illnesses	Dec. 11, 2019	Feb. 2020	8:27	100
Taiwan's aggressive efforts are paying off in fight against COVID-19	Apr. 1, 2020	April 2020	7:15	99
How a growing trove of genetic data is informing medical breakthroughs	Jan. 8, 2020	May 2020	9:24	98

Notes.   *N* here includes only complete responses. In several cases, researchers removed respondents who did not sufficiently answer content questions designed as a check on attention.

Demographics were largely consistent across surveys: at least three-quarters of each sample was younger than 40. Participants were split fairly evenly between men and women, and their ethnic and racial self-identification was largely consistent across all four surveys: between two-thirds and three-quarters of respondents selected white or Caucasian as one of their identities. The median respondent had a college degree, and a plurality of respondents to each survey self-identified as Democrats. Detailed demographic tables are available in Appendix B.

Analysis

We used descriptive statistics to characterize responses to the rating-scale and other close-ended survey questions. For open-ended questions, we reviewed responses to identify themes. For one series of open-ended questions about willingness to describe stories to others, we considered each respondent's answers holistically rather than dividing them up by question. Multiple themes were possible within a single respondent's answer. If respondents provided multiple answers that fell in the same thematic category, we counted the responses one time only.

Student Reporting Labs

Site Selection

The SRL team selected nine Student Reporting Labs to participate in the Health SRL program for Year 4. Eight of these sites participated in evaluation. These experimental sites were distributed across the contiguous US states and included public middle and high schools, a charter school, and one afterschool program. For the most part, Health Labs were part of journalism, media, and video production classes.

SRL Activities

At the beginning of the school year, instructors received the Health SRL curriculum, which included activities, worksheets, and prompts. The health-specific prompts were "*How Do We Achieve Our Goals*" and "*Taking Care of You."* The first prompt asked students to learn about the legwork involved to set up a health research project or intervention, and the second prompt focused on mental health. For each story, the labs shared story pitches with the SRL project team to receive feedback in an iterative fashion. In response to the COVID-19 outbreak, a new option, "*Making Sense of Coronavirus,*" was added later in the year.

Control students were present in the same classrooms, but they developed pitches and stories for other SRL prompts not specifically related to health topics.

Research and Evaluation Activities

Based on discussions with the SRL team, we altered the evaluation plan in three ways in response to the COVID-19 pandemic. Our goals were to better understand the effects of Health SRL on student learning, and to better accommodate teachers and students during remote learning. First, we conducted teacher surveys instead of interviews to ease the burden on teachers, and to allow them take the time to reflect on both their professional development and student impacts through SRL. Second, we added an optional module to the student survey which gave students the opportunity to share insights to how COVID-19 pandemic has affected them, their families, their learning and their news consumption. Third, we analyzed students' stories in response to the pandemic. We reviewed those stories to identify the concerns most directly relevant to students, and to assess where they are getting their health information. The previous evaluation plan and instruments are described in detail in the Year 3 report (Barchas-Lichtenstein et al., 2019).

Student Small Group Interviews

We conducted small-group interviews with three of the teams that worked on health science stories. Although small-group interviews were planned for all eight health labs, data collection ceased due to school closures as a result of the COVID-19 pandemic. We spoke with an average of five students from each of the three classes (N = 15). In these interviews, we focused on specific knowledge gains, and ways in which the story production process differed from student expectations. We also collected data from the pitch sheets that students created when their stories were approved. This enabled us to compare student knowledge before and after completing the stories.

Facilitator Surveys

Knology developed a survey for SRL teachers to reflect on their experiences with implementing the program, specifically the Health initiative. We adapted this survey slightly from a survey first used in Year 2 (Fraser et al., 2018). The survey addressed teacher motivations to get involved in SRL, descriptions of their classes and students, various aspects of the implementation process, perceptions of student outcomes and teacher competencies, and school and class demographics (Appendix D). We also added a question about the impact of COVID-19 on their schools and teaching.

Teacher Survey Participants

Six teachers completed the survey: five who taught high school (varying grade levels) and one who taught middle-school age students in an afterschool program (6th - 8th grades). Teachers had students with a range of skills. One teacher wrote that *"students came to my class with no knowledge of media production. They had no skills in camera usage, lighting, interviewing, editing, or storytelling."* At the other extreme, another teacher said that they limit SRL participation to seniors who have had considerable video production experience. Three teachers had a competitive selection process, one incorporated SRL into a vocational track, and two opened their class to all comers. All teachers were quite experienced with SRL: one teacher had 2-3 years of experience, one had 4-5 years of experience, and the rest all had more than 5 years of experience.

Four teachers worked in public schools, one in a charter school, and one in a private school. Two schools were in urban areas, two in suburban areas, one in a rural area, and one served students from a large and varied geographic area. Less than half of students were designated as English language learners in all but one school, while free lunch eligibility spanned the full range.

Analysis

A researcher summarized all teacher responses to closed-ended questions and compiled themes from teacher responses to open-ended questions.

Retrospective Pre- / Post- Surveys with Students

At the end of the school year, we asked students to rate both their pre-program interest and knowledge, and their current interest and knowledge (Appendix E). This survey and the quasi-experimental research approach used were designed to measure progress toward

project aims, and particular changes in student knowledge and attitudes. See the Year 3 report (Barchas-Lichtenstein et al., 2019) for further discussion of this methodology.

Student Survey Participants

The Health SRL program for the 2019-2020 school year yielded complete data for 70 students spread across five schools. Survey response rates were low due to all schools' responses to the pandemic. While all were engaging in some degree of remote learning some classrooms were less engaged, and some schools even ended early. A demographic analysis of these small numbers of schools and students would make it difficult to maintain confidentiality for participants. The summaries below are for internal use only. Instead we created two aggregate variables that are intended to capture two types of Privilege – Male Privilege and White Privilege – that the SRL program is working to overcome in opening health science, STEM, and journalism to a larger swath of society. The data included 41 students who did not explicitly identify as "boys" and 32 students who did not exclusively identify as "White or Caucasian."

Analysis

A Knology researcher reviewed open-ended survey responses to identify themes. Multiple themes were possible within a single respondent's answer. If respondents provided multiple answers that fell in the same thematic category, we counted the responses one time only.

Analysis of Student COVID-19 Stories

Shortly after the COVID-19 pandemic closed school buildings around the US, the SRL team created a public lesson plan ("Making sense of coronavirus through storytelling and media making") around this pressing health issue. The unit contained three prompts, ranging from a brief personal diary to a full journalistic news package. It also included a crash course on video journalism for each story type, as well as tips for interviewing over teleconference, questions about potential effects, and links to additional resources.

A Knology researcher reviewed 132 student submissions (e.g. videos, write-ups) to determine overall themes and student takeaways from participating in this journalistic assignment. Forty-eight submissions were written, and 89 were videos, with some students submitting both. We reviewed all videos that had signed release forms by the third week of May. Submissions were coded into the following four topical categories: *health-related*, *personal diary*, *mental health*, and *community impact*. We also tracked whether students referred to some authoritative source.

Most submissions fell into more than one category. *Health-related* submissions had to directly reference a health concept beyond simply mentioning COVID-19: for example, students needed to list a symptom, or a strategy for not getting sick. Submissions coded as *personal diary* consisted of students explaining and reflecting on their daily life under the COVID-19 lockdown, without mentioning specific information about the virus or its impact beyond their day-to-day life. Submissions coded under *mental health* included those that explicitly mentioned the impact of COVID-19 on students' mental health, such as coping mechanisms or strategies to improve their mental health during the lockdown. Submissions coded as *community impact* included those that mentioned the impact of COVID-19 beyond students and their families.

For the purpose of this analysis, we coded a story as using an authoritative source if students pulled credible outside sources into their submission, including interview subjects who work for local businesses or in the health industry. In general, students did not reference specific websites or news sources where they got their information from, though some students relayed instructions on how to follow "health guidelines" like sanitizing and social distancing.

Scale Reliability

We assessed the internal consistency (i.e. reliability) of the scales using the Cronbach's α statistic. We calculated only the overall α for each scale and not for each time period, given that students provided their current item ratings and retrospective pre-SRL ratings at the same time. For all scales, the reliability was good enough ($\alpha > 0.7$) to combine the scale items into a single unifying variable. We combined the scales by first calculating the change in rating from the start to the end of the SRL class (subtracting the pre-SRL item ratings from the post-SRL item ratings). Next, we used the arithmetic mean to calculate the combined change-in-rating scores for each of the 7 scales (see Table 7 in Appendix E).

Results

Supporting Broadcast & Digital Audiences

Analyzing data about audiences' engagement with news and reactions to specific stories helps NewsHour continue to support the needs of audiences on various platforms. Our analysis suggests that PBS NewsHour consistently produces health science stories that are relevant to audiences, and that these stories seem to pique audience interest in further learning. It is important to note that the COVID-19 pandemic did affect audiences' news consumption patterns for a time. We account for any variability due to the pandemic in our results.

News Consumptions & Sharing

We received fairly consistent responses about news consumption, with the exception of responses to the Taiwan story. The median respondent followed health news about *once per week*, while the most frequent responses were "*a few times per week*" and "*on and off*."

We observed both a large jump in the number of people who said they followed health news daily and a large decrease in people who said they followed it sporadically between February and April (Table 2). The numbers fell back to previous patterns by May. We believe this variability was due to external circumstances and timing, rather than differences between panel members or the stories themselves. We tested the Taiwan story in mid-April 2020, at a time when the COVID-19 pandemic was peaking in many parts of the US. By the time we tested the genetic data story a few weeks later, these data looked considerably more like those from the surveys we had run in January and February.

Table 2:   How closely do you follow health news?

	Alzheimer's (Jan. 2020)	Vaping (Feb. 2020)	Taiwan (April 2020)	Genetic Data (May 2020)
Daily	17	4	48	12
A few times per week	29	39	37	35
Once per week	8	16	4	13
On and off	45	39	9	36
Never	2	2	1	2

Note.   Shaded cells indicate numbers that vary noticeably from other tests.

Critical Health Literacy

Generally, respondents across all four stories reported moderate levels of critical health literacy (Figure 1 below). We define *critical health literacy* as the ability to assess incoming health information critically (cf. Chinn & McCarthy, 2013)
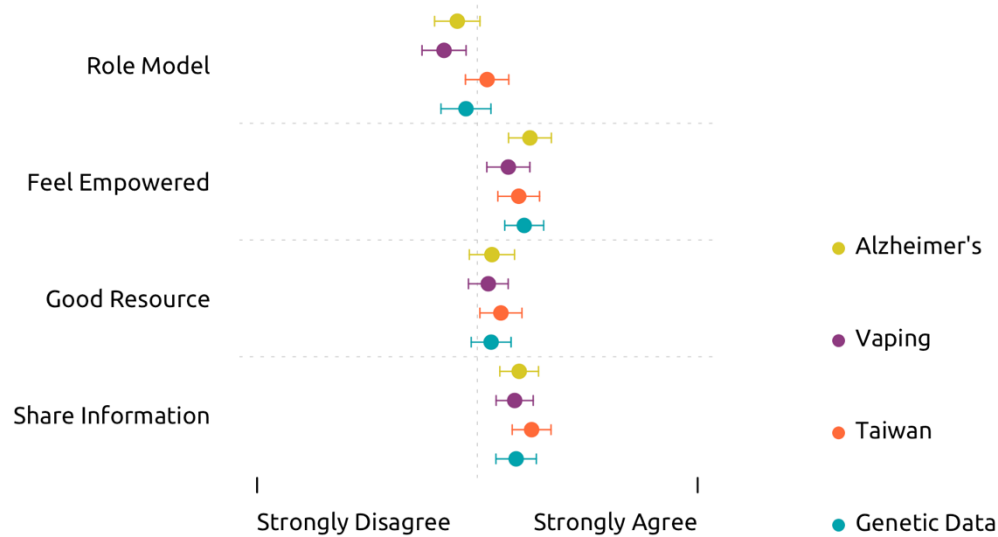
Figure 1:   Summary of responses to critical health literacy scale, by story

Notes: The points show the mean ratings by story, and the whiskers show the
               95% confidence interval around the mean

Willingness to Share Health Science Stories

As in previous years, we saw consistent responses across the four stories. Respondents said that they were most likely to describe a story to someone. Audiences were about equally likely to share each of the four stories on social media as they were to email it.
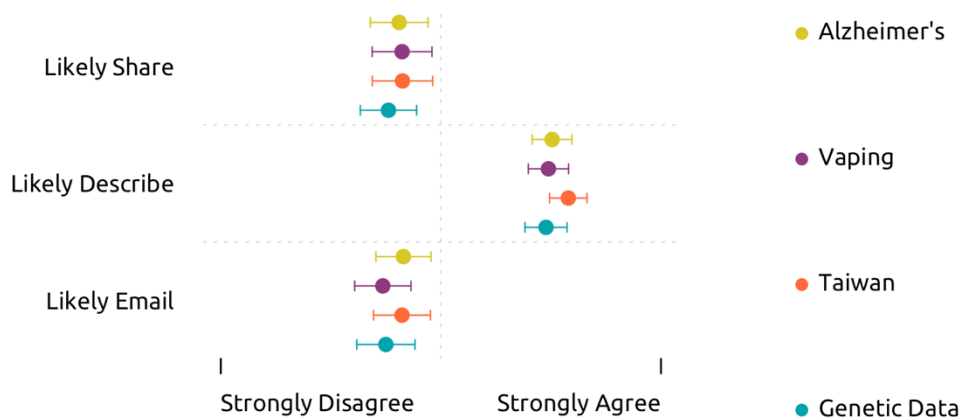
Figure 2:   Summary of responses to dissemination scales, by story.

Those who said they would describe the **Alzheimer's** story were particularly likely to say they would describe it to specific family members, including their spouse or partner (Table 3 below). The relatively high number of respondents who mentioned a family history of Alzheimer's or dementia may provide a partial explanation for these responses. Meanwhile,

those who saw the **vaping** story were much more likely say that they would describe it to a friend or roommate. Many respondents noted they had friends who vaped or were interested in vaping, which may partially explain these responses. Respondents who saw the **Taiwan** story mentioned describing the story to more types of people each, including a number who said they'd describe it to both friends and family members. Those who saw the **genetic data** story were somewhat more likely to describe it to family members than friends, roommates, or colleagues.

Table 3:   Who would you be likely to describe the story to?

	Alzheimer's	Vaping	Taiwan	Genetic Data
Partner or spouse	28	8	20	26
Other specific family member	37	16	18	23
Non-specific family member	18	17	37	22
Friend or roommate	26	53	44	31
Colleague	6	6	6	1
Someone else	3	9	5	5
Total	92	87	90	85

Note.   Some respondents indicated they would describe the story to people in multiple categories, so the responses in each column may total to a larger number than the total line below.

In the Year 3 report, we observed that the two most common reasons for wanting to talk about news stories were **to share specific and actionable information** and **to maintain ongoing social relationships**. We continued to see these reasons in Year 4 data.

Almost half (40 out of 92) respondents to the **Alzheimer's** story wanted to discuss it because of connections to a specific person with Alzheimer's, and many (n = 24) people specifically mentioned *"hope"* as a reason to pass the story on. Similarly, 42 of 87 participants who said they would discuss the **vaping** story specifically mentioned sharing with someone who currently vapes or might want to try it. Many of those people mentioned concern for those people and their well-being. And more than 50 of the 90 participants who said they would discuss the **Taiwan** story explicitly compared the Taiwanese government's actions to those taken in the US. Of those who said they'd discuss the **genetic data** story, interest in learning about genetic health concerns or trying out commercial genetic testing (n = 44) came up frequently, while concerns about privacy came up much less often (n = 6).

Others wanted to share each story simply because they found it interesting or because they generally discuss news stories with particular people.

Reactions to Health Science Stories

Two of the four stories (the **Alzheimer's** and **genetic data** stories) elicited mixed emotions, with both positive and negative emotions listed very frequently. Meanwhile, the **vaping** story

elicited primarily negative emotions and the **Taiwan** story elicited primarily positive ones. Table 4 shows the top two adjective categories for each story.

Table 4:   Most frequent adjective categories

Story	Most common category	Second most common category	
Alzheimer's	Hopeful	Sad	
Vaping	Concerned	Sad	
Taiwan	Positive	Hopeful	
Genetic Data	Interested	Concerned	Hopeful

Notes.   For genetic data, the same number of people listed *concerned* adjectives as *hopeful* ones. A full table of all adjective categories is listed in Appendix F.

In general, people found all four stories to be both reliable and fair (Figure 3 below). They found the vaping and the genetic data stories to be a little less reliable and fair than the Alzheimer's and Taiwan stories.
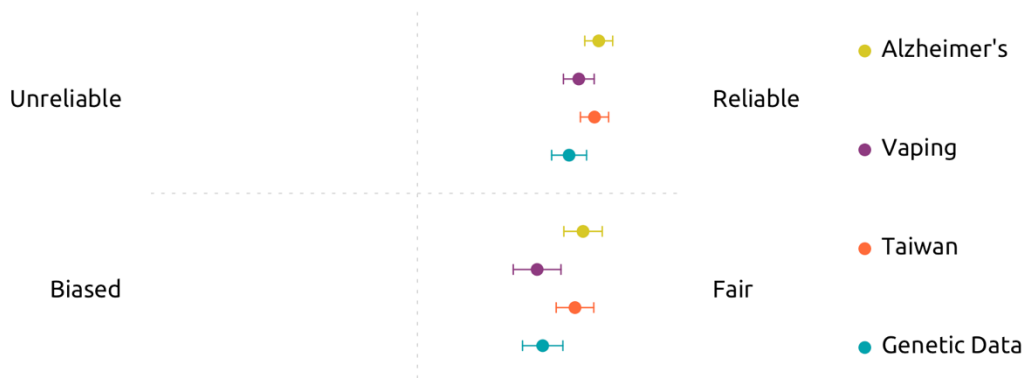

Figure 3:   Summary of responses to trust scales, by story.

Respondents also generally found all four stories visually appealing, significant, and absorbing (Figure 4 below). They did find the vaping story slightly less visually appealing and absorbing than the other three.
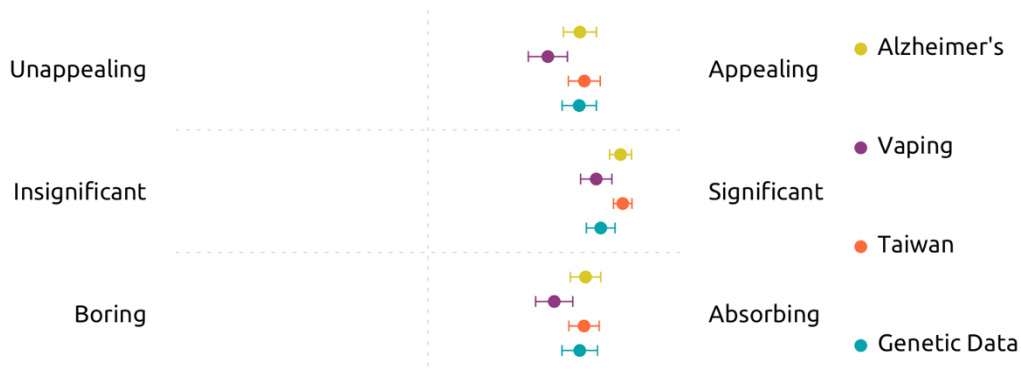

Figure 4:   Summary of responses to reaction scales, by story.

As in past evaluations, participants interpreted and responded to questions about their favorite and least favorite story elements in different ways. Some focused on their own emotional reactions, others focused on information they learned, and still others focused on technical aspects of the stories (Appendix H).

Across topics, people responded positively to both the human stories and the research. Common favorite elements of the **Alzheimer's** included the potential success of the treatment, the relationship between Judi and her husband, and Judi's volunteer role cuddling babies. Some of those who most liked the personal story said there was too much technical detail, while some of those who were most engaged with the science identified personal elements as their least favorite part. A number of respondents said their least favorite part was watching her struggle, and several noted that they had personal experience with the disease.

Within the **vaping** story, favorite human elements included Adam's recovery; many of the science-focused responses specifically mentioned interest in learning that Vitamin E acetate was the cause of the illness. Least favorites ranged from watching people suffer, to concerns about teens' access to vapes, to scare-mongering about THC (or excessive positivity about nicotine). Several people also noted that they wanted more focus on corporate responsibility, the lack of regulation, or a clearer differentiation between legal and black-market products.

Favorite parts of the **Taiwan** story included showing personal experiences of travel and quarantine, and seeing a government respond strongly and appropriately to the pandemic. Many people said their least favorite part, on the other hand, was the comparison between the responses from Taiwan and the US, and reported feeling disappointed with the US response to the virus. For example, one person wrote: *"realizing that [Taiwan is] doing COVID tests at the airport when my community doesn't have enough tests to test people who come into the health center."*

Finally, respondents enjoyed personal stories, the potential of personalized treatments, and the cautions provided about consumer genetic testing in the **genetic data** story. Similarly, quite a few people mentioned the possibility of false positives and the company's lack of concern for privacy as least favorite elements. Several people also noted that they would have preferred a piece that talked about multiple companies because it seemed somewhat like an advertisement.

Personal Relevance

In all four cases, a majority of respondents found the story relevant (Table 5).

Table 5:   Number of respondents who found each story personally relevant.

	Alzheimer's	Vaping	Taiwan	Genetic Data
Yes	71	63	87	74
No	18	30	1	9
Not sure	12	7	11	15

All of the participants who said the **Alzheimer's** story was not relevant to them noted that they do not know anyone well who has the disease. Several also noted that they were not

particularly interested in science or medicine, or were young and thus not at risk. Most participants who were uncertain noted that they did not have immediate connections to Alzheimer's but could see potential future risk to themselves or loved ones. Meanwhile, the majority of those who said they found it relevant specifically mentioned either knowing people with Alzheimer's or concern that it might affect them directly, while smaller numbers mentioned a particular interest in science or medicine.

Nearly everyone who said the **vaping** story was not relevant to them (n = 30 of 30) or they were not sure (n = 6 of 7) mentioned that they don't themselves vape or know anyone who does. Meanwhile, most of those who found it relevant (n = 44 of 59) were concerned about specific people who vape. These rationales came up far more than any other reasons for relevance or irrelevance.

In striking contrast to the first two stories, only one person said the **Taiwan** story was definitively not relevant to them. That one person said they had never left the US, while the 11 who were unsure either noted that they were not personally concerned about COVID-19 or that the US response was wildly different from Taiwan's. Three of them also noted that COVID-19 is a universally relevant topic. And of those who said the story was definitely relevant to them, nearly half (n = 40) noted the near-universal relevance of COVID-19 in April 2020, with smaller numbers comparing the US and Taiwanese government responses (n = 24) or noting that they were themselves quarantined or in an area with a large number of cases (n = 15).

Relatively few respondents said the **genetic data** story was irrelevant to them, and those who did said either that they were actively disinterested in health or genetic testing or that they had not had or did not expect to have serious health issues. Those who were unsure had similar responses, with a few others noting particular individual circumstances. Of those who said it was relevant, 30 (of 74) mentioned an interest in predicting their own health or trying out consumer genetic testing, and 20 mentioned known family history or genetic concerns. Others said they or a family member had already taken a commercial genetic test (n = 9), that these issues were universally relevant (n = 7), or that they had a professional or scientific interest (n = 6), with only a few mentioning concerns about privacy or misuse of data (n = 3).

Training Youth Health Science Communicators

Effects of COVID-19 Pandemic

In surveys, teachers pointed to several changes brought on by the pandemic. Most teachers and students experienced the closures as very sudden, which left them scrambling. A number of school districts reduced requirements or removed them entirely, chiefly due to concerns about equity issues. Several teachers mentioned specific concerns about equity issues, from lack of access to technology to students working in essential jobs. Only one teacher said they were surprised by the high quality of their students' work – the others either did not mention the work or noted that their students were unavailable or disengaged.

One teacher provided a detailed description of students' experience at their school: *"One day we were there, finishing up our big projects, and the following Monday we were told school was closed. They never even got to meet together as a class again because they had been working frantically in their smaller groups to finish up the Health2 project. They were supposed to do individual portfolios the rest of the year and they were all excited about their topics and focusing on their interests. I thought they would all want to work independently and would jump on being a part of the COVID19 assignments, but they all went home and shut down."*

The teacher noted that when the school shut down, it was difficult for their students to remain engaged in their projects. *"We did a Zoom meeting once a week for the first month to keep in touch, but they rarely had anything to say. Several of them were working at grocery stores and it was hard to schedule a time to meet,"* the teacher said. Furthermore, moving away from in-person teaching has been challenging for educators themselves. *"Teaching from home has been quite a change for the teachers at my school, but overall it has been okay. They/we don't like it. Nothing can replace in-person learning no matter how fancy your technology is or how creative your lessons are. Kids need social contact with adults and peers."*

Effects of COVID-19 on Student Learning

To capture the vastly different context in which students were learning this Spring, students had the option to respond to a few questions about how the COVID-19 pandemic has affected them and their families.

Twenty-five students said they were directly affected. Most of these students stated that their families were dealing with job loss, unemployment, and financial challenges. Two students said that their family members were deemed essential workers, and feared exposure to the disease. Six students described the stress of the pandemic, and the lockdown, on their family dynamics – from family members dealing with stress, to challenges in getting along with family members.

Students also talked about how their schooling has been affected, and the transition to remote online learning ($N = 57$). Almost half of the students discussed the challenges they face learning with this method, and how difficult it is to find self-discipline and motivation. Seniors specifically mentioned missing out on important activities such as graduation, prom, scholarship opportunities, etc. While some felt that the switch to online learning happened too fast for schools to transition smoothly ($n = 8$), a few students said that their schools adapted well to online learning ($n = 4$).

Students were also asked how their news consumption habits have changed in light of the pandemic ($N = 59$). About half of the students described consuming more news lately in closely following the developments of the pandemic. Ten students described consuming less news now, attributing this to the fact that the news is entirely dominated by COVID-19 and it is too grim and depressing. Fourteen said that there is no difference in their habits.

Story Creation Process

Generally, students were interested in learning more about the fields of health and research as well as in developing their journalism skills. In choosing their topics, students wanted to focus on stories that would be personally relevant and relatable to other people, as well as

stories that acknowledge and debunk stereotypes. They also felt that it was important to include multiple perspectives in their stories.

Students were especially interested in the topic of mental health and exploring how they could help make a difference specifically relating to mental health issues. They were interested in investigating what people already know about mental health, and what different groups are doing to help people. The intended audience for this story included teenagers, young adults, parents and caregivers among others. Students relied on various sources for information including the World Health Organization and mental health professionals. They also read various background materials including articles, scholarly essays, and relevant statistics.

Beyond COVID-19, students experienced some unexpected challenges while working on their stories. This included technical difficulties such as malfunctioning equipment and sound issues, and challenges with finding the right B-roll to fit the video. Students were also responsible for finding the right people to interview, and making sure that they were available to interview. Students also had some challenges with getting people to share their mental health stories without feeling like the conversation was invading their privacy. As one student noted in an interview, *"talking about mental health has a lot of responsibility, because you have to get it right and make sure that what you're doing is getting the full truth out there and make sure that it's respectful."*

Students reported learning patience through the story creation process, and the importance of respecting others' values and experiences. As one student noted, *"you never know how anyone else feels or what they're going through ... you have to be careful about what you say and who you say it to."* Students also valued the opportunities for teamwork with their peers. Some students said that learning how to work together was the most valuable thing they learned through working on their story.

A student summarized their work this way: *"Overall, this project opened our eyes. A lot of us gained a lot of new knowledge about [mental health], especially through working with the people we were interviewing and spending so much time trying to create a story with them. It really helped us get more insight."*

Mentorship & Feedback

Of the schools that mentioned mentors, teachers and students said that it was helpful to have professional input on their projects, specifically in helping them decide on their story topic. They said that mentors provided positive and valuable feedback as well as encouragement. Also, some teachers mentioned that the SRL team was "very supportive."

SRL Resources

All teachers used the general and health lesson plans, as well as the SRL assignment form. All teachers but one used the A2 prompt. All but one teacher used the Level Up videos. Meanwhile, use of other resources was somewhat mixed. Two teachers did not meet with either a public media mentor or SRL staff, while the other four met with at least one of these. Full details of the number of teachers using each resource are presented in Table 6 below.

Table 6:   Teacher use of SRL resources.

Resource	# of teachers using
General SRL lesson plans	6
Health SRL lesson plans	6
SRL assignment form (pitch sheet, script, lower thirds)	6
A2: Teen Mental Health prompt	5
Level Up videos	5
In-person meeting with public media mentor	3
Online meeting with SRL team	3
Online meeting with public media mentor	2
Production tutorial videos with Gil Garcia	2
In-person meeting with SRL team	-
Other worksheets	1 (Coronavirus materials)
Other:	1 (different examples each year)

Notes. $N = 6$

In surveys, all teachers except one said they adapted the resources. They made similar changes as we heard in previous years: they might use only part of the curriculum, further break down how to fill out a worksheet, or change video examples to use ones that matched students' interests or were accessible on platforms not locally blocked. One teacher mentioned starting with the prompts but shaping the final product based on student interest rather than the requirements provided by SRL. Some teachers made lessons longer or shorter, and one mentioned turning worksheets into discussion prompts. Teachers used SRL materials more often early in the year or to introduce concepts, and at least one teacher said they also used some of the worksheets and concepts in other topic-area classes.

Teachers had different preferences, with three saying the videos were the best resources and others preferring the worksheets and lesson plans. One teacher described the virtual interview guide as *"a lifesaver."*

One teacher praised the COVID-19 lesson plans, and one said the integration of health into the general curriculum was especially helpful: *"I love that the health curriculum starts out with showing the students how health can be a major part of the news media. Connecting sports and entertainment stories/people to health topics gets them more in-tune to the stories [...] and evaluating their validity and impact on teens I think combining the health concepts within the flow of the general SRL lessons helps the students not be too hyper-focused (and therefore burnt out) on health before we get to the major health assignments."*

Teachers suggested additional resources that they thought would be helpful in the future:

- Computer-based interactive lessons, since many districts will be partially or fully remote next year.
- Including all STEM topics, not just health
- Offering multiple prompts in parallel so students can have a choice

- Breaking up lessons even further to create a step-by-step production checklist
- Providing specific lessons on:
  - Lighting & other equipment
  - Podcast production
  - Conversational interviewing (perhaps with opportunities to practice with classmates)
  - Research methods and sources.

Some teachers also cautioned that it is difficult to report on stories involving both sensitive topics and protected age groups. As one teacher noted, *"When picking topics like Mental Health, remember that many underage students' parents would not agree to let their child interview about their mental health on camera."* We suggest ways to address this concern later in this report.

We asked students for suggestions to improve the SRL program in the future. Of those that had recommendations (n = 11) about half suggested more flexibility and clarity on the timeline. This included generally more time, the idea to have a calendar of dates of what is due when, and having more flexibility of programs so things can be done during different times of the school year. A few students also requested additional training, specifically seeking tips on editing, filming and interviewing. Two students recommended making the topics more specific. They explained that when topics are so broad it gives students too many options, making it harder to make a decision and find a focus.

Students' Favorite & Least Favorite Activities

Students most enjoyed learning how to film and edit their stories (Table 7 below). The most frustrating parts of the process, students said, were planning and researching their topics as well as editing their stories (Table 8 below).

Table 7:   Students' favorite activity

Activity	Favorite
Filming	21
Editing	21
Talking to people/Interviewing	7
Fieldwork	5
Creative process	5
Collaboration	5
Writing	4
Learning	4
Planning/Research	3
Having a voice	3
Viewing or sharing final product	2
Relevance/Relatability	2
Everything	2
Story Topic	1

Table 8:   Students' least favorite activity

Activity	Least Favorite
Planning/Research	18
Editing	10
Writing	6
Transcription	6
Nothing / I liked everything	5
Short time frames / deadlines	3
Dealing with challenges	3
Filming	2
Scheduling / coordination	2
Talking to people / Interviewing	1
Feedback / iterative process	1

Challenges & Constraints

Teachers wrote in surveys about two major challenges both for them and for their students. The first was finding appropriate topics and interview subjects, as we have heard in prior years. Some schools were fairly far away from health researchers or health organizations,

which created a challenge; one teacher also mentioned that a potential interviewee did not want to talk to high school students. That meant teachers struggled to keep morale and motivation high in some cases.

The second challenge was b-roll: in several cases, confidentiality and privacy concerns meant students were not allowed to collect b-roll from the site that was the focus of their story. As one teacher observed, *"I think there's a lot of learning that goes into thinking about b-roll and then choosing footage and images to support their ideas. I don't exactly know what to call that kind of learning, but it does deepen their knowledge of the topic, maybe not as much as interviewing an expert, but still it helps them think about their topic in different ways. … I'm not sure they learned as much as they could have, had they brainstormed and shot more of their own supporting imagery."*

Student Health & Media Communication Skills

Teachers generally found health SRL effective at increasing students' skills (see Table 9). No teacher said it was less than "somewhat" effective in increasing all 6 skills we asked about, and at least three teachers said it was "extremely effective" at improving all skills. The other teachers described either two or three items as "extremely effective." There was consensus that it was "extremely effective" in improving research skills, a theme we also saw in open-ended responses from teachers. As one teacher wrote, *"The amount of research they had to do to first pitch a story, then to do background research on their interviews, and then finally what they learned from their interviews … there's no comparison to the students who didn't do these stories."* In other open-ended responses, teachers also highlighted student growth in communication and independent work.

Table 9:   How effective was working on health stories at providing your students with the following skills, particularly compared to peers who did not participate in Health SRL?

	Not at all	Slightly	Somewhat	Moderately	Extremely
Research	-	-	-	-	6
Writing	-	-	1	1	4
Using technology	-	-	1	1	4
Communication	-	-	-	1	5
Teamwork	-	-	-	2	4
Leadership	-	-	-	3	3

In sharing their stories, students wanted audiences – friends, family, and their communities – to try out some of the advice and strategies described. They also wanted to raise awareness about and change narratives around mental health. As one student said, *"Adults really don't know that much about teenage mental health. I saw this with [my teacher], I saw this with the psychologists, I saw this with the teachers we interviewed. They really don't know what teenagers are actually going through. … They were really surprised when teenagers were like, 'Yeah, it's hard out here.'."* Some students said they speak with their family about mental health issues, but some indicated that even though they may discuss these topics with their friends, discussing

it with their family is too overwhelming. Students also acknowledged the importance of social support in discussing mental health topics.

Students said that learning about mental health helped to normalize talking about mental health issues. They noted that in schools, there is often discussion around physical health but rarely around mental health. *"Talking to the professionals made me realize ... I wasn't doing as much as I should to take care of my mental health,"* one student said. Students also realized the universality of struggling with negative feelings such as stress which impacts mental health. As one student said *"we also learned that you can't compare problems. ... Someone who's stressed about school, their mental health is just as important as someone who lost a family member."*

Students also acknowledged the importance of getting health information from trusted sources such as trusted adults, and experts.

Long-Term SRL Participation

Students who had participated in SRL more than once (*n* = 17) were asked how SRL affected the way they view their role as a storyteller. Over half said that SRL has made them better communicators, and has evolved their storytelling skills. Students also became more confident around storytelling (*n* = 3). Three students talked about recognizing the importance of being a good storyteller and the responsibility journalists have to provide accurate information. As one student put it, *"People often look to the news for information and likely assume that what they're hearing is the right information. It's your job to give them the correct information in a way that's not biased towards or against one side."* Additionally, three students talked about how their participation in the program helped them to think outside the box. One student wrote that *"it made me realize we have to look at things from a different angle to get the answers you need".*

Students who participated in SRL during the 2018-2019 school year were asked how their past experience with SRL affected the way they approached their story this year. Eight students said that their previous participation and experience allowed them to have more accurate expectations of what they were getting into, and that they had an easier time doing things this time around (such as interviewing). A few students wrote about how their previous experience made them a better storyteller this year. *"I understood and had experience with what can I ask to make this a cohesive story and display the feelings of the person in front of me. The experience affected the way I handled the whole interview and edit process."*

Student Critical Health & STEM Literacy

Out of the 70 respondents, most had worked on a STEM or Health related prompt during the year. However, a considerable number had been unable to work on any prompt, due to schools' responses to the COVID-19 pandemic. Out of the 42 students who worked on a STEM prompt, 21 had worked on one of the originally provided options *("How Do We Achieve Our Goals?"* and *"Taking Care of You"*). A total of 26 students worked on *"Rapid Response: COVID-19 Mental Health"*, only five of whom had also worked on one of the other two prompts.

We tested the overall effect of experimental condition (whether students had worked on a STEM prompt, a non-STEM prompt, or no prompt) on all ratings across scales. We used a Multivariate Analysis of Variance (MANOVA) on ratings with Condition as a between-subjects factor. In testing, we controlled for the effects of cognitive development (i.e., mother's education and grade in school), privilege (male privilege and white privilege as operationalized above), and prior SRL experience (i.e., whether students participated in SRL during the previous year). The MANOVA results are provided in Table 10 below.

Table 10: Overall test (MANOVA) of scale ratings by Condition, while controlling for cognitive development, privilege, and prior SRL experience.

	DF	Approx. F	p	η^2
Mother's Education	1	1.41	0.22	0.16
Grade	1	0.54	0.80	0.07
Male Privilege	1	1.14	0.35	0.14
White Privilege	1	0.20	0.98	0.03
SRL Experience	1	1.82	0.10	0.20
Condition	2	0.43	0.96	0.96

Notes: DF, approx. F, p, and η^2 are test statistics that indicate the reliability of each of the variables in explaining scale ratings.

The experimental condition did not have a significant effect on either students' overall ratings or their ratings on any individual scale when controlling for other factors. However, students in this year's program did generally report increases over time on all measured variables (Table 11 below). All of these increases were greater than chance. We cannot ascertain whether these increases were due to participation in the program, increased exposure to health topics due to the COVID-19 pandemic, or both.

Table 11: Year 4 average ratings and change in ratings for scales.

Scale	Pre	Post	Change	p	Cohen's d
STEM Interest	4.52	4.78	0.26	0.04	0.19
STEM Careers	2.86	3.10	0.22	<0.01	0.27
Health Literacy	3.13	3.49	0.37	<0.01	0.75
Health Sharing	3.20	3.48	0.28	<0.01	0.34
Health Resource	2.67	2.93	0.26	<0.01	0.27
Health Empowerment	3.01	3.24	0.22	0.01	0.22
Health Role Model	2.76	2.97	0.21	<0.01	0.19

Notes: N = 70. Cohen's d is a measure of effect size. A d of approximately 0.2 is small, 0.5 is medium, and 0.8 is large.

Overall, both pre- and post- ratings in Year 4 were slightly higher than those in Year 3 (Table 12). Students reported higher pre-program **STEM Interest** and **STEM Career Interest** in Year 4, which exceeded chance occurrence. We believe that students with higher interest may have been more likely to complete surveys in Year 4 given the number of factors that made survey completion difficult. Specifically, it is likely that students whose families or schools were more heavily affected by COVID-19 would have been unable to work on the project or unmotivated to take the survey, which could explain the difference in pre-ratings. For Year 3 results on which this comparison is based, see Table 9 in Appendix G.

The **post-ratings** for most of the Health scales were higher in Year 4 than Year 3, and these differences exceeded chance for **Health Literacy, Health Sharing, Health Resource,** and **Health Empowerment**.

Students grew more in the **Health Literacy** and **Health Sharing** scales in Year 4 than in Year 3, and these changes exceeded chance; other differences between the two years were within the bounds of chance occurrence. Analysis showed that the Condition variable in Year 4 did not significantly affect these scales when controlling for other factors. In other words, the increased growth may be due at least in part to the increased amount of health-related news students were exposed to during the pandemic.

Table 12: Difference between mean Year 4 and Year 3 ratings for scales

	Pre	Post	Size of Change
STEM Interest	0.38	0.26	-0.12
STEM Careers	0.23	0.16	-0.09
Health Literacy	-0.01	0.19	0.20
Health Sharing	0.21	0.47	0.26
Health Resource	0.17	0.27	0.10
Health Empowerment	0.20	0.31	0.11
Health Role Model	0.16	0.10	-0.60

Notes.   The Year 3 average ratings and changes are available in Appendix G. Differences that exceed chance ($p < 0.5$) are colored.

Health Literacy

Supporting student-reported gains in surveys (Table 11, above), teachers said in surveys that Health SRL had additional affordances compared to SRL in general: it gave students more exposure to science, introduced them to people and issues they never would have known about, helped them gain "*expertise"* and *"sophistication"* in one content area, and provided a general appreciation for how health issues apply to students' own lives.

Interest in Health & STEM Topics

Overall, students reported greater interest in learning about health topics as a result of their participation in the SRL labs in interviews, supporting their survey responses (Table 11, above). Several students came out of the assignment wanting to learn more about mental

health topics and specifically, teen mental health. Others described interests in psychology and sociology, physical therapy, gynecology, and working with people with disabilities.

For their part, teachers generally said that Health SRL increased students' interest in STEM and health topics at least somewhat (Table 13). In open-ended responses, they also noted that students were already interested in science and health topics, and that many had opinions about health or personal connections to mental health issues as a starting point.

Table 13:   Health SRL increased students' interest in...

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
STEM topics in general	-	-	1	3	2
Health topics in particular	-	-	1	2	3

Interest in STEM & Health Careers

Teachers were somewhat neutral on the effects of Health SRL on students' career interest (Table 14). Meanwhile, students reported some gain in interest (Table 11, above).

Table 14:   Health SRL increased students' interest in...

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
STEM careers in general	-	1	2	2	1
Health careers in particular	-	1	1	3	1
Journalism careers	-	-	1	4	1

Analysis of Students' COVID-19 Stories

Most submitted student videos (at least 100 of the 132 we reviewed) were personal diary accounts of life under the COVID-19 lockdown. In these accounts, students explained their transition to online learning, spending more time at home with their families, and missing the opportunity to see their friends and attend social events and sports practice. In general, the stories make it abundantly clear that students were very attuned to the impacts of health issues on their daily lives. Aspects of general health (e.g. eating healthy, working out at home if gyms are closed, washing hands, using disinfectant wipes, social distancing) were also referenced frequently in these personal accounts (n = 78), and a few students referred to the experience of a family member who works in the health industry.

Mental health was rarely addressed directly. When students mentioned it, they described it as becoming more aware of the emotional toll of not being able to see friends or adjusting

to the feeling of loss linked to important "memories" like prom and graduation. Some video diaries focused on strategies for nourishing their mental health like taking a walk in the afternoon, playing with a pet, practicing an instrument, or playing board games with their families. A small group of students interviewed parents or other adults in their videos, such as a student's mom who is a nurse, or a friend's parent explaining how their local business has been impacted by COVID-19.

In addition, a handful of students (*n* = 31) used this assignment as an opportunity for reporting on organizations or events in their town. These accounts featured an overview of the subject or organization, its relationship to COVID-19, and included interviews with those involved. For example, one student featured a company, including interviewing the CEO, that is setting up a pet supply pick-up location to support families with pets during the lockdown. Another student covered the impacts of the lockdown on a beach community that relies on busy tourist summers for most of their annual income and spoke with a landlord dealing with large amount of cancellations, and a local bartender. Other reporting topics included churches acting as food banks, feeding the unhoused population, and an organization that provides take-home science lessons for students to do with their families. Only three students included health experts in their reporting, all of whom were family members who were healthcare workers who shared about their experience during COVID-19.

Community & Social Network Engagement

Teachers generally agreed that Health SRL increased students' interest in their local community, as well as in news (See Table 15 below). Some students said that they were interested in learning more about health issues locally. Specifically, they were interested in finding out about organizations in their communities that focus on mental health. Some students also said that they were interested in getting involved in with some of these organizations in the future.

Table 15:   Health SRL increased students' interest in…

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Their local community	-	-	-	4	2
News	-	-	1	3	2

Reaching the Community

When asked to reflect on what they learned about health and quality of life issues in their area, most of the 32 students who answered framed their responses within the lens of the pandemic. A quarter of these students said that the pandemic is affecting everyone, and acknowledged that people mostly share all of the same problems *"Everyone might look different, but when we get sick or we lose a loved one, we are all the same".* They also discussed learning about how communities are responding to the pandemic, and the range of ways in which individuals and communities are responding. Other responses included the

importance of following guidelines from health experts (like the CDC), and learning to have gratefulness (for your health, for your community, etc.).

Students who did not frame their responses around COVID discussed learning something related to the content of the story they created. Examples of this included learning how black communities view mental health, how teachers are not well taken care of by many states, and the dangers of vaping.

Teacher Growth

In their survey responses, teachers said the SRL program succeeded in helping students become more independent and make excellent stories. One teacher also noted that the process of creating stories made it more possible for adults and teens to understand one another, which is one of SRL's overall goals: *"I have been able to view the world from their lens and that has increased engagement for them and relatability for me."*

Teachers were also extremely positive about the effects of Health SRL on their teaching. As one teacher wrote, *"I have learned, and continue to learn, so much through the resources SRL provides. My teaching methods have completely changed."* The list of positive effects that teachers highlighted included the following:

- increasing student motivation through access to a professional audience;
- more process-driven learning and student-centered assessment methods that acknowledge the messiness of learning (2x);
- improving technical skills so teachers can focus on storytelling (2x);
- making space for teacher learning alongside students; and
- creating mid-way checkpoints for students that helps the teacher think about instructional design in general.

Discussion, Recommendations & Conclusion

Discussion

Our results highlight the ways two initiatives from PBS NewsHour are helping to foster a more health-literate public. For simplicity, we break out the discussion of our findings and recommendations for next steps by public audience and Health SRL participants. In both cases, we highlight key themes and offer suggestions for deepening engagement and supporting specific needs.

Broadcast & Digital Audiences

As with previous years, our evaluation revealed some consistent themes in this population and these drive the focus of our ensuing discussion and recommendations.

Across stories, different audiences responded positively to both human and research components of stories. Different audience members appreciated science-focused information and human interest. For example, audiences enjoyed seeing the relationship portrayed in the Alzheimer's story and hearing the personal stories shared in the Genetic data story. They also enjoyed aspects of the stories that offered hope – a potential treatment for Alzheimer's and the potential of personalized medicine. As with Year 3 audiences, respondents said that their least favorite part was watching others suffer.

Audiences related to the stories to varying degrees largely based on their personal experience. For example, participants who did not find the Alzheimer's story relevant to them also indicated that they didn't really know anyone who had the disease. Similarly, nearly everyone who said the vaping story was not relevant to them or that they were not sure said that they didn't vape or know anyone who does. Most people who responded to the Taiwan story felt that it was personally relevant given the global impact of COVID-19.

In previous years, people reported being more interested in discussing health stories in person rather than sharing them by email or social media. This held true in the populations sampled in Year 4. We also gathered information about who people talk to, how they talk to them, and why. In general, people talk about news with the types of people they talk to the most on a daily basis, including romantic partners, friends, colleagues, and family members.

In the Year 3 report, we observed that the two most common reasons for wanting to talk about news stories were to share specific and actionable information and to maintain ongoing social relationships. We continued to see these reasons in Year 4 data. For example, participants who said they would share the Alzheimer's story wanted to discuss it because of personal connections to specific people living with the disease. Similarly, participants who responded to the vaping story said they would share it with someone who currently vapes or who might be considering trying it. The Year 3 report included some recommendations to deepen NewsHour's engagement with its audience including thinking about ways to support

these kinds of in-person discussion and dissemination of news content. These suggestions are reiterated in the recommendations section of this report.

Two of the four stories used for the Year 4 analysis elicited mixed emotions, with both positive and negative emotions listed very frequently – these were the stories focused on Alzheimer's and genetic data. Meanwhile, audiences had primarily negative emotions to the vaping story while audiences had more positive emotions about the Taiwan story.

SRL Participants

Perhaps the biggest constraint for Year 4 SRL participants and their teachers was the disruption to the school year caused by COVID-19. While trying to continue their learning online, students and teachers also had to navigate various issues including lack of access to technology, and students working in essential jobs which left them little time and energy to focus on school let alone the SRL program. Additional challenges that participants faced this year included finding appropriate topics and interview subjects for students as well as confidentiality and privacy concerns, which, in several cases, limited students' ability to collect b-roll from the site that were the focus of their story.

Still students and their teachers were able to get a considerable amount of work done as part of the program. Teachers generally found that Health SRL was effective at increasing students' skills in various areas including research, writing, and using technology. In other open-ended responses, teachers also highlighted student growth in communication and independent work. Teachers also generally agreed that Health SRL increased students' interest in their local community, as well as in news more generally, and increased students' pre-existing interested in STEM and health topics at least somewhat.

Overall students reported increases on all scales over the 2019-2020 school year on surveys. We believe these increases were due to a combination of their participation in the program, increased exposure to health information because of the pandemic, and a certain amount of selection bias in those students who chose to take the final survey. The strongest evidence for the strengths of the program specifically comes from interviews completed before schools shut down and from students' written responses. In these contexts, students reported greater interest in learning about health topics **as a result of** their participation in the SRL labs. Several students came out of the assignment wanting to learn more about mental health topics and specifically, teen mental health. They described greater sensitivity and awareness around mental health because of their participation, and were interested in educating their friends, families, and communities about this issue. Students were specifically interested in finding out about organizations in their communities that focus on mental health, and in getting involved with some of these organizations in the future. Some students also said that they were interested in learning more about local health issues in their communities.

Recommendations

PBS NewsHour audiences rely on its health reporting to stay current on clinical, biomedical, and behavioral research and innovations. This is especially pertinent during the current COVID-19 pandemic. Meanwhile, the SRL initiative teaches students the value of health reporting and is helping to cultivate interest in future health communication careers. Based on our evaluation of NewsHour's efforts for both groups, we offer the following recommendations for supporting existing NewsHour audiences and improving Health SRL programming.

Broadcast

For broadcast audiences, we reiterate the recommendations provided in the Year 3 report:

- Continue to emphasize actionable steps in broadcast stories, particularly those focused on negative topics such as disease outbreaks;
- Consider providing talking points during news reports to foster one-on-one discussions. Depending on the story topic, these talking points could focus on both personal impact and ways people can connect with and support those who are navigating a particular challenge;
- Consider developing interactives to help audiences visualize and think about stories' subject matter and link it to their lives. For example, clickable maps showing local differences;
- Given changing knowledge about current health issues such as the COVID-19 pandemic, continue reporting in ways that highlight the processes behind scientific knowledge and the fact that science is *"as far as we know right now";* and
- Provide online resources that offer easy access to additional content related to stories.

SRL Participants

To help students gain greater health literacy as well as grow the pipeline of future health communicators, we offer recommendations in two areas. In both cases, many of these suggestions come directly from teachers; others are based on teachers' and students' challenges.

Expanded Health Science Curriculum:

- Provide computer-based interactive lessons to support remote learning. This has become particularly pertinent given the current health crises
- Provide multiple prompts in parallel to give students more options
- Provide guidelines for conducting interviews confidentially and anonymously, as well as multiple options that allow interviewees more control over the amount of public disclosure required to participate.
- Break up lessons to create a step-by-step production checklist
- Provide specific lessons on topics such as lighting, podcast production, and conversational interviewing

- Provide more support on research methods, including suggested sources on particular topics of interest
- Given confidentiality concerns, provide tips on creative approaches to brainstorming b-roll to help students think outside the box

Logistics & Teacher Support

Remote learning has been challenging for teachers as well as students. Recommendations for greater teacher support include:

- Online learning has its limitations, however there may be specific strategies and teaching methods that have greater success in keeping students engaged than others. It may be helpful to create a forum for teachers in the program to share best practice strategies for remote learning
- Online learning also creates an opportunity: students who may not have had access to health experts in the past can now consider outreach to a wider geographic area. We recommend providing tips for outreach in addition to the best practices already provided for videoconference interviews.

Conclusion

PBS NewsHour's Health Literacy initiatives continue to increase awareness and understanding of health and STEM-related topics in both the general public and SRL students. Access to clear, accurate health information has been especially important this year given the amount of misinformation presented to the public about the COVID-19 pandemic. By offering clear explanations of research topics in the clinical and biomedical domains, NewsHour ensures that fact-based information grounded in research percolates into the public arena helping to combat misinformation about science and health. Through Health SRL, NewsHour is expanding paths for future health communicators and equipping young people with tools to tell clear and accurate stories that resonate with their communities.

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