

An Interdisciplinary Educational Project Connecting Smart City Technology with Local Communities

Ye Wang

*Department of Communication Studies
University of Missouri - Kansas City
Kansas City, USA
wanye@umkc.edu*

Paul Tosh

*Department of Studio Arts
University of Missouri - Kansas City
Kansas City, USA
toshp@umkc.edu*

Jejung Lee

*Department of Geosciences
University of Missouri - Kansas City
Kansas City, USA
leej@umkc.edu*

Yugyung Lee

*Computer Science Electrical Engineering
University of Missouri - Kansas City
Kansas City, USA
leeyu@umkc.edu*

Shawn Henderson

*Department of Geosciences
University of Missouri - Kansas City
Kansas City, USA
leeyu@umkc.edu*

Sejun Song & Baek-Young Choi

*Computer Science Electrical Engineering
University of Missouri - Kansas City
Kansas City, USA
songse, choiby@umkc.edu*

Abstract—This poster presentation demonstrates an ongoing research effort that combines smart city technologies with strategic communication and graphic design via a course Advertising Campaigns, to maximize the societal impact and better connect with local communities.

Index Terms—design, education, smart city, water quality

I. INTRODUCTION

This paper describes an interdisciplinary educational project that employed strategic communication and arts to connect science and technology innovation with local communities. Students majored in Communication Studies and Studio Arts enrolled in a course Advertising Campaigns planned and implemented the promotion of KCWaterBug, an application launched by KCWaters.org, a collaborative partnership in the Kansas City metropolitan area that promotes awareness about the quality of water. This interdisciplinary educational project serves as an example of connecting smart city technologies with local communities and public in urban areas.

II. MOTIVATION OF RESEARCH

There are various definitions of smart city. Some address the technologies, and others highlight the ideological aspect. However, at the center of the concept is a desire to use technologies to better serve cities and urban communities [1]. This involves not only intelligent computation, information technology, and data sciences but also an organic system that infuses information into its [city's] physical infrastructure to improve the life of people living in urban communities. Thus, smart city has an inherent human dimension; and educating the public and empowering them with knowledge and information from this organic whole of smart system is crucial to the success of this concept [1]. With this understanding, the current project was motivated by enhancing the human dimension of

smart city technologies to facilitate education and learning in urban communities.

The unprecedented scale and speed of urbanization makes quality water resources extremely vulnerable in cities. While large amounts of data collection has been conducted to monitor water quality in Kansas City metropolitan areas, water data have not been efficiently utilized to inform and educate the public for safety and protection. There is a great potential for water data to be used by affected communities for their societal and economic benefits as well as by city stakeholders for effective and sustainable policy-making. Thus, collaborating with environmental and governmental agencies, researchers at the Departments of Geoscience and Computer Science at UMKC developed the KCWaterBug mobile application utilizing real-time data. The data are automatically updated hourly through satellite communications with conjunction of periodical laboratory results after field monitoring campaigns. The KCWaterBug App allows users to access information on Line Creek, Shoal Creek, Jersey Creek, Brenner Heights Creek, Brush Creek, Blue River, Mill Creek, Tomahawk Creek, Indian Creek, Coffee Creek, Cedar Creek and Turkey Creek, including the estimated real-time water quality, a color-coded system that explains safe water activities, FAQs for clarification of how the water quality is measured, etc. The



Fig. 1. Application Design of the Winning Team

major challenge facing this application is to increase its awareness and usage among local residents in KC. When smart technologies are developed, their impact will then rely on how widely it is adopted by the local communities [2], [3].



Fig. 2. Flyers and Website of the Winning Team

III. REBRANDING KCWATERBUG

This educational project was conducted via an interdisciplinary course at University of Missouri, Kansas City: ART/COMMST 492 Advertising Campaigns. Interdisciplinary approach has been widely adopted by not only urban research relating to data sciences [4], but also higher education [5]. Students enrolled in this course are majors in Communication Studies and Studio Arts. The focus of this course is re-branding or development of an identity program that combines advertising planning with creative execution [6], [7]. Students will learn how to conduct research and develop advertising plans, create whatever promotional materials the advertising plan requires, and present the plan/creative to clients. In the spring semester of 2016, KCWaterBug became the client of this course. Three groups of students competed with each other to design promotional plans and materials for this mobile App.

There were the following steps to the process.

Step 1: Scientists who were involved in the development of the technology met with the students to answer questions regarding the purposes, the functions, the current usage, the objectives, and the budget relating to this application.

Step 2: Students, divided into groups conducted secondary research on environmental communication, risk communication, demographics and lifestyle of local residents living near the natural water bodies. The secondary research also included examination of other similar applications designs, promotions, and functions.

Step 3: Students were asked to collect primary data by interviewing residents living in affected communities. Doing so made sure the development of the promotional plans was research driven. All research data were compiled, discussed, and analyzed under the guidance of course instructors.

Step 4: Students wrote situation analysis, competitor analysis, SWOT analysis, market analysis on KCWaterBug. The research generally indicated rebranding of the application seemed to be necessary.

Step 5: Student teams proposed three different versions of brand identity design, position strategies, media strategies, and created application interfaces, brochures, flyers, calculated

advertising budget, and made a timeline for implementation. Lastly, each team presented their plan and design to the client.

The winning team whose plan and design chosen by the scientists proposed a three-phase campaign that would rename the application as KCWaters, relaunch the application and the website, and promote it on social media (Figures 1-2). The campaign theme emphasized water safety. The design elements focused on a trustworthy, reliable, and authoritative image of the KCWaters App. This identity package included unique font/typography designed for the App, and a combination of deep blue, bright green, light blue, red, and yellow color panels as the theme colors. They also created a new application interface, and other promotional materials.

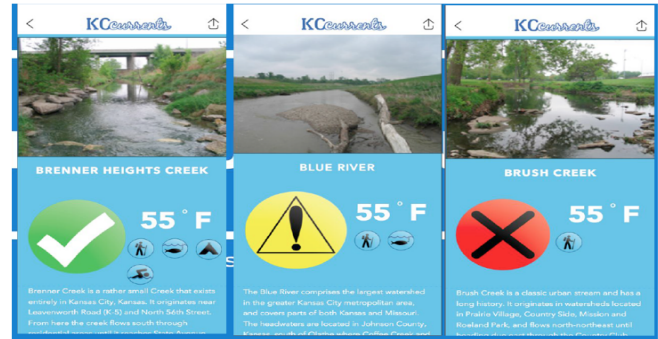


Fig. 3. Another New Legend Design

Other student teams proposed different ideas to communicate this technology. One team proposed a positioning theme focusing on the concept of friend. Their campaign theme was: KCWaterPal is your friend to help! Their execution included three messages: Most people do not know about the risks associated with natural bodies of water; Just because the water looks good and safe does not mean it is; Natural water quality affects everyone in the community, even if you do not care. They also proposed a geo-targeting strategic to distribute promotional materials based upon zip codes. Another team created new legends that better communicate water safety information (Figure 3).

REFERENCES

- [1] T. Nam, and T. A. Pardo, Conceptualizing smart city with dimensions of technology, people, and institutions, In Proceedings of the 12th annual international digital government research conference: digital government innovation in challenging times, ACM, pp. 282-291, Jun 12 2011.
- [2] C. Visconti, Community-based adaptation measures for Water Sensitive Urban Design in context of socio-environmental vulnerability, TECHNE-Journal of Technology for Architecture and Environment, 27(14), Nov 27, 2017.
- [3] A. Meijer A and M.P., Governing the smart city: a review of the literature on smart urban governance, International Review of Administrative Sciences, 82(2), pp. 392-408, Jun 2016.
- [4] N. T. Buck, The art of imitating life: The potential contribution of biomimicry in shaping the future of our cities, Environment and Planning B: Urban Analytics and City Science, 44(1), pp. 120-40, Jan 2017.
- [5] M. Phillips, and M. Jahanshahi, Integrating data information literacy into a service-learning engineering design course, 2017. https://docs.lib.purdue.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1193&context=lib_fsdocs
- [6] T. Altstiel, and J. Grow, Advertising creative: Strategy, copy, and design. Sage Publications, 2015 Dec 10.
- [7] A. Wheeler, Designing brand identity: An essential guide for the whole branding team. John Wiley & Sons, 2017.