

Introduction

The Science of Water Art project brings together professionals, community members, college students and children to think about the role that water plays in each of our lives. Using a sample of 4th grade classes in Arizona, over 3000 drawings of children's perception of water today and in the future were collected, coded and analyzed for various themes.

As part of the larger Global Ethnohydrology study that is looking at the role of water, climate change and health in several communities worldwide, this project allows for a look into how these topics are viewed by younger generations and gives a voice to children so that they may share their outlooks on this vital resource.

Here, we are specifically interested in determining if gender is linked to children's perceptions of how they use water now and in the future.

Methodology

With the help of their teachers, we asked approximately 1,500 students between the ages of 9-11 to draw two pictures that best represented their thoughts on the following:

Prompt 1 – Please draw a picture showing water being used in your neighborhood (Time 1)

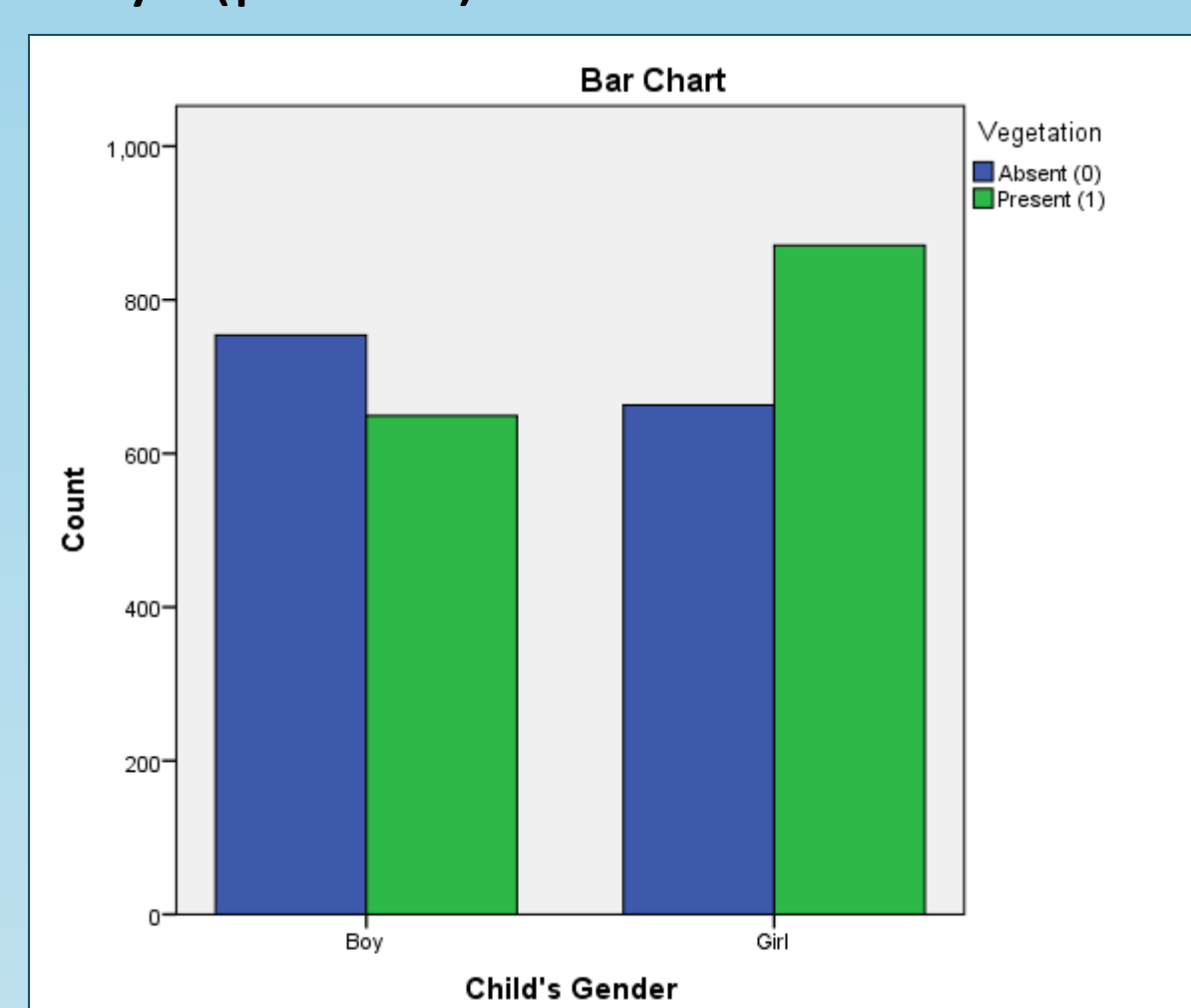
Prompt 2 – Please draw a picture showing how you imagine water will be used in your neighborhood 100 years from now (Time 2)

To analyze the artwork, a coding scheme was developed based on nine different themes that could occur in the artwork. These include vegetation, scarcity, pollution, natural sources, commercial sources, existing technology, technology innovation, recreational use, and domestic use. Each picture was coded as having each theme present or absent. Pearson's chi-squared tests were conducted to evaluate significance between gender and presence of each code.

Results

A total of 2937 drawings were analyzed, 1403 were identified as being drawn by boys and 1534 were identified as being drawn by girls.

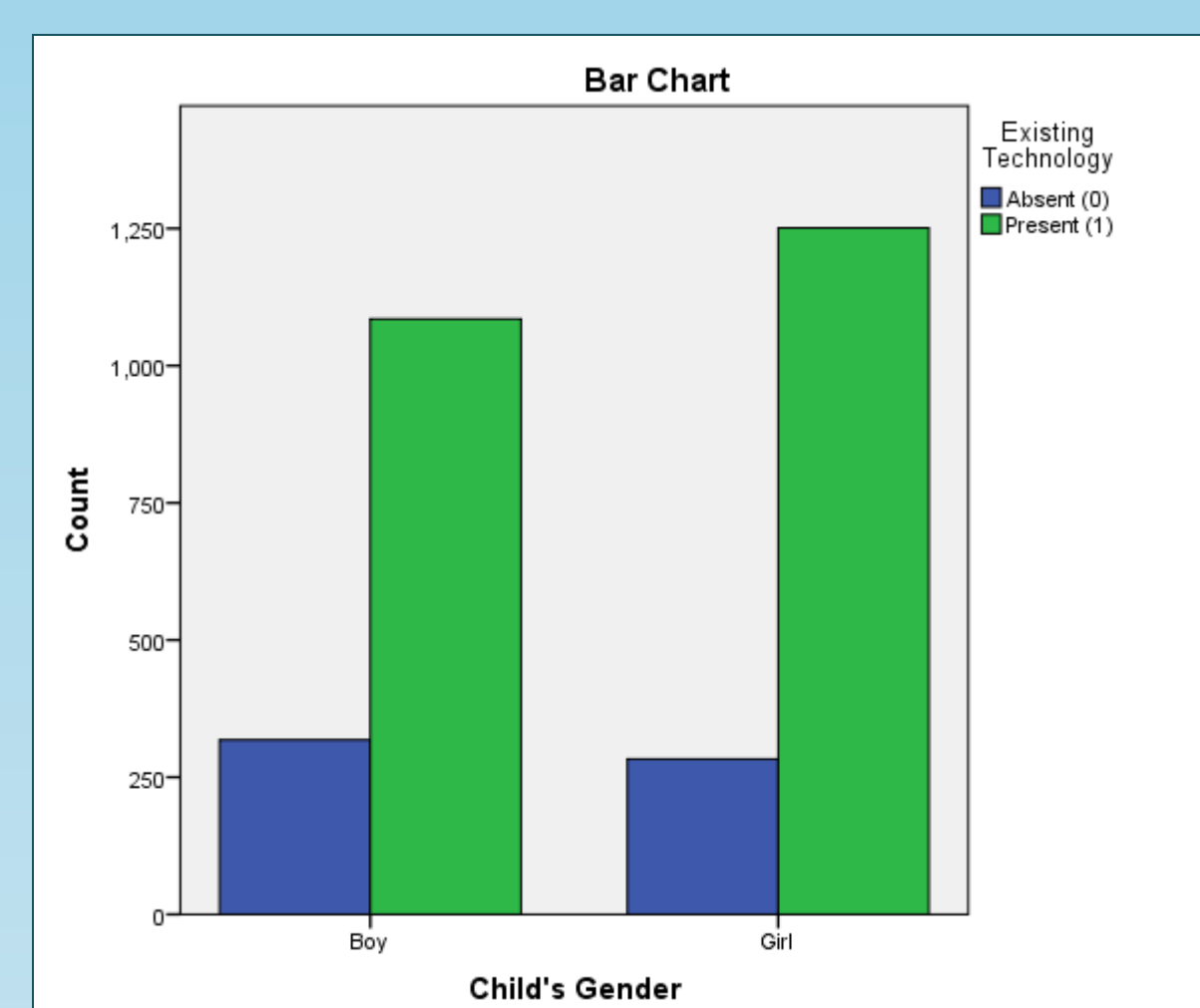
Girls drew vegetation significantly more often than boys ($p=.000$).



Vegetation is typically depicted as green space, living plants, lawns, gardens, parks, and outdoor scenes.



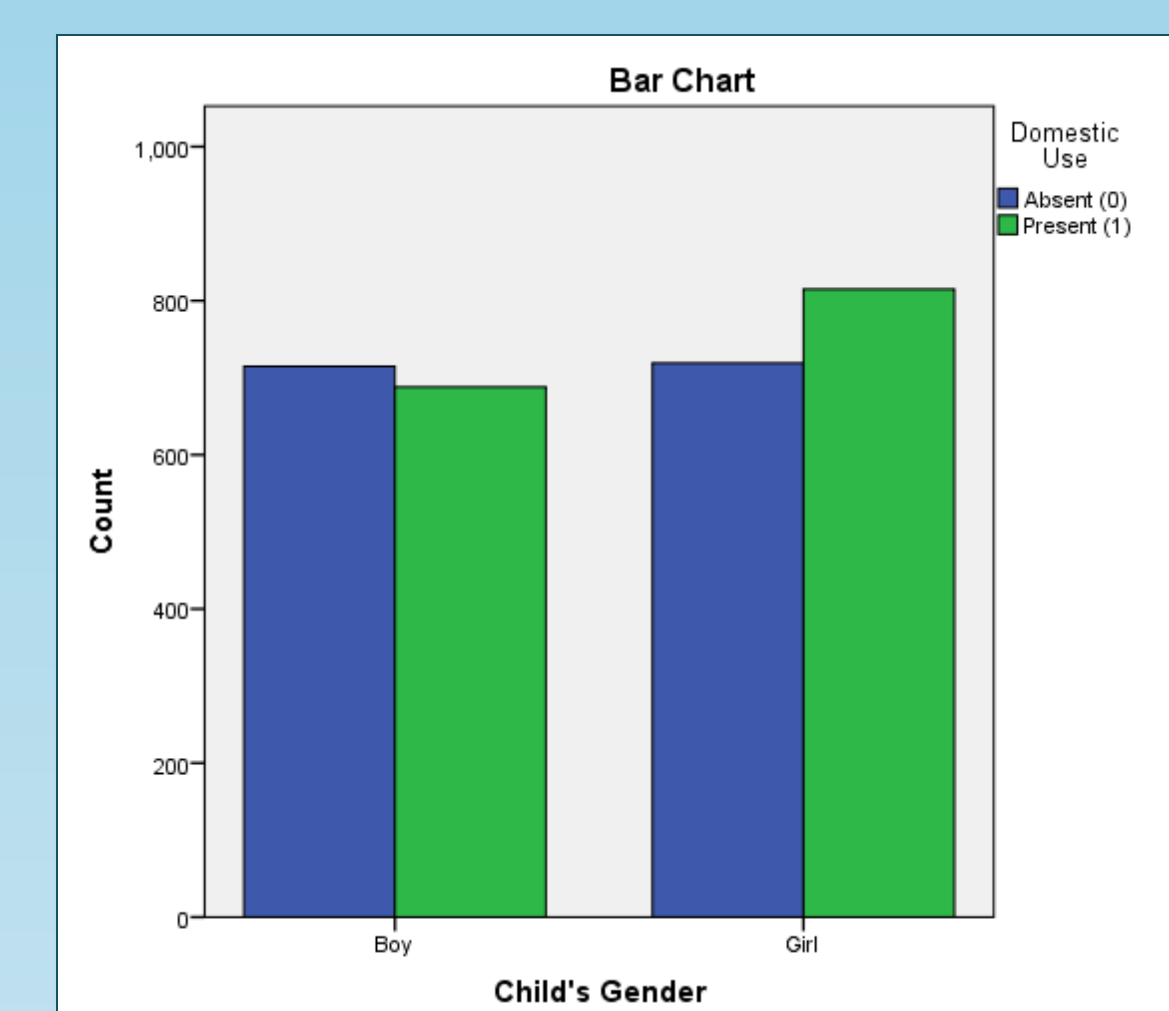
Girls drew existing technology significantly more than boys ($p=.005$) and are significantly more likely to draw the code in Time 2 ($p=.001$).



Existing technology is typically depicted as hoses, pipes, pools, sinks, cups, pots, pans, refrigerators, showers/baths, sprinklers, and fishing equipment.



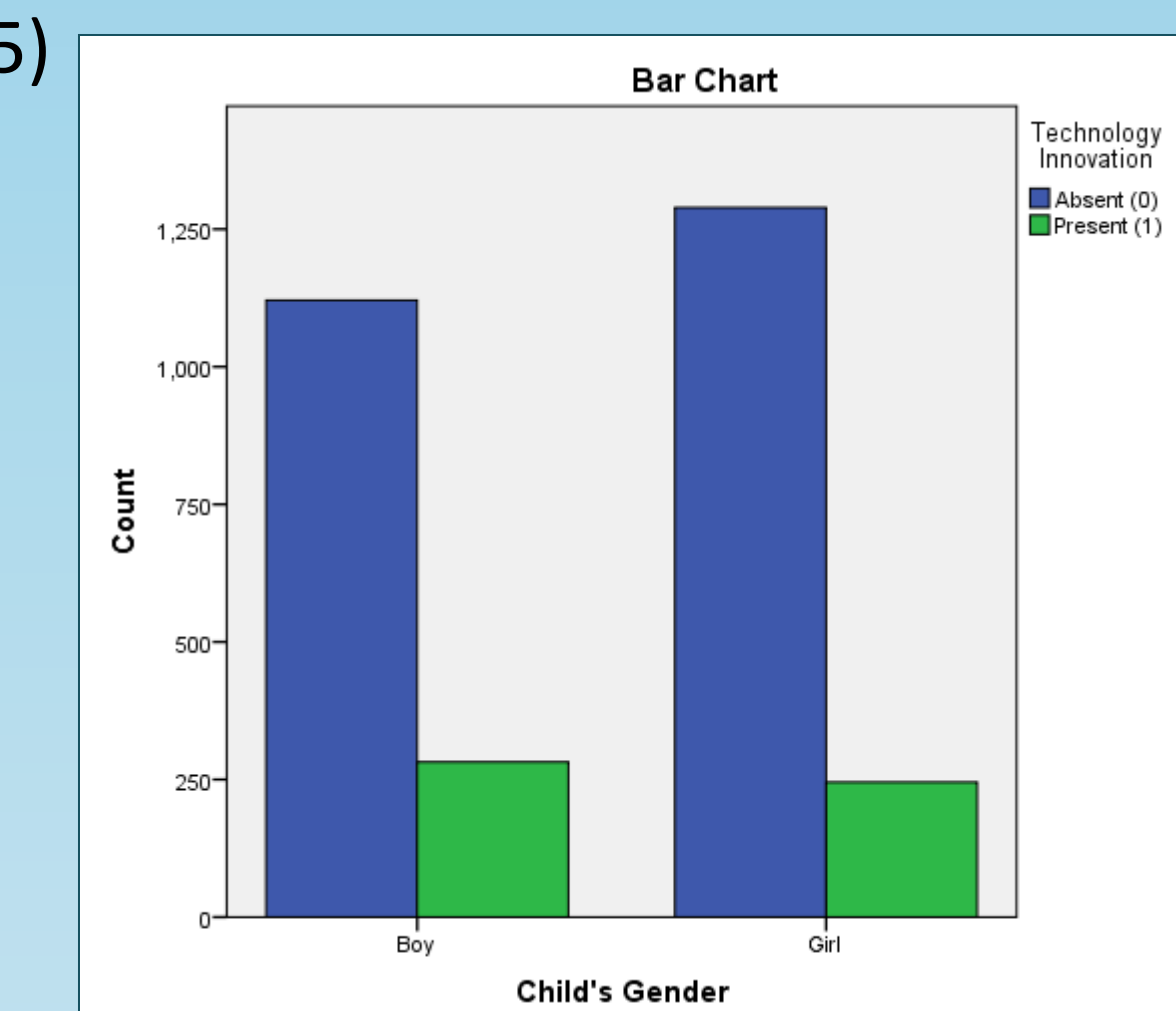
Girls drew domestic uses of water significantly more than boys ($p=.027$) and are significantly more likely to draw the code in Time 2 ($p=.003$).



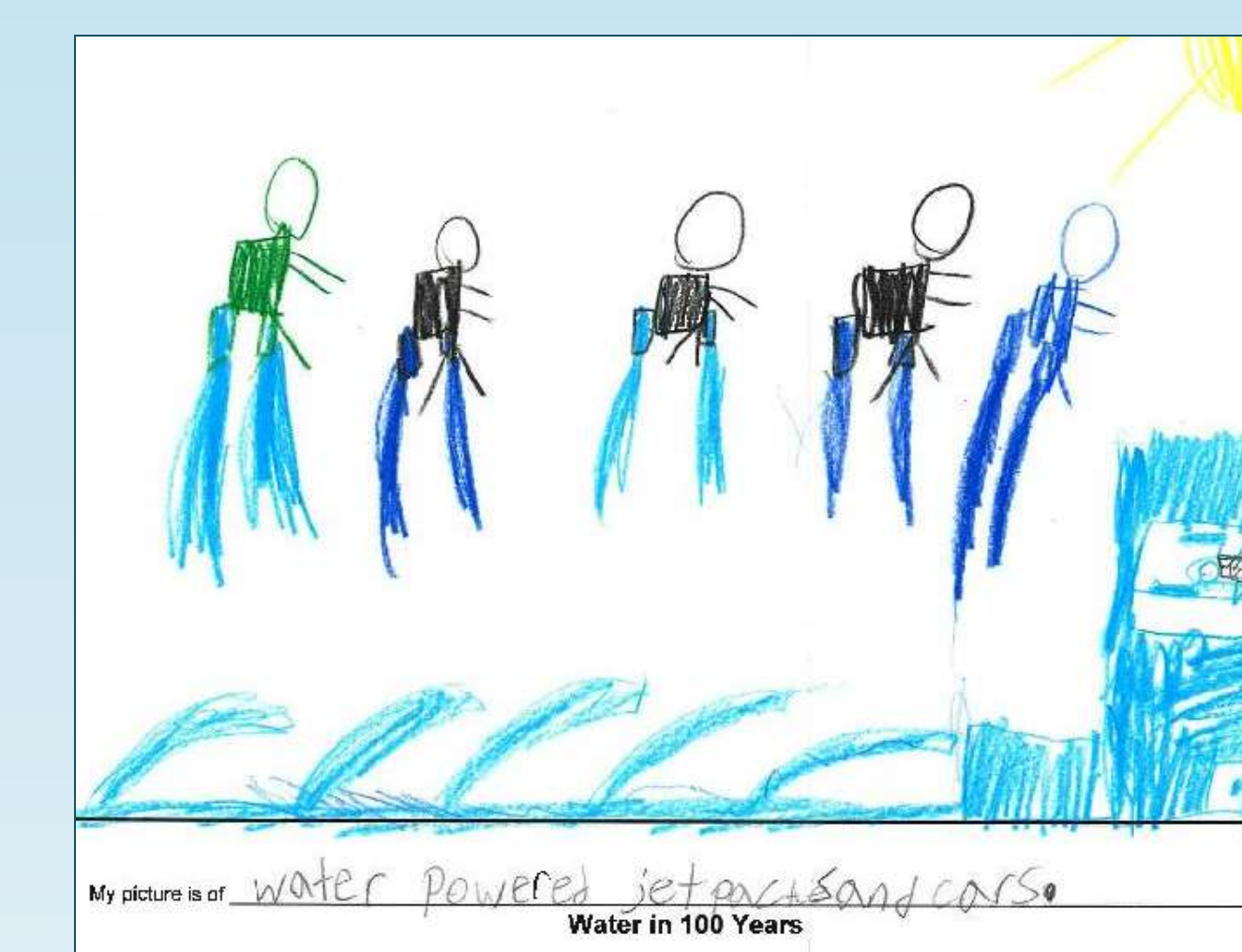
Domestic use is typically depicted as washing dishes, cooking with water, cleaning with water, doing laundry, in-house taps and faucets, sinks, private pools, bath tubs, showers, watering plants and gardens.



Boys drew technological innovation significantly more than girls ($p=.004$), and are significantly more likely to draw the code in Time 2 ($p=.005$).



Technological innovation is typically depicted as technology doing something that is currently impossible, robots and levitating cars that use water as fuel.



Conclusion & Discussion

Girls are overall more likely to draw vegetation, existing technology and domestic use of water than boys are, and are particularly more likely to draw existing technology and domestic uses in their drawings of the future. In comparison, boys are more likely to draw technological innovation, particularly in their drawings of the future. These results show that when it comes to water use, girls are more likely to identify with and depict what they see in everyday life, while boys are more concerned with ideas of future innovation.

These findings could suggest that in the future, girls see themselves more in the domestic sphere doing domestic duties, especially considering that the typical exemplars of existing technology and domestic use include cleaning, cooking, cups, pots, pans, sinks and other household appliances. Boys, on the other hand, are not identifying as much with these themes and are instead depicting more imaginative technologies.

That there is no significant difference between genders when it comes to the codes of pollution, scarcity, commercial sources, natural sources, and recreational sources suggests that boys and girls are equally concerned with these themes.