“Enagaging Young Adults With Water Conservation”

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Introduction - Laylah

Learning about water conservation and the ways that we use it everyday is very important. In this project we are trying to figure out why young adults don't know much about water conservation and ways to get young adults engaged in water conservation. We are doing this because we feel as if this is something that it's important to know about especially since water is something we use in our everyday lives. With this knowledge it'll help them save water, understand its use for not only humans but the environment and animals also.

For our research we have to figure out the unknown which are the stakeholders. We have to figure out why people lack understanding of the use of water and how we can find better ways to get them more engaged and interested in this.

Some relevant terms and factors include: Water conservation, engagement, environment and education. These 4 key terms summarize the purpose of our research to continue to derive better ways to engage and inform Young Adults With Water Education. When talking about Water Conservation our goal is to get the audience to grasp the fundamentals of water sustainability practices, the methods used and the benefits behind them. This gives our audience a broader sense of understanding stakeholders rather than just stating that it's important. When talking about engagement, our goal is to provide our audience with a meticulously procured section of the most engaging and informative water management organizations. When speaking about the environment

Research Question & Hypothesis - Isaiah

Our research question for this project is: **"**How can we get young adults engaged in water conservation?**"** This question is important to our group because water is a finite resource, and the choices we make today directly influence the sustainability of our environment in the future. As young people ourselves, we recognize that our generation will inherit the consequences of current water use, pollution, and climate-related changes in water availability. Because of this, understanding what motivates young adults and what barriers prevent them from participating in conservation behaviors is both meaningful and personally relevant.

We are also curious about this topic because water conservation is often discussed from a global or political perspective, yet everyday people, especially young adults, play a crucial role in shaping long-term environmental outcomes. Young adults are at a stage of life where habits are still forming, identities are still being shaped, and environmental awareness can significantly influence future decision-making. Exploring what inspires or discourages young adults from taking action allows us to better understand how to create educational programs, outreach strategies, and community initiatives that are actually effective.

Overall, this research question matters to us not only as students, but as individuals who want to contribute to solutions rather than add to the problem. We believe that engaging young adults in water conservation is essential for protecting natural resources, supporting environmental justice, and promoting sustainable behavior that can benefit both present and future generations.

Review Paper Analysis

“Do Health Risk Perceptions Motivate Water and Health-Related Behavior?” A Systematic Literature Review.

The article presents a complex examination of the relationship between health-related risk perceptions and human behavior, particularly in the context of water and sanitation. A central point in the review is that what individuals believe about health risks, such as contamination, disease exposure, or water insecurity, significantly shapes their choices and actions. The authors emphasize that health risk perceptions are not only emotional or cognitive responses, but also important components within behavior-change theories. The review underscores the increasing global relevance of these perceptions due to ongoing water challenges, infectious diseases, and shifting environmental conditions.

The paper discusses the wide range of issues examined across the 187 studies included in the systematic review. These issues include concerns about drinking water safety, sanitation practices, hygiene behaviors, and exposure to waterborne or vector-borne diseases. Many studies show that perceived dangers such as arsenic, diarrheal disease, or mosquito-related illnesses, shape how communities select water sources, whether they treat their water, or how consistently they practice protective behaviors like handwashing. Yet the report extends beyond individual concerns, highlighting broader social and environmental contexts that influence how people assess water-related risk.

The “Methods” section outlines a structured and transparent approach, following PRISMA guidelines. The authors conducted extensive database searches, applied clear exclusion and inclusion criteria, and extracted detailed information regarding each publication’s characteristics, context, methodology, and key findings. This systematic strategy allowed them to synthesize twenty years of global research, providing a robust overview of how risk perception has been studied across rural villages, urban centers, coastal zones, disaster-prone regions, and marginalized communities.

A notable strength of the article is the categorization of research into major themes such as drinking water, sanitation, hygiene, waste management, disease risk, mental health, and preventative measures. This thematic diversity offers a broad yet organized framework for analyzing how different forms of water insecurity influence human behavior. The wide geographic coverage, from Africa and Asia to Europe and the Americas, adds depth and highlights how cultural context, income level, and environmental exposure shape risk perception differently across populations.

The narrative also explores critical links between health risk perceptions and behavioral outcomes. The review provides strong evidence that perceptions significantly influence key behaviors, such as choosing safer drinking water sources, treating household water, seeking healthcare, using mosquito protection, or adopting sanitation improvements. It further demonstrates that variations in perception are shaped by geography, socioeconomic status, gender, and local climate events, from floods and droughts to disease outbreaks. The authors emphasize that cultural beliefs, local knowledge systems, and past experiences deeply affect how people interpret and respond to risk.

In conclusion, the article argues that understanding health-related risk perception is essential for improving water, sanitation, hygiene, and overall public health efforts. The authors contend that effective WASH governance must integrate community beliefs, culturally sensitive education, and ongoing engagement to shift behaviors sustainably. They highlight the importance of strengthening policy, raising awareness, and designing early interventions that reflect how communities interpret risk. Ultimately, the review calls for continued research that captures changes in risk perception over time and uses these insights to inform behavior-change strategies, particularly in the face of emerging global health challenges.

“Perceptions of Drinking Water Quality—A Review of the Literature and Surveys Covering the Topic”

The article outlines a multifaceted relationship between public perceptions of drinking water quality and the behavioral responses that follow. A central theme in this review is that people’s beliefs—rather than objective measures of water quality—play a decisive role in how they engage with household water sources. The report underscores that perceptions rooted in sensory attributes, such as taste, odor, color, and clarity, often override scientific assessments of safety. This disconnect highlights a persistent challenge: despite widespread compliance with safety standards in public water systems across the United States, many communities continue to distrust their tap water and rely on more expensive alternatives.

The paper examines the broader issues that shape distrust in drinking water, situating these perceptions within social, environmental, and economic contexts. It discusses how bottled water consumption, water filters, and avoidance behaviors commonly emerge when residents believe their tap water is unsafe. These reactions disproportionately affect minority and low-income households, who are more likely to perceive their water quality as poor despite living in areas with compliant systems. The report emphasizes that distrust extends beyond sensory concerns—it is influenced by past contamination events, community narratives, media coverage, and the level of communication residents receive from their water utilities. Yet the

review expands beyond these specific triggers, noting that systemic inequities and environmental stressors contribute significantly to how people interpret the safety of their water.

The “Literature Review” portion provides a structured synthesis of domestic and international research, drawing on studies from the United States, Canada, Australia, Europe, and Iran. This section highlights patterns in how sensory cues shape perception, how demographic characteristics influence trust, and how contextual factors—such as proximity to farms, industrial activity, or coastal environments—play a role. The article relies on surveys, risk perception studies, and institutional reports, demonstrating a deliberate methodological approach to capturing a wide range of sources analyzing household water attitudes.

A notable strength of the review is its categorization of multiple factors shaping water perceptions, such as socioeconomic status, management of water utilities, sensory characteristics, trust in governing agencies, and communication practices. This diverse analytical structure allows for a detailed exploration of how the same water system can be judged differently by residents based on income, race, education, or personal experience. The collection of survey findings—from statewide assessments to neighborhood-level studies—serves as a comprehensive foundation for understanding how perceptions vary geographically and demographically.

The dialogue within the article evaluates critical themes related to trust, safety perceptions, and behavioral outcomes. Research explored in the review consistently shows that individuals with higher trust in their water providers are more likely to rate their tap water favorably, whereas those who recall receiving information from water authorities tend to express greater satisfaction with water quality. Conversely, reliance on bottled water correlates with heightened risk perceptions and lower trust in public water systems. The report also highlights that perceptions of risk do not reliably align with actual water quality data; instead, they reflect cultural beliefs, social influences, and confidence in regulatory agencies. Studies comparing public and private management systems demonstrate that management structure can shape trust, with mixed patterns emerging across countries.

In conclusion, the article advocates for the increased inclusion of water-quality perception measures in national surveys, emphasizing the importance of understanding the gap between actual water quality and public perception. The author argues that because negative perceptions drive costly and environmentally harmful behaviors—such as dependence on bottled water—policymakers need better tools to track mistrust, especially in vulnerable communities. The report recommends that future surveys incorporate questions about sensory characteristics, communication from utilities, trust in water authorities, and frequency of using alternative water sources. Ultimately, the article asserts that a deeper understanding of how people perceive their drinking water is essential for improving public communication strategies, strengthening trust, and addressing equity issues that influence household water choices.

Research Paper Analysis

"Water Quality in Sustainable Water Management" - Laylah

The article presents a detailed examination of the growing challenges surrounding water quality within India's sustainable water management efforts. It highlights a complex relationship between population pressures, industrial expansion, agricultural intensification, and the increasing contamination of surface and groundwater resources. A significant point raised in the review is that water quality degradation now contributes to water scarcity just as much as physical shortages, placing considerable strain on both human communities and natural ecosystems. The authors emphasize that nearly 70% of India's freshwater sources are impaired by biological, organic, and inorganic pollutants, making water quality a core concern within sustainability frameworks.

The paper discusses the multiple pollution pathways—both point and diffuse—that undermine India's water security. Industrial effluents, untreated domestic sewage, and agricultural runoff emerge as major contributors to polluted rivers, contaminated aquifers, and unsafe drinking water. The text outlines how groundwater contamination is often detected only after substantial damage has already occurred, reinforcing the severity of pollution in urban and rural settings alike. The review goes beyond identifying pollution sources, underscoring the deeper problem of reliance on untreated groundwater in rural regions, where naturally occurring contaminants like fluoride, arsenic, and dissolved salts pose widespread health risks.

The article's methodological strength lies in its structured discussion of contaminants and treatment techniques, particularly focusing on fluoride, one of India's most severe groundwater pollutants. It details current defluoridation methods—including the Nalgonda technique and activated alumina—and outlines their limitations, such as toxic sludge production, hazardous chemical handling, and inconsistent effectiveness depending on local water chemistry. This section also highlights the significant gap between existing technologies and the need for solutions that are safe, affordable, and applicable across diverse geochemical conditions.

A unique strength of the review is its introduction of a newly developed defluoridation approach created at the Indian Institute of Science (IISc), using magnesium oxide. This method is presented as an innovative and environmentally conscious alternative, leveraging precipitation, sedimentation, and filtration to remove fluoride efficiently. The article outlines laboratory findings showing high fluoride-retention rates and effectiveness across varying concentrations of dissolved salts and bicarbonates. The development of a domestic defluoridation device further demonstrates the method's practical potential, offering a low-cost, household-scale solution for affected communities.

The discussion broadens to explore chemical mechanisms, practical constraints, and implementation challenges associated with fluoride removal. The authors explain how magnesium oxide interacts with fluoride ions to form insoluble compounds, while also

addressing the need to manage high pH levels and interference from bicarbonates. The narrative underscores the importance of tailoring treatment approaches to local water composition and ensuring safe waste disposal. The inclusion of comparative chemical data, efficiency charts, and design details for the defluoridation unit strengthens the article's technical depth and its relevance to both scientific and rural development audiences.

In conclusion, the article advocates for integrating water quality management into broader sustainable water strategies. It stresses that contamination from both human activities and natural geochemical conditions must be addressed to ensure safe, adequate water supplies. The IISc method is presented as a promising advancement—one that avoids toxic byproducts, eliminates the need for chemical recharge processes, and enables environmentally safe reuse of fluoride-bearing waste materials. Ultimately, the authors highlight that improving water quality is essential for protecting public health, ensuring resource availability, and supporting long-term sustainability goals in India's rapidly evolving water landscape.

"Indigenous water management" - Laylah

The article presents a nuanced exploration of Indigenous water management in Australia, emphasizing the rising recognition of First Nations knowledge, rights, and authority in contemporary water governance. It highlights that although Indigenous peoples have always maintained deep cultural, spiritual, and ecological relationships with waterways, their voices were historically excluded from national water policy. The authors underscore that only in the past fifteen years have policymakers begun acknowledging Indigenous water rights, despite landmark legal decisions such as Mabo and the Native Title Act predating this shift by over a decade. This evolution marks a significant turning point in how water is valued, governed, and discussed in Australia.

The paper discusses the challenges and aspirations voiced by Aboriginal nations as they work to assert their sovereignty and cultural responsibilities over water. It reflects on the momentum generated at forums such as the annual Riversymposium, where Indigenous leaders have increasingly shaped conversations around cultural flows, water justice, and self-determination. The authors stress that Indigenous communities continue to face systemic barriers, including limited access to water entitlements, uneven inclusion in planning processes, and vulnerability to political shifts that threaten progress. The article goes further, noting that despite these obstacles, Indigenous nations have developed influential declarations, policies, and assessment tools to articulate their rights and guide collaborative management efforts.

The article's contextual foundation is built upon a decade of Indigenous-led initiatives, such as the Echuca Declaration and the National Cultural Flows Research Project. These movements represent structured approaches to defining cultural flows, strengthening governance capacities, and developing new institutional pathways that embed Indigenous values into water planning. The authors highlight how these initiatives rely on extensive

community-based research, partnerships with government agencies, and the leadership of confederations such as MLDRIN and NBAN. Through this structure, the text presents a thoughtful overview of both the political and methodological frameworks shaping Indigenous water management.

A major strength of the paper is its emphasis on nation-building and institutional capacity within Aboriginal communities. The authors show how Indigenous groups are reclaiming authority through collaborative governance models, state-supported programs, and culturally driven methodologies such as the Aboriginal Waterway Assessment Tool. Case studies from the Murray–Darling Basin, northern Australia, and the Fitzroy (Martuwarra) River region demonstrate how First Nations organizations have developed strong political, cultural, and ecological foundations for managing water in their Country. These examples serve as evidence of Indigenous communities not only participating in water governance, but actively shaping it.

The discussion expands to evaluate the broader implications of these developments. The article notes that governmental support—such as appointing Indigenous representatives to major water authorities—signals progress, yet highlights that meaningful participation remains inconsistent. Some states and agencies have advanced partnerships and capacity-building programs, while others have withdrawn key resources or dissolved Indigenous advisory bodies, stalling momentum. The authors illustrate how data control, entitlement inequities, and unstable funding continue to impede Indigenous aspirations. Nonetheless, the growing number of community-led projects, negotiations, and environmental water collaborations reflects a strong and expanding field of Indigenous water governance.

In conclusion, the article emphasizes that Indigenous water management has reached a pivotal moment of visibility and influence. It acknowledges both the achievements and ongoing challenges, expressing optimism for future advancements in policy, research, and practice. By centering Indigenous voices, documenting community initiatives, and calling for sustained governmental commitment, the authors highlight the essential role that First Nations knowledge and leadership play in shaping Australia's environmental future. This special issue, they argue, celebrates these contributions and sets the stage for continued progress in recognizing and implementing Indigenous water rights across the continent.

"Protecting Indigenous Values in Water Management: A challenge to Conventional Environmental Flow Assessments." - Laylah

The article offers an in-depth examination of the longstanding gap between environmental flow assessments and the protection of Indigenous values within Australian water management. A central argument presented by the authors is that although environmental flow practices have been used for nearly two decades, they rarely incorporate Indigenous

relationships to water or their dependence on aquatic species. The review underscores that Indigenous people maintain strong socio-ecological connections to rivers, yet environmental flows are often assumed to serve as adequate surrogates for safeguarding their interests - an assumption the authors challenge. This disconnect highlights the need to broaden environmental flow frameworks so they can address cultural, economic, and relational dimensions of Indigenous water use.

The paper discusses the broader challenges faced by Indigenous communities whose livelihoods and cultural practices rely heavily on river systems. It highlights how conventional environmental assessments prioritize threatened or iconic species valued by scientists and recreational users, while overlooking abundant species that Indigenous harvesters depend on for subsistence. The article points out that this mismatch between ecological priorities and Indigenous needs can produce management decisions that sustain ecosystems at levels inadequate for customary fishing, hunting, or cultural activities. Beyond resource use, the review emphasizes that Indigenous worldviews - and the meaning attributed to waterplaces, ancestral ties, and ceremonial obligations - are rarely considered in flow planning, resulting in a narrow understanding of water's role in Indigenous wellbeing.

The authors take a structured approach in outlining how environmental flow assessments (EFAs) evolved and how they can be modified to better address Indigenous requirements. Drawing from case studies in northern Australia, the article identifies three major challenges for the integration of Indigenous values into EFAs: selecting species that reflect Indigenous priorities, adopting management objectives aligned with Indigenous harvest needs, and incorporating Indigenous worldviews and people-place relationships. The paper also connects these challenges to the Ecological Limits of Hydrologic Alteration (ELOHA) framework, showing how Indigenous perspectives could be incorporated into each stage of flow planning, from determining hydrological baselines to establishing ecological-response standards.

A notable strength of the article is its clear articulation of the economic significance of customary harvests and its focus on the species - such as long-necked turtles, black bream, and various plants - that directly support Indigenous diets and household incomes. The authors differentiate between the conservation focus of traditional EFAs and the socio-economic priorities of Indigenous communities, showing that environmental flows must consider not only ecological persistence but also the abundance needed to maintain high catch rates. The discussion situates these differences within broader national water policies, noting that despite reforms acknowledging Indigenous interests, actual implementation remains minimal, inconsistent, and politically vulnerable.

The article expands its dialogue to explore the cultural, spiritual, and relational dimensions of Indigenous water values. It highlights that Indigenous engagement with rivers involves more than resource extraction - it includes visiting ancestral sites, practicing ceremonies, passing on knowledge, and fulfilling custodial obligations. These aspects, often seen as intangible or beyond the scope of technical water planning, are shown to be deeply linked to flow regimes, water quality, and access to culturally significant sites. The authors demonstrate how qualitative assessments, Indigenous ecological knowledge, and participation

in monitoring programs can enhance EFA processes and bridge epistemological gaps between Indigenous and scientific approaches.

In conclusion, the article argues that environmental flow assessments must evolve if they are to meaningfully protect Indigenous interests in water management. The authors stress that continued reliance on EFAs as ecological tools without socio-cultural components will perpetuate inequities and fail to safeguard Indigenous rights, livelihoods, and cultural connections to water. They call for sustained research, cross-cultural engagement, and institutional commitment to ensure that Indigenous values - both tangible and intangible - are embedded within flow-ecology frameworks. Ultimately, the article positions Indigenous perspectives not as peripheral considerations, but as essential elements in creating inclusive, just, and effective water governance systems.

“Youth Engagement in Water Quality Monitoring: Uncovering Ecosystem Benefits and Challenges” - Isaiah

This project details engaging the youth population in citizen science, particularly students aged 13 to 18 from a Cincinnati neighborhood dealing with environmental justice issues. The study placed these young people directly on the water by having them canoe a 1.5-mile section of Lower Mill Creek, an area historically impacted by pollution, runoff, and urban neglect. While navigating these waterways, students used ArcGIS Field Maps to geotag specific locations and visually rate environmental concerns. They identified issues like heavy debris buildup, possible sewage indicators, and areas that looked ecologically healthy based on visible biodiversity.

In addition to the hands-on fieldwork, the study connected environmental monitoring to spatial data analysis, giving students a real sense of the scientific process. Their collected data allowed researchers to run hotspot analyses, which revealed concentrated debris near areas like a barrier dam and the point where Lower Mill Creek meets the Ohio River. These identified “trouble spots” became more than just abstract data - they were places the youth physically visited and connected with. This tangible link between experience and data helped the students better understand both the problems and the potential ecological benefits of the creek.

By grounding the project in place-based, experiential learning, the study mixed real hands-on STEM work with community partnerships and spatial mapping. It provided actionable environmental information to community leaders and restoration groups, while simultaneously boosting environmental awareness among young people. Overall, the article shows how participatory mapping combined with on-the-water experience can empower youth, bring

visibility to overlooked local issues, and generate community-driven solutions to environmental justice challenges.

“Engaging young people in climate change action: A scoping review of sustainability programs.” - Isaiah

This article examines 48 studies from around the world that explore how young people are drawn into climate change action and sustainability programs. The study’s goal is to identify which strategies actually work to keep youth engaged. The authors highlight eight key engagement factors such as offering leadership roles, providing community support, building personal identity around environmental action, and developing a sense of agency. Programs that give youth a chance to contribute meaningfully - rather than simply receive information - tend to create stronger, longer-lasting involvement.

The article emphasizes that successful programs combine external support systems with internal development. External factors include mentors, school support, peer groups, and community networks, while internal factors include motivation, empowerment, and the ability to think critically about systems and long-term impacts. By weaving these pieces together, the review shows that youth engagement thrives when young people feel both supported and capable of driving real change. These programs tend to move beyond short-term activities and instead focus on building sustained, youth-led participation.

Ultimately, the review concludes that the most effective initiatives are long-term, context-specific, and built around youth leadership. Programs that adapt to local cultural, social, and environmental conditions tend to be more meaningful and sustainable. Since these insights come from dozens of diverse studies, the article offers a broad and evidence-based framework for understanding youth engagement globally. This allows educators, policymakers, and researchers to design stronger programs that connect youth identity, empowerment, and community partnership to effective climate action.

“Engaging Rural High School Students in a watershed literacy program.” - Isaiah

This article describes a watershed literacy program built around the idea of “place-based” learning. Rather than learning about water systems only through textbooks, students interacted directly with their local watershed, grounding their learning in the real environment around them. The researchers argue that local watersheds are ideal for blending place-based learning with problem-based learning, allowing students to investigate real issues like pollution, erosion, and water management challenges in their own communities (Young et al., 2025).

The study highlights research from groups like the Rural School and Community Trust, which shows that this approach significantly increases civic knowledge and competence in youth. When students are given opportunities to explore, test, and observe in real outdoor settings, they demonstrate higher engagement and better retention. The hands-on nature of the watershed program helps students connect scientific concepts to meaningful local issues, fostering a deeper desire to learn and a stronger sense of stewardship.

Overall, the article argues that bringing rural students into real watershed environments transforms water literacy from something theoretical into something lived. Because rural students often have direct ties to land and water, place-based programs deepen both academic learning and personal investment. This makes the article highly useful for research that looks at how hands-on, environment-centered methods improve youth engagement in sustainability.

Science Communication Articles

“Understanding the role of youth in Indigenous territorial governance.” - Isaiah

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“Youth for a water-secure world” - Isaiah

This article emphasizes the urgent importance of involving younger generations in global water conservation efforts. It argues that youth perspectives are essential for shaping future water security and presents several initiatives designed to build youth capacity and leadership. These include programs like the Transformative Futures for Water Security initiative, the Global Youth Movement for Water, and multiple youth-led organizations such as the Water Youth Network and the World Youth Parliament for Water. Together, these initiatives aim to strengthen awareness, advocacy, and technical knowledge among young people worldwide.

The article identifies youth education and engagement as “building blocks” for creating a water-secure future. It argues that empowering youth today will shape the sustainability and resilience of water systems tomorrow. By spotlighting successful programs, the article shows how youth can become innovators, advocates, and leaders in water governance. However, it also points out the major milestones that still need to be achieved, such as increasing accessibility, expanding training, and building platforms that amplify youth voices.

While the article offers numerous resources and examples, it also tends to focus more on the urgency of youth engagement rather than outlining the foundational steps needed to spark youth interest in the first place. Still, it clearly reinforces the idea that youth energy and creativity are central to global water sustainability. This makes it especially useful for research that focuses on the importance of raising awareness, building skills, and ensuring long-term involvement of youth in water conservation.

Science Communication Article Analysis

1. Article information
    a. Sarigumba, M. P., Soriano, M., Robson, J. P., Quiviquivi, I., & Cabrera, O. L. (2023). *Understanding the role of youth in Indigenous territorial governance*. Frontiers in Environmental Science, 11, Article 1200434.
2. Introduction to the article
    a. The purpose of this article is to explore how Indigenous youth participate in territorial governance and how their roles, perspectives, and contributions shape the future of Indigenous-controlled lands. The authors examine the Indigenous Territory of Lomerío (Bolivia) and analyze how young people view governance structures, how they participate (or are limited in participating), and what strategies can enhance youth involvement.
    b. The article presents information about Indigenous youth perspectives, local governance systems, such as community assemblies and elected caciques, socio-cultural norms, land use practices, and engagement challenges such as migration, limited representation, and lack of confidence. It also outlines a 5-year collaborative research project involving workshops, focus groups, interviews, and a youth gathering that generated empirical data on youth engagement.
3. Analysis of the information.
    a. Audience: This article is intended for scholars, practitioners, policymakers, Indigenous leaders, and organizations working in environmental governance, youth engagement, sustainability, and Indigenous studies. It is an *educational and informative research* article
    b. Content: The article begins by emphasizing the global significance of Indigenous territories, which hold high biodiversity and cultural value. It outlines that although

Indigenous communities play a major role in conservation and climate solutions, governance structures often underrepresent youth. The authors describe how historical, socio-economic, and cultural factors restrict youth involvement, especially in decision-making spaces traditionally dominated by older men. They frame youth engagement as essential for maintaining long-term environmental stewardship and territorial sovereignty. Next, the article details the 5-year collaborative research project conducted in Lomerío. Tools such as workshops, focus groups, and interviews were used to understand how youth perceive governance and their own roles within it. Youth explained their connections to the land through farming, ranching, domestic chores, and communal work (such as Minga). They also expressed concerns about environmental change—declining water, reduced fish diversity, and forest degradation—showing that youth are deeply aware of ecological challenges. The findings reveal that youth feel welcomed in assemblies but often remain quiet due to nervousness, lack of experience, or shyness. They report barriers including poor communication from leaders, lack of transportation, inconsistent organization, and expectations from elders. The charts on pages 8–10 show youth rating their participation in governance as generally low to moderate. Despite this, most expressed a desire for more involvement, clearer roles, and greater representation—such as having a youth council or official youth representatives in CICOL. Finally, the article analyzes governance quality, showing that both youth and leaders believe decision-making is only moderately inclusive and that coordination among territorial institutions needs improvement. The authors conclude that while Lomerío youth have strong ties to their territory, more structural support, training, and empowerment are needed to transform them from labor contributors into decision-makers. Broader lessons suggest that Indigenous communities must integrate youth more intentionally by addressing socio-cultural barriers, providing leadership opportunities, and embedding youth voices in institutional structures.

c. Bias: The article is grounded in empirical research and shows no signs of opinion-based bias.

4. Relevance to your question

Engagement increases when youth feel included and valued, knowledge, or lack of communication reduce participation, youth need training, confidence-building, and opportunities to lead, and community-based approaches work best.

Proposed Experiment (Together)

Our created experiment is that if we hosted bi-weekly events in the goshen lounge where students would come and listen to a discuss following a handout over water conservation and the importance of engagement and which organization would be right for them that over time there would be a consistent audience thereby allowing us to know how effective or ineffective our efforts were.

1) independent variables

Attendance at bi-weekly water-conservation events held in the Goshen Lounge.

and 2) dependent variables,

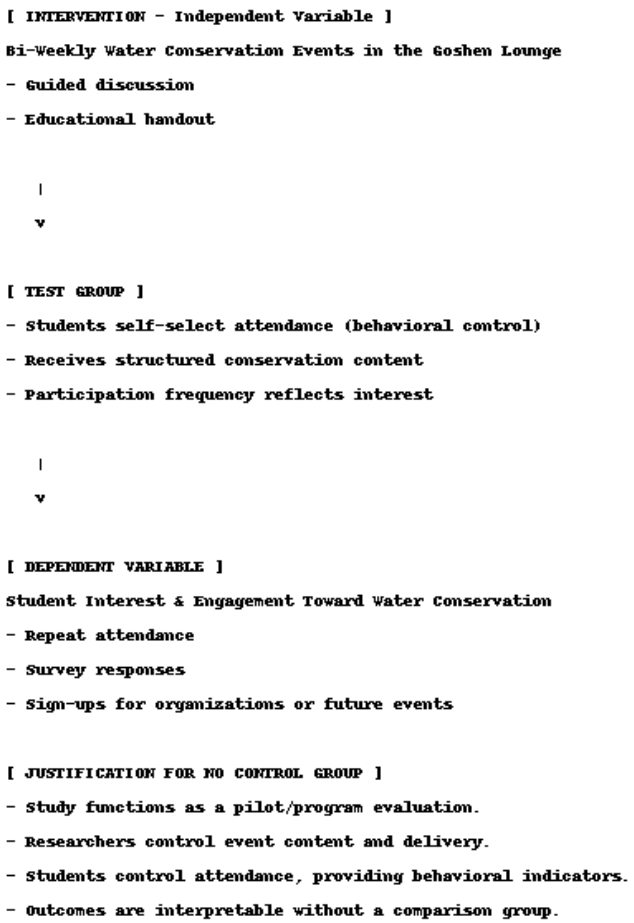
Student interest in water conservation and engagement with local organizations.

3) control (if not needed you have to justify)

“A traditional control group is not necessary in this study because the purpose of the experiment is a program evaluation rather than a causal determination. The researchers already control the content, environment, and delivery of the intervention, while the participants’ attendance naturally reflects their interest. Since the variables measured are direct behavioral indicators (attendance, participation, engagement), the researchers can gauge the effectiveness of the intervention without requiring a no-treatment comparison group.”

4) construct at least one figure for the proposed results of data that supports your proposed hypothesis/research question.

FIGURE 3. Experimental Structure Without a Control Group



6. Summary and Reflections

In our study exploring effective strategies to increase young adult engagement in water conservation, we aimed to learn more about the different factors influencing how young people respond to environmental issues, educational programs, and community-based initiatives. Specifically, we sought to understand which types of outreach—such as social media campaigns, hands-on activities, peer-led programs, or informational workshops—were most successful in motivating behavioral change. Framed within the context of growing concerns about water scarcity and sustainability, we centered our research question on: *What methods best encourage young adults to participate in water conservation efforts?* Our hypothesis suggests that engagement is highest when young adults are provided with relatable information, practical tools, and opportunities for meaningful involvement.

Drawing from diverse sources, we examined articles discussing youth participation in environmental governance, barriers to young adult engagement, and the effectiveness of various educational strategies in fostering pro-environmental behaviors. We explored how community-based programs empower youth, how digital media influences knowledge and motivation, and how real-world water challenges—such as pollution, scarcity, and climate impacts—shape young adults' willingness to act. Additionally, research on Indigenous youth engagement and sustainability leadership provided insight into how cultural context, identity, and lived experiences influence environmental responsibility.

Our proposed research design underscores the need to carefully consider variables such as age, prior environmental knowledge, communication style, and accessibility of engagement opportunities. Incorporating a comparison group of young adults who do not receive targeted outreach helps strengthen our study's reliability in assessing which strategies are most effective. The strength of this research lies in its potential to expand our understanding of how to structure educational initiatives, community programs, and communication platforms that meaningfully connect with young adults and foster long-term conservation habits.

Summary

In summary, our project seeks to make meaningful contributions to the discussion of youth involvement in water sustainability. Through continued research, surveys, and engagement-based experimentation, we hope to gain deeper insight into the approaches that most effectively inspire young adults to conserve water. These findings could guide the development of educational tools, outreach models, and community practices that strengthen environmental stewardship and support long-term water conservation efforts.

Reflection

a. What was the most interesting or surprising thing you learned during this research project?

The most interesting thing we've learned is the amount of resources that are out there already to promote and strengthen the connection that youth and young adults have towards water education and the environment.

b. How did this project change – if at all! – your idea of science and how scientists address research questions?

When we thought of science it was mainly that of physical experimentation or the analysis of something you could see. However, after now having thoroughly reviewed articles relating to our research question we have found that science involves not just the analysis of what the eye can see but also the study of complex social relationships

c. Do you think it is important for the public to understand these science processes?

We believe it's important because it helps society advance in their ability to utilize resources efficiently which is a stark characteristic of the growth of a particular species.

d. What skills did you learn during this project that will help you develop research for future questions?

We have learned how to search for academic articles, search for the necessary information, analyze the information and give a description by reading the documents thoroughly and developing our scientific reading and comprehension skills as a direct result to formulate detailed summaries.

e. Is there anything else you wonder about now that you've completed this project?

What would the results be from a society in which everyone was educated and informed on water conservation and management methods. Is it truly feasible in the present days in which we are living?

7. Reference Page

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