

Title:

Be a Water Superhero with the Water Saver App:
Encouraging Water Conservation in Albuquerque

Water, water, water... There is no shortage of water in the desert but exactly the right amount, a perfect ratio of water to rock, of water to sand, insuring that wide, free, open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from any other part of the nation. There is no lack of water here, unless you try to establish a city where no city should be (Abbey, 1968).

Introduction:

Albuquerque is currently home to over half a million people. While population growth in New Mexico has stagnated in recent years (Quigley, 2016) population growth across the Southwest is expected to continue to boom with an estimated 19 million people moving to the region by 2030 (Travis, 2010). In such an arid climate, population numbers of this magnitude will put additional strain on our water supply in the coming years. On average, Albuquerque receives 9.4 inches of rain and 10 inches of snow a year (US Climate Data). With climate change increasing drought conditions (EPA) the lack of water will only become more prominent in years to come.

According to the San Juan-Chama Drinking Water Project, consumers of the Water Authority needed to reduce their water consumption to 155 gallons per person per day by 2024 (Albuquerque Bernalillo County, Water Utility Authority). This goal was met early with gallons per person per day reaching 134 in 2015, according to the WUA. The Water Authority is continuing to pursue aggressive goals for water consumption reduction as population increases across the region will continue to put pressure on our water supply.

Since water is such a precious resource in the Southwest, multiple solutions will be needed to address this issue, and everyone will need to play a role. My engagement project is aimed at residents in Albuquerque, and encourages them to conserve water by competing with their

neighbors, friends, and family to use the least amount of water and track it via a free application on their phone. This idea is inspired by the popularity and prevalence of health tracker apps - applications that track miles walked and other health choices have become so popular it seems like the norm to engage in healthy behaviors while competing with coworkers and family. By normalizing water conservation behaviors, allowing people to feel like they are making an impact by looking at the numbers over time, and providing tips and encouragement on how to do more, I believe this app could inspire real change amongst the population and lower water usage.

The app will provide residents in Albuquerque with tips on how to address water use in their own homes and gardens. This will provide realistic changes people can make and stick with overtime, which is a crucial part of implementing a behavior change. The emphasis on having people be in control of their own water use and having a sense of personal responsibility (Kollmuss, 2002) will hopefully also lead to successful behavior changes in a large part of the population. Hopefully, by beginning to take steps to use less water in their own homes, residents will then feel empowered to encourage their local officials to implement water conservation in more areas of the city, such as municipal buildings and private businesses.

Process:

Barriers:

In America, it is easy to take water for granted. Most of the time when you turn on the faucet, clear, drinkable water comes out. Turn a different faucet and you can even get hot water if you wait for a moment. As we saw with the Flynt water crisis in Michigan, we are sometimes reminded that our water does indeed come from somewhere and can sometimes be compromised. But for many of us, most of the time, water is easy to get, free and or cheap, and plentiful. Because water is so accessible to most Americans, it is easy to take it for granted. I believe this is a major barrier for water conservation.

An additional barrier includes financial resources. New Mexico consistently has one of the highest poverty rates in the nation. In 2013, 21.9 percent of New Mexicans lived in poverty,

falling only behind Mississippi (Contreras, 2014). While conserving water when possible can save money bill to bill, bigger upgrades to appliances and fixing leaks can put a considerable financial burden on an already struggling household. One of the best ways to reduce water use is by installing high-efficiency toilets, shower heads, or washers, or by fixing leaks. However, this can be out of range for many families, so some can be caught in a cycle of paying higher water bills and consuming more water simply by having outdated appliances. This barrier will be addressed in a later stage in the project.

Step One:

- Identifying people to build the app. Fortunately, there are numerous “coding boot camps” throughout New Mexico that teach people how to program and become web developers. The STEMulus Center runs many boot camps throughout the year in Albuquerque that focus on different aspects of programming - application development being one of them. These students are always looking for projects to take on while enrolled in the classes, and they would be a perfect group of people to reach out to for help on this project. Through connections at the New Mexico Wildlife Federation, I will reach out to participants in the boot camp and see if they are interested in building the app as part of their project when learning how to code.

A partnerships with boot camp participants will keep the cost of building the app to a minimum, while also helping an additional group of Albuquerqueans finish their training in coding to advance job prospects.

Step 2:

- Partner with the Water Utility Authority. In order for people to learn about the app, the WUA will be a necessary partner. With their cooperation the app will be advertised on water bills, their website and social media pages, and promoted at water information sessions. The app can also help the WUA by allowing for bill payment, cutting down on resources for the agency and paper mailings.

- Develop desired water saving behaviors with the help of WUA. Some easy to implement behaviors that will be encouraged are:
 - Taking shorter showers
 - Only planting native, water efficient plants
 - Utilizing reusable water bottles
 - “Bucket showering” - collecting water in a bucket as the shower water warms up to be used elsewhere
 - Identifying and fixing leaks
 - Installing high-efficiency appliances

Step 3:

- Promotion: Materials, such as posters, social media pages, and stickers will be created to continue spreading awareness about the app and encourage people to “play” with their friends. Users will be encourage to be a “Water Superhero” by becoming a top “water saver” and playing against their friends. Users will be able to invite others to join through Facebook profiles so more people can join the game. Further incentives for playing and “winning” will be gift certificates to local stores and restaurants and discounts on water bills. By creating the app like a game, it will hopefully keep people invested and continuing to play and find new ways to reduce water consumption. When people hit certain water goals, they can unlock a new level of Water Superhero, further incentivizing people to find new ways to conserve water.

Step 4:

- Evaluation: By partnering with the WUA, we will be able to track water use and compare average water usage from the time the app is launched to previous time periods. Amount of people who have downloaded and logged into the app will also be tracked to measure the popularity and use of the app. Users will be able to watch their water consumption fall over time, and compare levels with neighbors and previous time periods.

Next Steps:

I could see this project working within my community and being implemented in the next year. Coding boot camps run for 10 weeks, and after the implementation of the app and lining up partners, I think the app could run itself with some easy to handle maintenance. As the app got more popular and needed to handle more traffic, it would potentially need more tech assistance, but as it got off the ground it could run itself.

As the app gained in popularity, it could potentially make money through advertisements within the app that could be used to offset the costs of water efficiency implementation for residents who cannot afford upgrades to their appliances. There could also be a section where people can donate to a fund that helps people fix leaks and purchase high-efficiency appliances that could also give donors additional points within the games - further incentivizing them to keep playing and donating.

Two to three years after launch, residents would feel compelled to do even more and petition their local governments to implement additional water saving policies. The app can add a section that tracks which businesses engage in water saving measures, further incentivizing more businesses to take part in water conservation.

Implications:

This project will give people greater control of the impact they have on their environment. One problem many people have with environmental issues is they can seem overwhelming and complicated. This overwhelming feeling can prevent people from doing anything at all because they feel like it won't help in the grand scheme of things anyway (Lertzman, 2008). By giving people the power to track their impact, they can see in real time the water they are saving and the impact they are having.

With more and more people pulling water from rivers in New Mexico, our wildlife is being impacted and our way of life is changing. Low water levels in the Rio Grande have increased salinity content which has allowed for ocean-dwelling species to inhabit the river, pushing out

native species (MSNBC, 2007). By damming the river to provide water for residents and agriculture, many species along the river have gone extinct and the ecosystems have changed dramatically (Sallenave, 2010). Reducing water use could help the Rio Grande, and other rivers in New Mexico, flow stronger and more consistently in the years to come.

I believe that giving people a reason to care about the environment - whether it's monetary or to have a friendly competition with your friends - will lead to greater involvement and action down the line. By getting people involved in one aspect of water conservation, I believe you could create possibilities for even more change and advocacy down the road.

My Master Plan involves raising awareness about the endangered status of the Rio Grande. Increasing water conservation amongst large portions of the population will help keep the Rio Grande healthy or at the very least, stop it's condition from getting worse. Additionally, my Master Plan involves getting people to submit content over a website, seeing how large populations react to an app could be helpful insight for how this could work in New Mexico.

Small steps within my community could lead to big change when it comes to water consumption in New Mexico. Giving people the opportunity to have an impact with an application in the palm of their hand will give people ownership over their own actions, community, and environment.

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