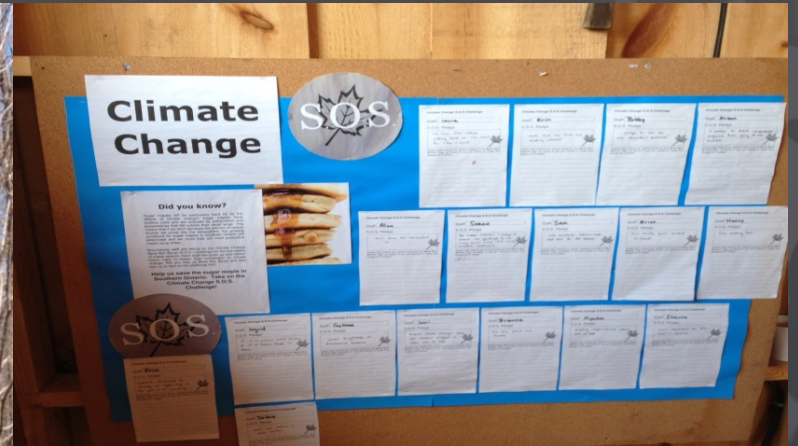


Climate Change S.O.S: Save Our Syrup!



Program Overview

- Climate Change S.O.S. is a program geared towards high school students highlighting the effect of climate change on one of eastern Canada's great natural assets and contributions to the cultural landscape – the sugar maple and maple syrup.
- The purpose of Climate Change S.O.S. is to engage students with the issue of climate change through their hearts and stomachs by highlighting the plight of this iconic Ontario symbol.
- The program brings students to the Mountsberg Conservation Area where they explore a working maple sugar bush. Students monitor the health of the sugar bush and contribute to an ongoing data set. They also learn about the threats faced by the sugar maple, and examine the economic and cultural impact of the potential loss of these trees, and ultimately go home with real world techniques they can use for reducing their own carbon footprint.

Research Question

- To what extent does sharing knowledge about the impacts of climate change on a valued ecosystem and commodity (namely sugar maple ecosystems and maple syrup) influence the participant's knowledge, attitudes, and behaviours towards climate change?
 - The knowledge mobilization assessment project utilizes a pre & post survey to measure the students knowledge, attitudes & behaviours towards climate change.



Pre/Post Survey Methodology

- 5-point Likert-scale pre-test/post-test non-equivalent group design survey (Trochim, 1997)
 - Number of useable surveys is **517**



Strongly Agree **Agree** **Neutral** **Disagree** **Strongly Disagree**

- As is standard in this type of research, the same survey is administered before and after the learning experience to measure general changes in knowledge, attitudes and behaviours across the entire group.
 - The process of evaluation was selected to be both brief and engaging for the students completing the survey, and for teachers administering the survey.
 - It is based on models previously proven to be successful evaluation tools.

The Pre/Post Survey

Part One: Environmental Knowledge

1. Changes in climate temperature are so small and so gradual that plants and animals can adapt.
2. Biodiversity is essential to the health of ecosystems.
3. Climate change is affecting the timing of the maple syrup collection season.
4. Climate change may result in more storms or droughts.
5. Carbon dioxide is removed from the atmosphere by trees through photosynthesis.
6. The maple syrup 'value chain' involves producers, distributors, retailers and customers.

Part Two: Environmental Attitudes

1. I am concerned about climate change, and how it may impact my life.
2. Using more resources than we need is a serious threat to the health and welfare of future generations of people.
3. I don't think there is very much I could do to lessen the impacts of climate change.
4. I like maple syrup and would be willing to make some personal changes to prevent the impacts of climate change.
5. I believe it is important to buy products that are environmentally friendly, even if they are more expensive.
6. I believe I should recycle because it helps lesson my impact on the environment.

The Pre/Post Survey Con'd

Part Three: Environmental Behaviours

Indicate the answer that best represents you with an 'X'.

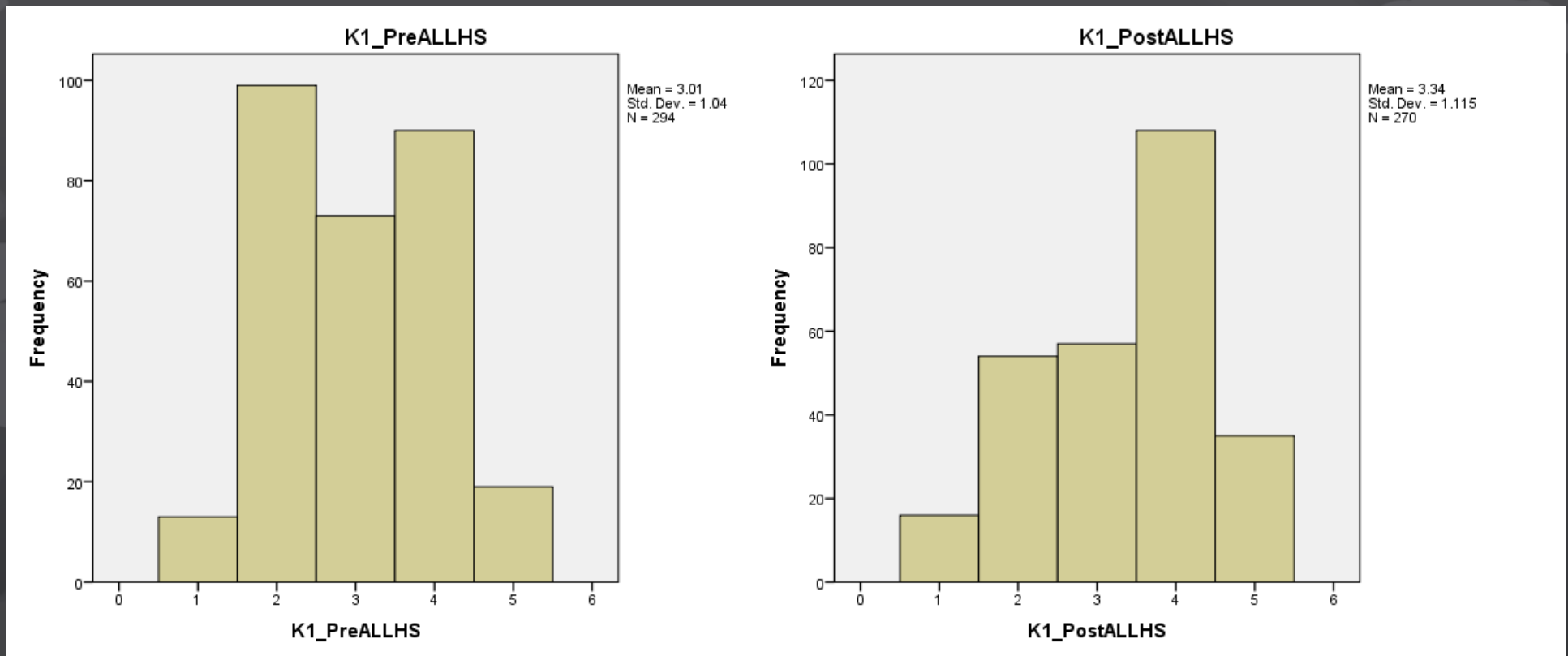
| | Never | Rarely | Sometimes | Always |
|---|-------|--------|-----------|--------|
| I consciously turn-off the tap to conserve water. | | | | |
| When I shop I choose natural or chemical-free products whenever I can (e.g. snacks, clothing, shampoo). | | | | |
| I talk to others about climate change, and the environment. | | | | |
| I walk whenever I can because I know cars contribute to climate change. | | | | |
| I encourage my family to purchase locally grown food (e.g. grown in Ontario). | | | | |
| I recycle because I know it helps lesson my impact on the environment. | | | | |

Data Analysis

- Testing the null hypothesis that the two populations (pre and post) have the same response distribution, we employed a Non Parametric Independent samples Mann Whitney U test (non parametric T test), the significance level being 0.05
 - If null hypothesis is rejected, there is a statistically significant difference.
- The following 5 questions from the survey indicated statistically significant changes in student response.

K1. Changes in climate temperature are so small and so gradual that plants and animals can adapt.

1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree

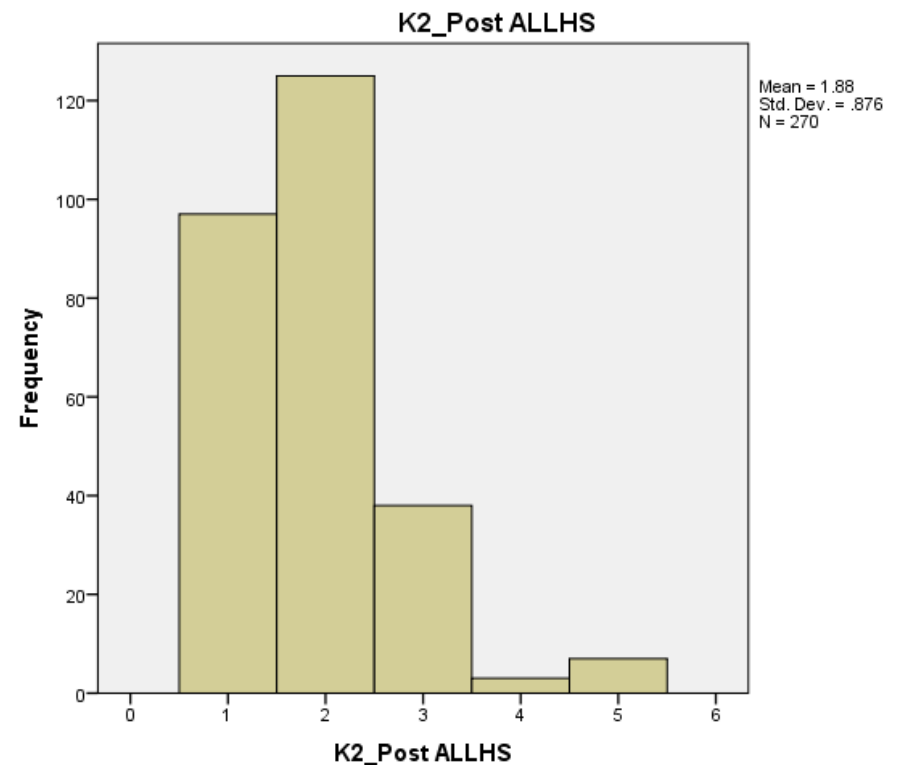
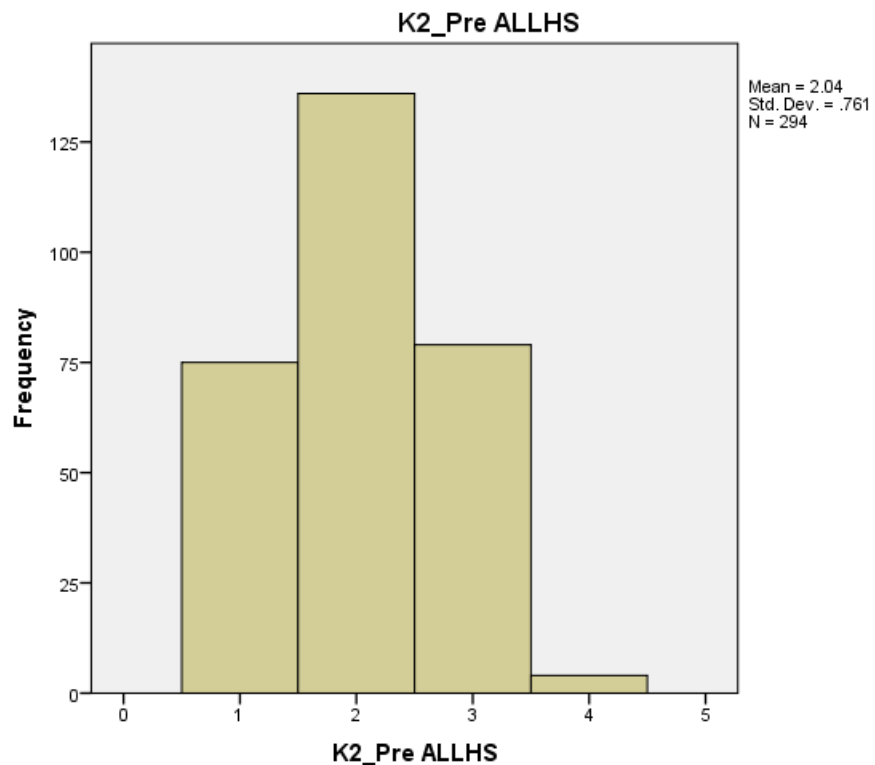


Pre-Test (Before the Program)

Post-Test (After the Program)

K2. Biodiversity is essential to the health of ecosystems.

1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree



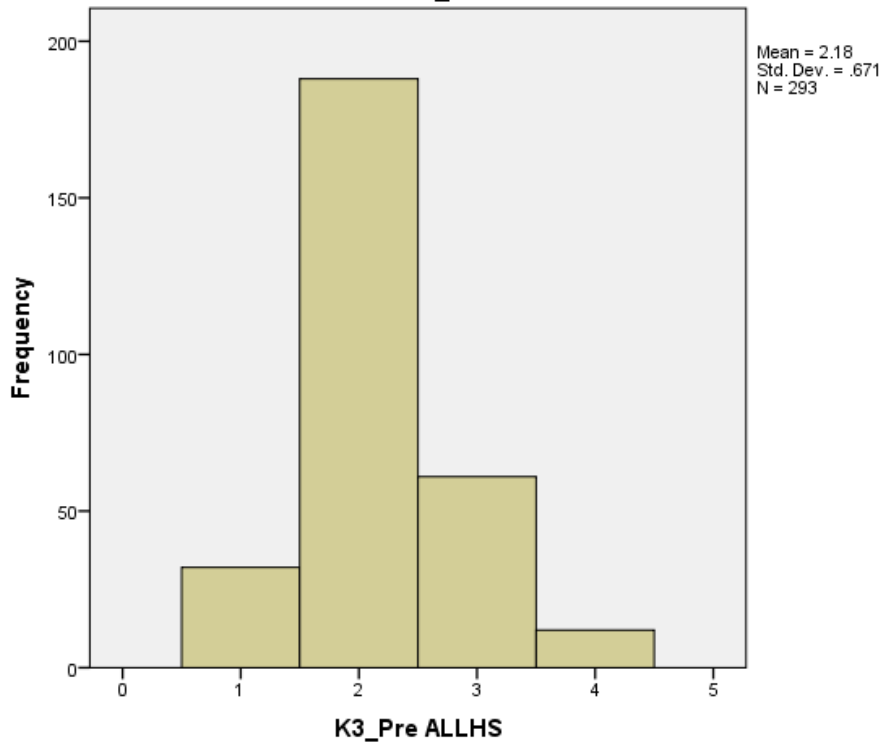
Pre-Test (Before the Program)

Post-Test (After the Program)

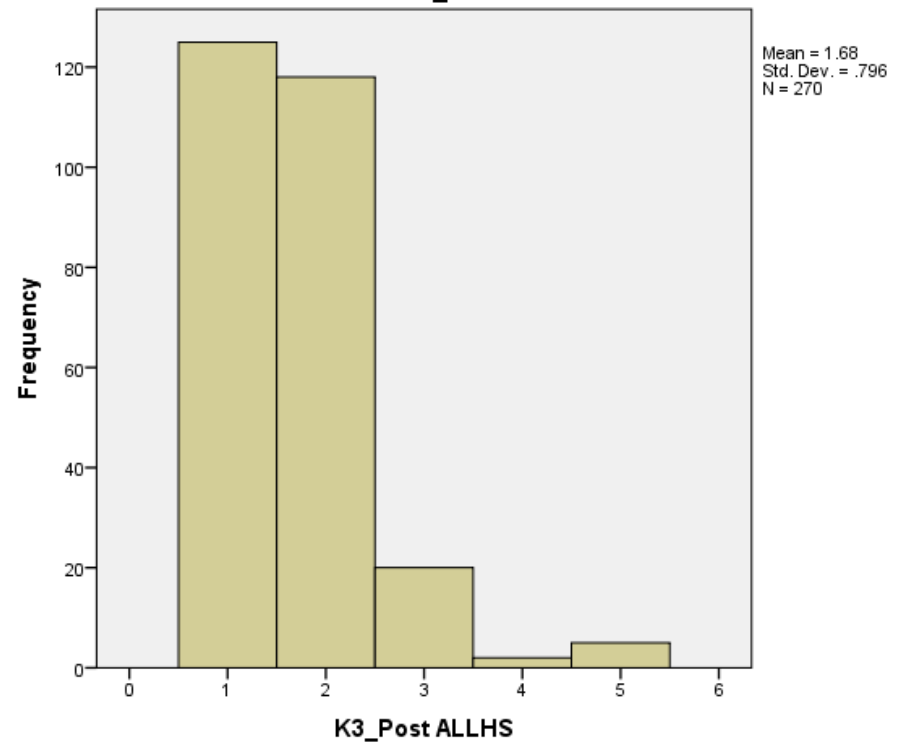
K3. Climate change is affecting the timing of the maple syrup collection season.

1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree

K3_Pre ALLHS



K3_Post ALLHS



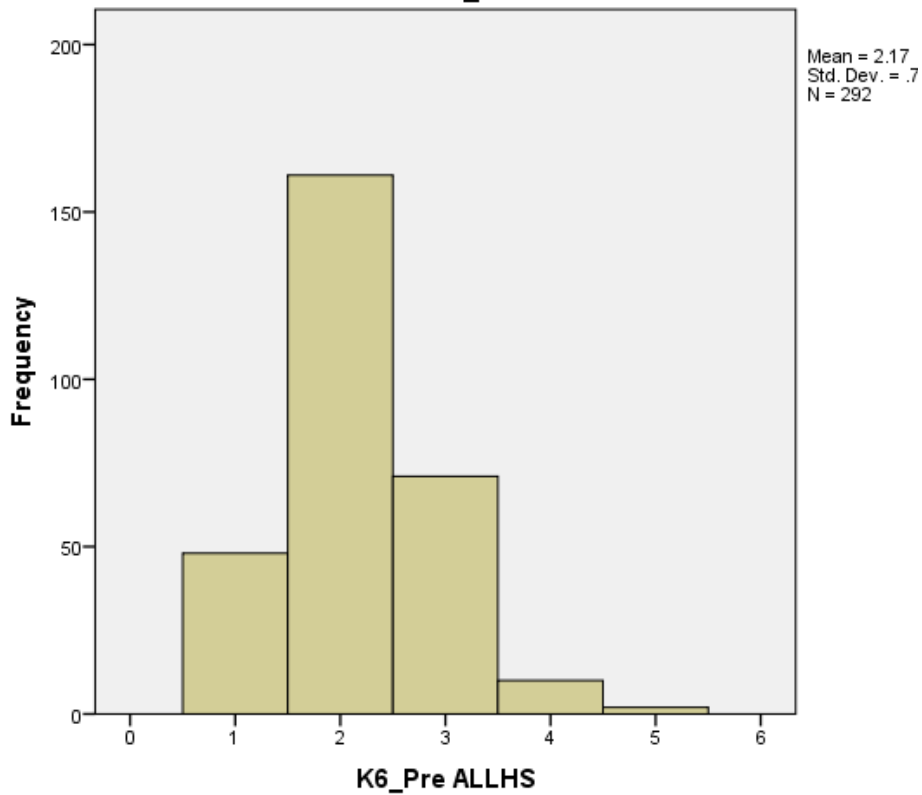
Pre-Test (Before the Program)

Post-Test (After the Program)

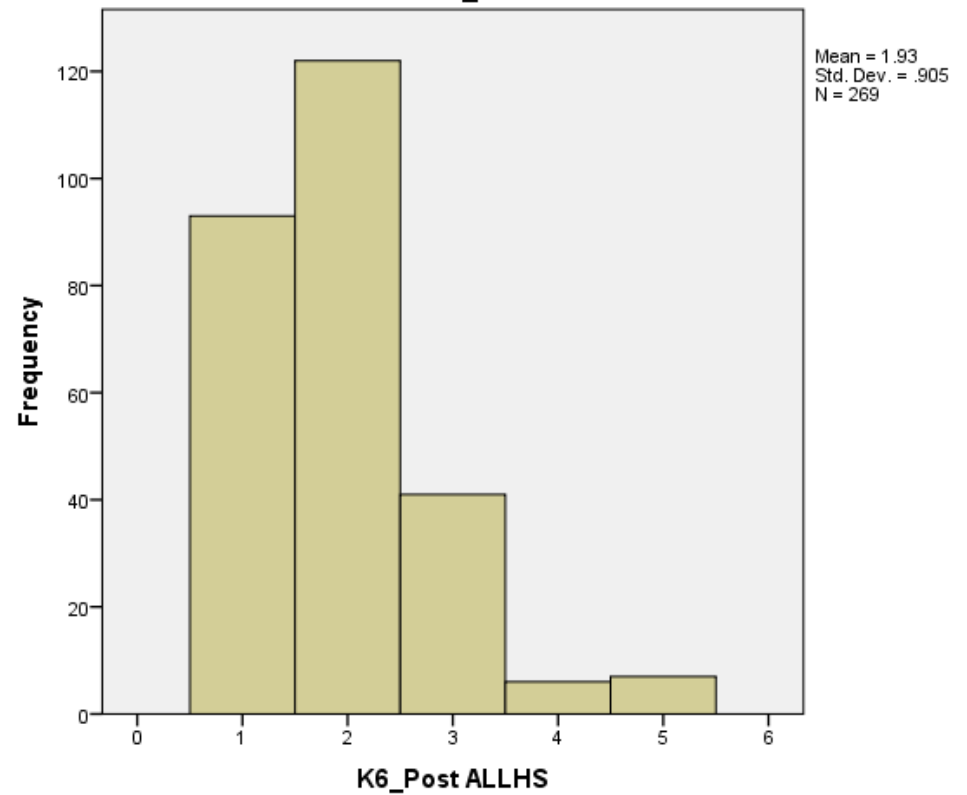
K6. The maple syrup 'value chain' involves producers, distributors, retailers and customers.

1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree

K6_Pre ALLHS



K6_Post ALLHS



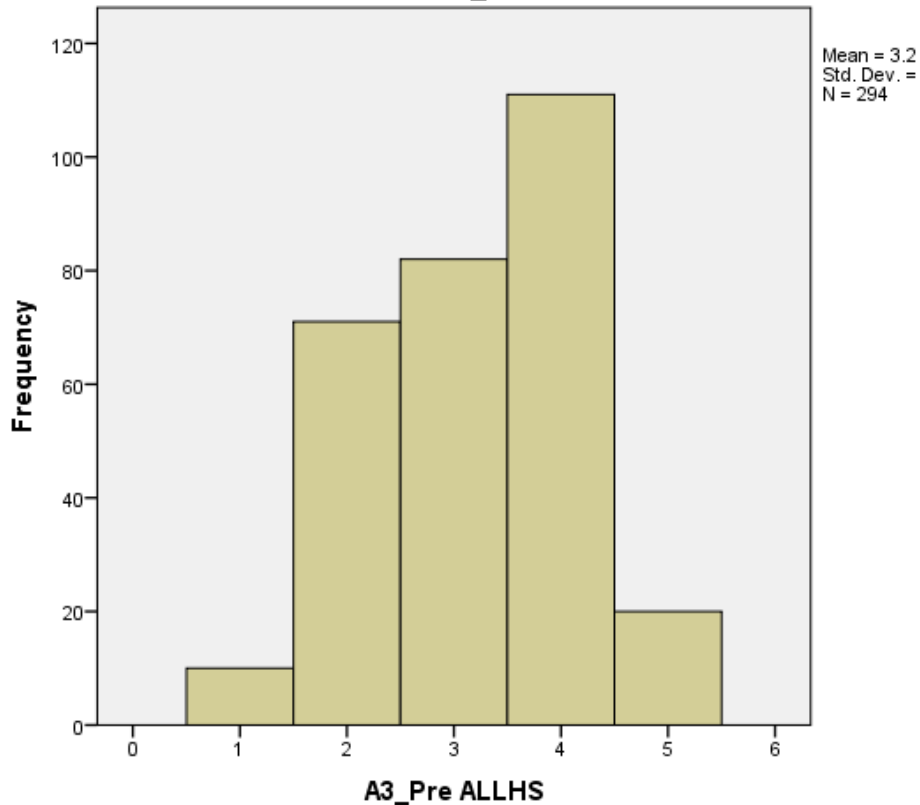
Pre-Test (Before the Program)

Post-Test (After the Program)

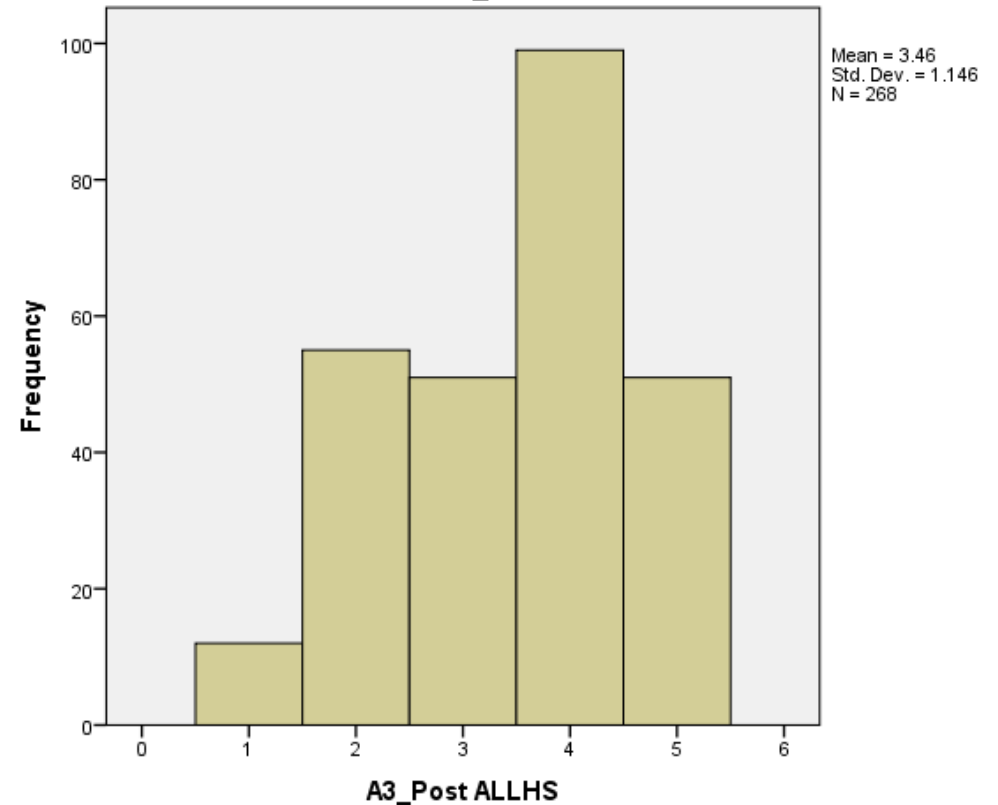
A3. I don't think there is very much I could do to lessen the impacts of climate change.

1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree

A3_Pre ALLHS



A3_Post ALLHS



Pre-Test (Before the Program)

Post-Test (After the Program)

Results

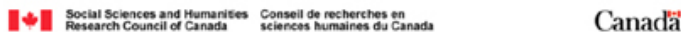
- Results from the 517 surveys indicate:
 - Positive changes in knowledge of climate change & maple syrup
 - Positive changes in students attitudes regarding their ability to lessen their impact on climate change.
- Although we didn't see a statistically significant change in behaviour towards climate change, the literature indicates this is the hardest attribute to change.
- Overall, feedback on the program from both students and teachers has been extremely positive.

Next Steps

- Researchers from Wilfrid Laurier University (led by Dr. Brenda Murphy) will be conducting follow-up interviews with teachers and educators involved in the program in Fall 2014.
 - The goal is to collect high-level information to further refine and develop the program.
- The larger goal is to make the program self-supporting and delivered as regular programming at Mountsberg, as well as being transferrable for use by other outdoor education organizations.

Acknowledgements

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- We would also like to thank Dr. Brenda Murphy, Dr. Jennifer Baltzer, Dr. David Morris, Dr. Laura Brown and Mr. Bryce Gunson from WLU and Brenna Bartley & all the staff at the Mountsberg conservation area.



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We develop talent
We build knowledge

Nous cultivons le talent
Nous bâtissons le savoir

