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Health Sciences 3290B: Environmental Health Promotion

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Community Engagement Learning (CEL) Project Report

City of London Water Engineering – Teacher’s Toolkit (Older)

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Health Sciences 3290B: Environmental Health Promotion

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Introduction

The report aims to analyze and critically evaluate the performance of our group in a Community Engaged Learning Project (CELP). To best evaluate the CELP, it is essential to look at three components that are the foundation of the report: the partner organization, the problem at hand, and a reflection on the key takeaways.

Partner Organization

The partner organization was the City of London Water Engineering Department, alongside the community partner supervisor, Jessica Favalaro. The City of London has dedicated itself to providing safe drinking water for everyone, abiding by the regulations of the Water System and continually improving the Water System. These objectives influenced the focus of our project to include: water conservation, distribution, sanitation, treatment, and the water cycle.

Environmental Health Problem

The environmental health problem consists of a lack of educational engagement and interaction in the knowledge of water treatment, distribution, conservation, and the water cycle. The Water Engineering Department provided us with current teacher resources on water units. Upon further research and analysis, we found these resources to be outdated and not sufficiently engaging to the Grade 12 students they were meant to be catered towards. Due to the importance of water and understanding the consequences of overconsumption and waste, it is essential that the presentation method is updated and the students retain the information. Moreover, it would allow the students to develop a greater appreciation for the efforts of the City of London.

A key environmental problem that is central to our project is the lack of knowledge on water quality and sustainable usage. The best way to overcome these problems is by educating children from a young age and helping them understand the importance of sustainable water use.

Curry (2010) noted that “15 year-olds reported that most of their learning about the environment occurred in school.” Teaching children material that is relevant to the real world allows them to put water knowledge into perspective and foster appreciation for water, a resource that is not immune to a shortage. Humans have limited cognitive resources to devote to one task; therefore, attention in class is often limited. Hakala (2015) states that the best way to capture students’ attention is by making it more difficult for them to pay attention to anything else. Furthermore, Hakala (2015) expresses that this method produces class time go faster and helps students remember more. Therefore, the group has decided to make videos that are short and captivating, and an infographic that is easy to understand and assess in a short period. Furthermore, there was no information informing the cohort of water conservation. Pomeroy (2017) indicated that although Canada is not at risk of a water shortage in the near future, Canada has recently experienced extremely dry conditions and forest fires in British Columbia, as well as an unrivalled drought in the Prairies last year. This illustrates that Canada is susceptible to water shortages and thus, all efforts should be made to conserve water when possible. Therefore, we created a short video to convey this message. Overall, our group aims to communicate the information to students in a more impactful manner by changing the teaching method to incorporate more interactive forms of media.

Planning and Deliverables

Our group decided to apply the logic model when planning the deliverables with Jessica. A logic model involves determining the desired impact and working backwards to develop outcomes, outputs, activities and inputs needed to make the impact. The inputs and resources required for the project included funding, time, filming equipment, video editing software and information on water units to be provided by the City of London’s Water Department. The

purpose of our project, and thus the desired impact, was to make the information relatable and interesting to grade twelve students. To best achieve this goal, our group aimed to use deliverables that would be most impactful for the grade twelve audience; this resulted in our group interviewing grade twelve students for feedback. Based on the feedback we received, we created a list of criteria for our deliverables. The list included information that was: presented in an aesthetically pleasing way, easy to follow, concise, and presented in an enthusiastic tone.

These findings led our group to decide upon the following four activities (deliverables):

- 1) An infographic describing the water cycle: attention grabbing layout thus easy to understand, also easy to be incorporated into teachers' lesson plans (refer to Appendix A).
- 2) A video illustrating methods of water conservation and daily use of water: makes students aware of their daily water consumption, and is relatable as it tracks a girl's daily consumption (refer to Appendix B).
- 3) An animation describing water treatment and distribution: illustrates how water goes through the treatment process in the City of London (refer to Appendix C).
- 4) A fill-in-the blank worksheet covering all the information presented: allows students to follow along with the videos and also gives the students notes which they can utilize at their leisure (refer to Appendix D).

The targeted audience was Grade 12 students, however, the deliverables must also be easily comprehensible and deployable to the teachers. The expected output for the project would be the number of schools using these deliverables to educate Grade 12 students on the water units, while the expected outcomes are (1) an increase in water treatment process in London, and (2) an increased appreciation for water conservation. The logic model also allows the summative

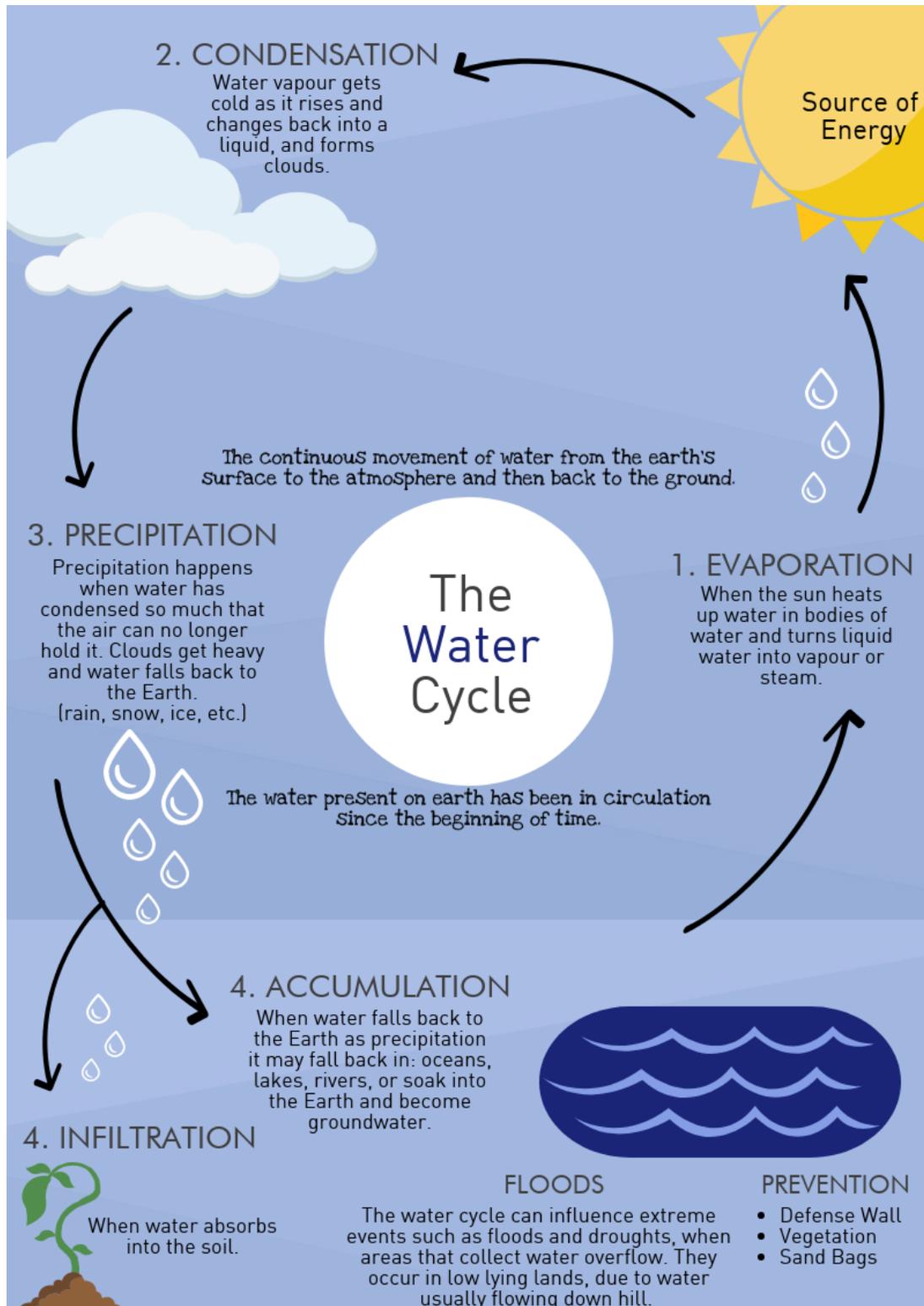
evaluation to be conducted to assess both the fidelity and effectiveness of the project; therefore continuous efforts of improvements can be made accordingly.

References

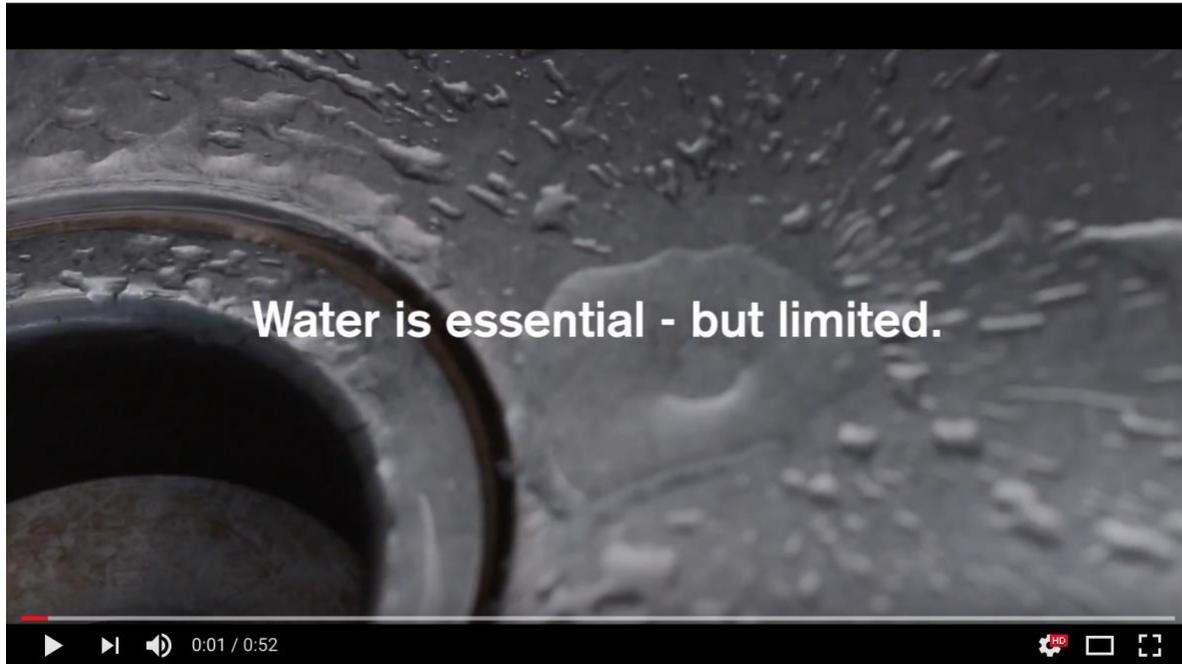
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Appendices

Appendix A: Infographic: The Water Cycle



Appendix B: City of London – Water Conservation Video



YouTube link: <https://www.youtube.com/watch?v=7Y5BRIGNSjE>

Appendix C: City of London – Water Treatment and Distribution Animation

WATER TREATMENT PROCESS IN LONDON



YouTube link <https://www.youtube.com/watch?v=ZYNksNREFZk>

Appendix D: Fill-in-the blank worksheet

Water Treatment and Distribution – Fill-in-the-Blanks

Untreated water goes through _____ screens to get to the treatment facility.

_____ is added to the water to kill micro-organisms that may cause harm to humans.

Flash mixing's purpose is to get out any _____ particles by causing them to clump together to make larger particles called _____, which is then removed from the water.

During the _____ process, water speed is slowed allowing larger particles to sink to the bottom and be removed.

Filtration is used to make sure anything left in the water that is not _____ is removed.

_____ is added to the water in a small quantity to help prevent cavities and make teeth look great!

The perfect drinking water is then stored in a _____ _____ to wait to be discharged and distributed to the citizens of London.

Water Conservation – Fill-in-the-Blanks

Roughly _____ litres of water each day is lost to leaking taps.

It takes _____ litres of water to flush a toilet once.

_____ litres of water to wash a car.

Water is essential – but limited.

**** Statistics are estimated based on National Geographic's information. ****

- National Geographic. (2010, August 05). Water Conservation Tips. Retrieved March 20, 2018, from <https://www.nationalgeographic.com/environment/freshwater/water-conservation-tips/>

Water Cycle Facts

- The water present on Earth has been circulating since the beginning of time, this is because it is recycled through the water cycle.
- Global water resides mainly in oceans rather than freshwater.
- Freshwater sources include (from most to least): glaciers and ice caps, ground water, and surface/other surface freshwater.
- Water Cycle: The continuous movement of water from the Earth's surface to the atmosphere and then back to the ground.
- The water cycle has 4 steps:
 - 1. Evaporation: sun heats up bodies of water and turns it into vapor/steam.
 - 2. Condensation: water vapor gets cold as it rises and changes back into a liquid.
 - 3. Precipitation: happens when water has condensed so much that the air cannot hold it anymore
 - Clouds get heavy and water falls back to Earth.
 - 4. Accumulation: water falls back to the Earth as precipitation and may fall back in: oceans, lakes, rivers, or it can soak into the Earth and become part of the ground water
- The water cycle can influence extreme events (floods and droughts)
 - Floods typically occur in low lying lands, due to water usually flowing downhill.
 - Prevention of flooding: defense wall, vegetation, and sand bags.
- City of London. (2010, January 31). *Wading into the Water Cycle* [PowerPoint Presentation]. Retrieved from <http://www.london.ca/residents/Water/Teacher-Resources/Pages/Water.aspx>

Answer Sheet

Water Treatment and Distribution – Fill-in-the-Blanks

- Intake
- chlorine
- sand-like
- floc
- sedimentation
- drinkable
- fluoride
- clear well

Water Conservation – Fill-in-the-Blanks

- 38
- 13
- 568