

Innovations in data literacy in a globalizing world

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The way data is collected, communicated and utilized is constantly changing. Collection occurs across multiple domains in informal and formal ways; communication targets various levels of stakeholders in the decision-making process; and data is increasingly open, social and over-abundant, making it imperative that consumers understand the dimensions and consequences of available information. With an increasing onus on the consumers of data in the decision-making process, it is important that data is communicated to support data literacy across a diverse set of stakeholders. Thus, planners play a critical role, given that urban environment harbor and produce substantial data sets.

There is a need for planning curricula to adapt to this data revolution in ways that extend beyond innovative data collection techniques to consider the life-cycle of data, from collection to dissemination to action. This includes skills that span research methods, community engagement, and data visualization. Historically in planning, community engagement strategies have been a particular research method central to soliciting civic participation.¹ And while design communication is critical to the pedagogy of traditional design disciplines,² it is not ubiquitous across planning curricula. This paper links the ways by which community-based data is collected with the way it is visualized, so that visualization and communication are central to the research design and decision-making processes that derive from the data. Two case studies from the island of Hispaniola illustrate how technology facilitates data collection in the field, utilizing local community engagement teams (Haiti) and interdisciplinary

¹ J. Friedmann. (1987) *Planning in the Public Domain*. Princeton, NJ: Princeton University Press.

² Jorge Frascara. (2004) *Communication Design: Principles, Methods, and Practice*. New York, NY: Allworth Press.

student cohorts (Dominican Republic) to propose an innovative way forward with community-based research methods and context appropriate dissemination tactics.

A two-year study in Haiti investigated the effects of the post-earthquake built environment on the cholera epidemic. This research monitored 400+ water points at a regional scale utilizing a local team trained in WASH,³ community engagement, cultural competencies, and data collection techniques using various technologies. This work revealed the complexities inherent in conceptualizing, analyzing and synthesizing issues related to the built environment and public health at a systems level, particularly in the post-disaster context of Haiti where the resource-deficient government carries much of the burden of poor water-related infrastructure.⁴

A more recent study in the Dominican Republic took the lessons learned from Haiti to refine the data collection strategy, with a focus on how the data generated from the process could directly inform the decision-making process that involves the public and private sector. An interdisciplinary cohort of students trained community leaders and youth in socio-spatial data collection. Through this process surveys were designed, translated, and pre-tested in the field alongside the partners from the communities, thereby increasing the reliability and cultural-appropriateness of the questions asked. The use of a mobile application facilitated this process. Video data supplemented the survey data and was submitted to the research team through WhatsApp. The final product became a video which was shown to the community at the end of the fieldwork as a way of disseminating the findings, but also putting a tool in the hands of the community.

Across these two studies, technology has been an agent of change and is transformative insofar as individuals engage with their own real-world challenges through various online, open, and social platforms using locally-appropriate devices. This methodology produces a significant amount of data, and utilizing certain

³ WASH – Water, Sanitation and Hygiene (WHO/UNICEF Joint Monitoring Programme for Water, Sanitation and Hygiene: <http://www.wssinfo.org/>)

⁴ Jocelyn Widmer, Thomas A. Weppelmann, Meer A. Alam, David Morrissey, Edsel Redden, Mohammed H. Rashid, Afsar Ali, Madsen Beau De Rochars, Jason K. Blackburn, Judith A. Johnson and J. Glenn Morris, Jr. (2014) “Water-Related Infrastructure in a Region of Post-Earthquake Haiti: High Levels of Fecal Contamination, and the Need for Ongoing Monitoring. *American Journal of Tropical Medicine & Hygiene* 91 (4): 790 – 797.

engagement strategies, the data is often collected by leaders, stakeholders and youth. For the community and associated decision-makers, this process involves the community in ways that they can engage, articulate and contribute to shaping solutions to their grand challenges. For planning students, effective data visualization requires training across critical thinking skills, technical competencies and design communication. Applying innovative strategies to collect, communicate and utilize data calls into questions why our brains respond so well to graphics, what are the trends in the data presentation field, and how to meet stakeholders' information needs and interests. Interpretation of findings then becomes an engaging mechanism whereby information systems are a democratic and transparent lever in the decision-making process.