

Essay

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Completing a senior research project proposal and final report is a requirement to graduate from the University of Maryland with a degree in geology. The winter before my senior year, my sponsoring professor, Dr. Sarah Penniston-Dorland, invited me to join her and a graduate student to Santa Catalina Island, California, where I would conduct research on a fault in the Catalina Schist to be used for my senior thesis research. After initial field observations of the fault, the rock type within the fault appeared different than that hosting the fault, raising questions about the fault rock origins. Answers to these questions may have implications for the formation of the fault and relationships between rock units on the island.

Sources were recommended by Dr. Penniston-Dorland and one of my other advisers, Dr. Melodie French. The university's online library resource gave me access to the papers recommended by Dr. Penniston-Dorland. Not only did the online search service provide an excellent collection of scientific articles for me to consider, but the university's subscription to journals and databases were a crucial component. Without such subscriptions, many of the publications necessary for my research would have been out of reach.

Typical research techniques involved searching for key words, methods, and/or authors involved in research similar to my own. From there, abstracts were my main filtering technique, with which I determined whether a publication would be useful based. This proved to be an efficient process. Particularly useful sources were those that presented data to which I could compare my own. For example, one paper provided geochemical data for some Catalina Schist rocks, and comparing the geochemical signatures of the rocks to those of my rock samples from Catalina Island provided useful insight into the potential source of the fault rock. I was also able to conduct further research by reading other papers involving the topics in the recommended papers. I found other papers referenced in publications I had already read using the library's online systems which was also crucial to my research.

While my initial focus was primarily the geochemistry of the fault material as compared to the host rock, my focus has shifted to analyze a particular section's deformation microstructures to make inferences about the fault's formation mechanisms. My focus changed when Dr. French, a structural geologist, looked at samples in this particular section and noted odd structures and relationships between the different crystals. I chose to make this the focus of the rest of my research; instead of outlining the geochemistry of the fault in its entirety, I am focusing on a smaller portion of the fault and comparing the geochemistry and structural characteristics of the samples to narrow the possibilities of fault formation and fault rock origins.

This research project had a very short timescale. Completing such a rigorous and demanding research project proposal in one semester and a final report in another requires exceptional time management. Perhaps the most time consuming part of the research process is the textual research itself. Reading papers, some of which can be on the order of tens of pages in length, can take up an immense amount of time, and may not amount to anything if the paper provides information that is not useful towards the research goals of the project. Thus, choosing

whether to read a specific paper was important as I had to consider whether it would aid in the research and was worth the time. The abstract, then, became a crucial aspect of papers as they gave me brief glimpses into the publication. This proved successful as I felt as though the amount of textual research I conducted provided me with enough information to conduct meaningful research of my own while saving time for other research methods, such as geochemistry and petrography.

As a future Ph.D. candidate, conducting this sort of research as an undergraduate is extremely important as it builds the skills necessary to conduct meaningful research in the future. In such small fields such as high-temperature geochemistry and metamorphic petrology, papers build off of one another by making considerations and assumptions based off of previously published papers. Conducting research through the library's online resources taught me how important the publishing process is. By using other paper's conclusions as assumptions or taking their data into consideration during my own research process, I am trusting the accuracy of the researchers and their ability to conduct meaningful research as made evident by their acceptance of publication; by attempting to publish my own work, I am expressing my confidence in my data and implications for future researchers to consider. Overall, the basis of academic research is the published paper, and the library provided me with both access to published papers and the tools necessary to attempt to publish my own.

In terms of research methods, I was entirely comfortable conducting online research. My project could have benefitted from more textual research and data, however this is simply due to time constraints. The library provided me with the tools necessary to conduct research in a timely manner and exceeded my expectations, as I would not have expected to have access to so many journals and databases. One small aspect that would have been beneficial would have been access to free prints of the publications, as reading for long periods of time on computers is both detrimental to one's health and more difficult in my opinion. Printing in the library can be quite expensive, especially when multiple publications are being printed in color. I am unaware whether prints of such publications are already readily available in the library; if there are, library outreach to inform me of my print options would have been beneficial. Alternatively, a limited number of free printed pages for such intensive and required research would have also been lessened the financial burden that quickly adds up when printing many pages. Otherwise, I do not believe I would change anything in terms of the library's contributions to my research proposal.