

## **Campus Sustainability and Information Literacy for First Year Students: Preserving the University's Environment for the Future**

**Raymond Pun**

**Jessica Bustos**

**Elizabeth-Agenes Gaw**

**Alfredo Lopez**

**Karla Moreno**

**Edwin Rivas and**

**Xayaphone Salinthone**

California State University, Fresno

USA



Copyright © 2018 by Raymond Pun, Jessica Bustos, Elizabeth-Agenes Gaw, Alfredo Lopez, Karla Moreno, Edwin Rivas, and Xayaphone Salinthone. This work is made available under the terms of the Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0>

---

### **Abstract:**

*What are universities doing today to preserve their environments for the future? How can the academic curriculum support campus sustainability efforts? How can librarians integrate information literacy in campus/STEM sustainability research? At Fresno State in California, incoming first year STEM students are part of a special research class designed to teach basic scientific research skills focusing on sustainability efforts. In addition, this research program is designed to recruit and retain first year STEM majors from women and underrepresented groups. This paper covers the academic librarian's and six student teaching assistant's experiences and examples of supporting campus sustainability research that utilizes information literacy skills. For the past three years, the academic librarian has been embedded in planning campus sustainability programs and research to support this effort. The paper provides a brief overview of the research questions and problems that students encountered from the levels of air pollution on campus to biodiversity in the campus gardens to food waste management. The paper will consider these questions, instruments, and the results to design their own campus/school sustainability program that integrates information literacy and research skills for their students and classes. The paper also shares the students' perspectives*

*and feedback on their experiences in learning and researching sustainability as a student and as an instructional student assistant at Fresno State.*

---

## **INTRODUCTION: CSU STEM BOND**

Fresno State is part of the California State University (CSU) system, and currently has 25,000 students enrolled in this university. The BOND program was designed for incoming freshmen in Fresno State's College of Science and Mathematics (CSM) who wanted to make stronger connections, get involved in the campus community, and receive additional resources and support for their STEM majors. This grant-funded program was launched to support and retain underrepresented groups and women in the STEM fields in California State University system. In Fresno State, the program encouraged first year students to engage with different faculty, advisors and their fellow students in learning about and addressing real world experiences and problems, and to help these students and their transition to college environment as well.

The academic librarian, the first year student success librarian, and his involvement with this program extended back to Fall 2015 until Spring 2018. The topic for these classes focused on sustainability. "Each semester focused on a specific theme relating to sustainability, such as coffee, water, or campus environments. Coffee was a unique topic, for instance: Students conducted research and worked in groups to explore coffee as a global socioenvironmental system with the goal of providing recommendations for local, campus-based solutions related to coffee purchasing, consumption, and waste" (Pun, 2017).

The purpose of the embedded librarian's role was to show and teach 100+ first year students how to find research STEM articles in library databases. As a librarian, it is important for students to discover and use current research on sustainability so that they can apply it into their local contexts. The challenge is that many of these articles were very difficult to read; some of the articles were primary articles that were written by researchers for other researchers, and other articles were secondary articles that still contained a lot of data and scientific analyses. The librarian felt that some students found this task to be difficult, however, the searching itself and discovery process for them proved to be quite an interesting opportunity to see what the library had the offer. It was also important for first year students to know the difference between primary and secondary sources, where and how to find them for their research as well.

In another assignment, the librarian showed students how to find graphs and charts in the library databases. This was part of another assignment where students had to find one from the database and then create a visual/artwork using the chart/graph. It proved to be creatively challenging for them but some actually enjoyed it. The role of the librarian in supporting campus sustainability projects will be discussed from the student perspectives and the questions/activities involved in

the BOND program. One major advantage that students gained from this program was being exposed to interdisciplinary questions and resources; there were professors from earth and environmental sciences, chemistry, and biology who taught the classes collaboratively. Their disciplinary perspectives can help shape students' understanding of sustainability as a multidisciplinary one.

### **QUESTIONS AND ACTIVITIES:**

Throughout the semester, students collaborated in teams to create research questions that reflect the local nature of the topic in sustainability. Many have crafted their research questions in several points, and some have focused on specific topics relating to campus sustainability such as air quality, food waste management, biodiversity in plants, trees, insects and soils, and more. Their questions focused on improving the campus experiences and they were more concerned on how to design a research study, collect the data and analyze them properly. In their experiences, they had to learn how to work in teams to engage with each other's perspective, and create a research proposal that would cover literature reviews, scientific methods, and research findings; their work were also published in posters to be presented near the end of the classes. The students came up with a lot of creative solutions and ideas on their research topics. For example, they found out that the university can provide alternative transportation services or incentives for those who do not drive to school to reduce air pollution; there could be creative signage or changes in the policies regarding food waste in the dining halls; the university should consider maintaining sustainable landscapes and gardens to preserve biodiversity; the campus sustainability projects were helpful and eye-opening for students collecting these data for the first time. These experiences ensured that first year students in the sciences will know and be more aware of the issue of sustainability in global, local and campus contexts. Below, there are several students who shared their experiences as the first year student in the program and those who were also instructional student assistants in supporting the teaching faculty during the program.

### **STUDENT PERSPECTIVES**

**Jessica Bustos:** Library resources are vital in helping students in the First Year Experience program with their projects in sustainability. Finding appropriate primary and secondary sources are a key factor when conducting research. Students need to be familiar with how to find and examine these sources early in their college career, in order to be successful and credible scholars. The library resource that we used in our CSM 10 and 15 courses were presentations conducted by our freshman serving librarian Raymond Pun. He presented our students with the basic fundamentals on how to find primary and secondary sources and what consisted of each type of source. He also showed our students how to find them in our own library database and other reliable databases, such as Google Scholar. This was a great help to these first year

students, since they would be conducting their own campus research on sustainability. Introducing research on sustainability to freshman STEM majors is important because sustainability can be applied to each and every STEM field in one way or another. Knowing how to inform yourself on environmental issues is important in spreading awareness and knowledge about how to protect and sustain our earth. Keeping sustainability in these students' repertoires while they progress through their careers is an effective way to hopefully keep the conversation of sustainability prevalent in their future work.

**Elizabeth-Agnes Gaw:** I am an Instructional Student Assistant (teacher and mentor) for CSM 10 and CSM 15 in which both emphasize on concepts/practices behind sustainability. When I was part of the CSM Bond Program as a student, I used the online database to look for primary sources for my topic about how capitalism affects sustainability to persuade people to support sustainable and efficient methods in consumerism. As well, I used the resources to look upon on how to sustain coffee in which best supports industries, workers, and consumers. The library resources provided me credible articles to backup my main point and provided me with insights I would have not ever considered. It is important for students to delve into research about sustainability because this subject is part of their major. We need to learn on how sustainability works, so we can preserve our environment for future generations. To make big changes, we need to start small, to start locally in our own community. Thus, we need to promote information literacy, so we can build towards a sustainable and efficient solution to better everyone's lives.

**Alfredo Lopez:** The role that I have as an Instructional Student Assistant (ISA) in CSM 10 and 15 is that me, as well as my colleagues, have the opportunity to show first-year STEM students how the college works. As an ISA being in a STEM major, I know the struggles of how hard it is to reach out to people in a new environment that one is not used to. My purpose, as well as my colleagues, is to help first-year students find resources around the university that will help them during their stay at the university. In my perspective, many incoming students were not ready for the type of work that was given to them in class. However, by questioning and communicating with other students and professors helped them get familiar with college-level courses which was a great chance to see what the student's potential in a classroom was. Correspondingly, we help the students engage in scientific research that not only pertains to how to keep the university campus sustainable but also how it can be implemented on a larger scale. Along with the research, the students were shown how to find proper primary and secondary sources which are critical when conducting research. By learning how to recognize reliable sources early in their college career the students will be more successful. One main source that was used in CSM 10 and 15 was the library resources which was led by the freshman serving librarian Raymond Pun. He showed the students with essentials on how to obtain primary and secondary as well as what the sources consisted of. Furthermore, he showed the students how to use the university library database as well as other reliable databases and websites. The experience that I gained from CSM 10 and 15 is that I was able to work along with other majors besides my own and

networking with other resources on campus such as the library was great for personal growth and development.

**Karla Moreno:** CSM BOND is a program where students can use what they learned from reading scientific literature to support their wants to reach a more sustainable campus. The Henry Madden Library provides students the tools and guidance to find research articles and peer-reviewed journals for these students' projects. In addition to that, CSM BOND has a designated librarian, Raymond Pun, that is able to guide and educate the students on what scientific literature is and how to find it. During his in-class presentation, students in the program learned the importance of scientific literature and the differences between primary and secondary sources. They were taught the databases that are best for finding scientific literature which include EBSCO, ProQuest and Google Scholar. The students also learned how to customize each database to fit their research for maximum comparability. Now, as a former CSM student and currently an Instructional Student Assistant in the classroom, I have personal experience that I can share with my students to positively influence their research journey because I have been in their place before. I can share with them the importance of scientific research because I had the opportunity to help change the future of our campus in a unique way through research. This is all possible because I was taught, at a young age and as a first year college student, the true significance of reading scientific literature which can leave a noticeable impact on our lives as young scientists. With sustainability, for example, the search for more efficient ways of living will never stop which is why this program has the ability to make a difference in our lives and the world around us. Conducting research on sustainability does not end once we leave campus-- it continues to educate, guide and make a difference in the world but only through us as scientists.

**Edwin Rivas:** We live in an era of mass information and communication. This era has proven to have both benefits and drawbacks. While we have a plethora of information readily available, much of it can often be incorrect and misleading. The library's resources and vast collection of knowledge can support students by exposing them to peer-reviewed scientific articles, books, and other resources that allow them to determine what is fact and what is false. I have been able to utilize the resources presented to me to gather the information necessary and guide my sustainability projects toward new directions. For example, I researched how clays were able to adsorb heavy metals from water and remove harmful pollutants in the process. Using library resources, I was able to find various sources that had done a similar experiment which allowed me to gain new knowledge and improve my own project. The first year experience allows freshmen to center a research project around sustainability. To conduct a credible research project, primary sources are needed to support any conclusions one determines. Incoming freshmen often do not know what primary sources are or how to find them. The library guides them to locate those primary sources and provides a guide to interpret the dense language found in those articles. Lack of education is arguably the primary reason behind the environmental

issues we face today. Education is vital for a sustainable earth. Exposing sustainable living methods to incoming freshmen allow them to begin to live a more environmentally-friendly lifestyle and possibly spread their knowledge to others.

**Xayaphone Salinthone:** Campus research projects in sustainability requires the knowledge of literature review, the might to gathering background information, the capability to implement data collection, and the skill to evaluate credible sources. Library resources and information literacy has helped me immensely in article-based research. As a former CSM BOND student, I had to conduct descriptive research on sustainability of food management. For this particular subject I had to rely on articles and previous studies that provided factual data on nutritional guidelines and statistical data on food surveys. Searching for credible articles and scouring for books was difficult to acquire without the knowledge of information literacy and the guidance of library assistance. Fortunately, the program introduced me to our first-year experience librarian Raymond Pun; who informed me about all the resources the library had to offer and the significance of information literacy. I was soon to uncover that our library resources provided numerous credible databases, research guides and tutorials, and technical services for research. To conclude, Pun's guidance to all of the accessible resources in the library has guided me to conduct a successful research project.

## CONCLUSION

Academic librarians play a critical role in supporting sustainability efforts including campus projects that involve first year students who are new to the academic journey. At Fresno State, many of them are first generation students with limited access to resources or connections from the beginning and this program was one way to introduce the opportunities and resources to them as they continued their journey in the STEM fields.

In this context, the librarian's role in collaborating with the STEM faculty teaching in this program created new opportunities and challenges in support such interdisciplinary curriculum. Coffee, water and campus sustainability projects are important and it is vital for students to learn and to know that the library can provide many rich resources to discover the research on these topics as well. Based on the student perspectives, it is clear that students thrive in these learning environments where they get to understand the factors that impact the environment. The library's role is to preserve and disseminate information for research and learning, but the librarian's role is the key factor in transforming knowledge and understanding through these engagements and activities.

## REFERENCES

Pun, R. (2017). Campus sustainability through information literacy. *American Libraries*.  
<https://americanlibrariesmagazine.org/blogs/the-scoop/campus-sustainability-information-literacy/>