

Research Strategies Reflective Essay 2019
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The writing of this research paper was unlike any other project I had previously attempted, being only in my second quarter at the University of Washington. This was the first research paper I had ever written, and therefore became my basis on how to find and collect information from previous experiments and research conducted throughout the years. Before beginning the project, I was nervous and unconfident in my abilities to complete it. I reached out to fellow peers, my parents, and previous professors in order to collect guidance and gain aplomb. Although I struggled at the start, developing my own strategies for finding the necessary information and allowing myself to grow through the difficulties led me to develop a much more efficient style of writing research papers and has created a very solid base for my future scientific career. The most challenging part about this project was finding information related to the increasing probability of invasive organisms being brought to the Arctic through hull fouling and ballast water release. This challenge allowed me to develop unique and inventive ways of discovering the evidence needed for the successful articulation and support of my main claims.

In order to begin accumulating the information needed to write this paper, I began by searching for papers that detailed the transportation of organisms through ballast water and hull fouling. Once I felt that I had a strong understanding of these processes, I began reading papers that explained the circumstances under which invasive species may be transported in this manner, including the conditions that needed to be met and the impacts that could result from these transportations. It was only after developing a strong collection of these papers that I delved deeper into the specifics of my research topic. As I progressed, I found it more and more difficult to find sources that addressed the specific matters I was searching for. As I got deeper into my writing, I began using a variety of techniques in order to find appropriate material, including sifting through the bibliographies of vaguely related papers and applying evidence from similar situations to the ever-changing future Arctic ecosystem. These methods, explained in detail below, were the main reason for the success of my final project.

When searching for sources, I found myself relying heavily on the UW library search platform. I was able to find dozens of peer-reviewed papers closely aligned with my topic. My main strategy was to search for key words related to the information I was lacking, such as "ballast water," "changing Arctic food webs," "invasive or introduced marine/aquatic species," and other similar terms. This approach allowed me to collect a vast variety of papers and develop a collection of sources not limited to ones simply addressing the Arctic region. When observing my fellow classmates' search strategies, I found that they did not employ this strategy, which made it difficult to connect their arguments to the rest of the world as I was able to do. I also believe that this allowed me to be extremely thorough when collecting and analyzing information, as I used unique sources in order to close the gaps that have resulted from a lack of data and experiments on the subject. Specific examples of this include using a paper on the benthic communities of an Arctic fjord and another paper on the feeding habits of demersal fish in Icelandic waters as evidence for the changes that will eventually result from the observed increasing level of shipping with Arctic waters. Although I might not have taken a conventional path in finding sources for this paper, my strategy resulted in the creation of a well-balanced and dimensional argument.

One of the methods I found to be the most useful when encountering information gaps was searching through the bibliographies of relevant papers in order to find others that supported similar claims. Once I developed this technique, I began finding information much quicker and more efficiently. It soon became my preferred method of finding new sources, and I will continue to exploit this in further scientific writing projects.

The last element I had to consider while developing my argument was the criteria for finding adequate and reliable information. This was the most challenging element, as there were different qualifications needed for each aspect of my paper. For example, information regarding melting sea ice and current food webs in the Arctic needed to be published within approximately the past 5 years, as information of this nature changes daily. For information regarding the transportation of organisms through ballast water and hull fouling, and ecological changes that have already been observed, I was open to gathering sources from a wider variety of years, as this allowed me to comment on the changes in technology or food webs that have occurred over time and the current likelihood that these problems will persist. The scope of the information covered in each piece was also dependent on the topic, and ranged from extremely specific regarding the efficacy of ballast water exchange, to immensely broad addressing the effects of a warming Arctic. However, each source exploited served a specific purpose, and none were used that did not provide value to my argument or the main proposal of my project.

The most influential lesson I learned from writing this paper was that the information needed for a project is not always going to be easy to find, and that odd or elaborate paths may need to be taken in order to gather the lacking evidence. Additionally, although the majority of my sources were peer-reviewed papers, I learned not to limit myself to them. One of the most important sources referenced in my project was a book called "Marine Invasive Species of the Arctic," which I never would have found if I had only been analyzing research papers and reports.