



Expert Review

Functioning with Information in Individual English Classrooms: Expressive Judicial Knowledge Gained During the COVID-19 Pandemic

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Abstract

Health officials have relied on data visualizations throughout COVID-19 to convey urgent information regarding the virus's spread and preventative measures. In order to shape these communications, relatively few efforts have utilized participatory engagement with communities that have experienced a disproportionate burden of COVID-19 illness. W.E.B. Du Bois, a sociologist, thought that data visualization could help people change how they think about themselves. An adult English program in the Northern California, Bay Area, employs a community-engaged approach to data literacy skill development with bilingual Latina students. Data visualization activities, language instruction, and health prevention topics are all incorporated into the curriculum. In the early work on COVID-19 in 2020–21, the focus was on improving health knowledge and message interpretation. Later, however, the focus shifted to a critical data literacy perspective, with a focus on dispelling myths, improving risk messaging in learners' own social networks, and assisting learners in realizing the power of their own experiences in the process of data story-telling.

Keywords: COVID-19, English as a Second Language (ESL), Communicative justice, Data visualization, Data literacy, Learner leadership, Community-based participatory research, Health communication

INTRODUCTION

The way we create, disseminate, and interpret risk data and risk communication has been profoundly altered by COVID-19. Unfortunately, language and literacy barriers (such as low levels of health literacy, data literacy, and English proficiency) that may limit interpretation in key population groups are not taken into account in the majority of COVID-19 prevention-focused data visualizations. Equally troubling is the absence of public health images produced through interaction with populations in the United States that bear a disproportionate burden of COVID-19 illness, such as (Black et al., 2008) (Latinx et al., 2010) people. By focusing on the adult English language classroom, we examine the opportunities and challenges that the COVID-19

pandemic has presented for community engagement as a data science strategy.

Nearly half (43%) of the approximately 1.1 million adult learners served by the publicly funded adult education system in the United States are English language learners (ELLs). This figure does not include the thousands of students enrolled in community-based programs that are funded by other means, such as private foundations. Immigrants, refugees, parents, the elderly, adults who are "working poor" (underemployed or looking for work) and youth who have left the K-12 system make up the U.S. ELL population (Black et al., 2008). Adults who have not learned to read or write in any language and/or have received little or no formal education are making up an increasing number

of students in the system.

We argue that these classrooms are a neglected resource in efforts to democratize data science, data, and health-related literacies. Although the image of a classroom full of adult English language learners is not one that often comes to mind when people think of data scientists, our argument is that this is the case. What we know about the interconnectedness of language, power, and health, as well as the way these lived experiences shape engagement with COVID-19 risk messaging, ought to include the healthcare experiences of learners from linguistically minoritized groups. Adult learners have their own interpretations of the health information that is all around us—the data, images, media campaigns, and sound bites—but they rarely share their interpretations of the data or their requirements for data with other students, local communities, or public health researchers. As a legitimate maker space where linguistically diverse communities can work with data tools and data interpretation/production practices and thus be recognized as valued contributors to the world of community-engaged data science, the adult literacy classroom has received relatively little attention up until this point.

DISCUSSION

Our work with Latina women in community-based English language learning classrooms emphasizes data interpretation as a social and creative activity. This is the first study to explore the unique constellation of making meaning from a variety of emerging and frequently conflicting data during a pandemic that also applies translanguaging and collective participatory data analysis. The English classrooms combine instruction with preventive health themes (e.g., stress reduction, COVID-19 prevention) and data literacy skill-building. The collaborative translanguaging deciphering the meaning of data visualization across multiple languages, such as a COVID-19 prevalence heat map. Although competencies related to data interpretation and visualization are described in a variety of ways, curriculum standards related to data literacy have been crucial in drawing attention to the role that K-12 schools and higher education play in skill-building. The ability to work with information in "diverse media and formats (e.g., visually, quantitatively, orally)" is included in oral and written communication skills in California's Common Core Standards. The ability to "sift through data" and find patterns in numbers, texts, and pictures is one of the most important "Computational Thinker" standards, according to the International Standards for Technology Education (ISTE) Standards for Students. Under the Standards for Essential Software Skills section of the Northstar Digital Literacy framework, which was developed specifically for the adult basic education system, some data visualization skills are listed. For instance, "Sort (least to greatest, alphabetically, etc.)" and filter data") and Standards for Using Technology in Daily Life (for instance, "Identify types and formats of information found online (articles, databases, images,

videos, etc.)". The emphasis placed on collaborative learning and skill transfer to real-world problem solving is common to these frameworks (Brigg et al., 2005).

The adult learners' data visualization work is positioned as part of a broader effort to be included in the perspectives that shape knowledge production in today's healthcare system in this pedagogical approach, which is based on (Charles et al., 2008) idea of communicative justice priorities. This method can be used to study differences in information access in communities with linguistic minorities and provide direction for future educational interventions.

The focus shifts to how communities can be involved in the creation and interpretation of data, a participatory approach that has emerged from environmental justice initiatives to explain and address disparities and pollution risks. This more collective conceptualization may relate to community empowerment. This work focuses not only on individuals' comprehension of their own exposure risks, but also on aspects of the data visualization process that make it possible for members of the community to work with local risk data and advocate for changes to reduce those risks. These ideas are based on the work of anthropologist (Charles et al., 2008) (Brigg et al., 2005), who believes that the advancement of "communicative justice" in public health and medical care is fundamentally dependent on the elimination of power imbalances and health communication pathways, as well as the localization of interpretive authority in communities.

A related idea emphasizes the process of data visualization as a significant driver of community agency and knowledge creation. For instance, W.E.B. (Du Bois et al., 2009) a well-known early pioneer in sociology, particularly African American sociology, is under credited for developing data visualization as a method for altering people's self-perception through visualization. With a focus on participatory data collection, this process can be seen as both creative data literacy skill development and participatory engagement.

The concept of students "seeing themselves in the data" took on a whole new meaning when classrooms were closed due to the pandemic in the spring of 2020. (Mara Jose et al., 2007) switched to teaching COVID-19 trends and counter-narratives to the widespread COVID-19 misinformation that students were encountering in their daily lives, such as those employers were not required to provide masks or to use appropriate ventilation in close workspaces, beginning in March 2020 and continuing for the next nine months. Students were motivated to learn English, according to course evaluations and (Mara Jose et al., 2007) own observations; however, during the pandemic, they also sought refuge, support, and health information from the classroom community. Lesson topics evolved as students shared their fears, discoveries, and interest in learning more as new COVID-19 trends emerged in the news and public safety guidelines changed. Over the course

of 2020, learner exploration of additional "hot topics" such as interpretation of public health messages, labour rights, advocacy and social justice, questioning sources of data, risk prevention, public health regulations in the workplace, navigating power dynamics at work and home around social distancing during COVID-19, and the role of technology in daily life was sparked by classroom activities centred on COVID-19 themes and various types of data.

CONCLUSION

During the pandemic, our classroom work suggests that data literacy competence is multilingual and multimodal. In a variety of ways, students attempt to make sense of "ensembles" of health information: sound, images, graphics, speech, and print. Through our work with this community of female students, we are able to gain a clearer understanding of how people move through their sense-making processes across modalities (print, audio, visual, spoken), tools (markers and paper, smartphones, tablets, apps), and languages (English, Spanish, Mam). We discovered that the women's most insightful interpretations of the COVID-19 data visualizations are not restricted to any one language; instead, it appears that the transition between languages and modalities improves risk comprehension, fosters trust in the message, and boosts self-assurance in interpretive abilities. An essential question arises from the women's learning and discovery processes: In these multilingual and multimodal ensembles, especially during a global health crisis, how can any of us learn to identify what to focus on and what to "make meaningful"? When data visualization is integrated, common misconceptions regarding the knowledge-building capacity of groups categorized as "limited English proficient" should be put to the test. The visual message is more than just a substitute for written messages about public health. In fact, in the age of digital health, visual information interpretation should be regarded as an essential component of digital and health literacy competencies. We will gain a better understanding of the role that language choice (along with other choices we make about modalities and tools) plays in data visualization/interpretive work once our conceptual frameworks, research designs, and funding priorities give more consideration to the data work that is being done in community-based adult education classrooms.

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CONFLICT OF INTEREST

None

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