## Building Success Skills into an Oceanography Curriculum

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Student success and developing those necessary skills in students extends beyond the geosciences and while I use geoscience topics, I work to address and develop cross-curricular success skills throughout assignments all semester. This is true in all classes that I teach, but I will describe how this has been built into the introduction to oceanography classes at Thomas Nelson Community College.

Introduction to Oceanography is a relatively new course, only having been taught for two years. During the development phase of the course, it was decided that this course would have a field-based research project that students would spend about 6-7 weeks completing, and that all labs leading up to that project would aid students by exposing them to skills needed, many cross-curricular, to successfully complete the project. Not only was the goal of this to help students learn concepts and skills important to the project, but also to the success of the students by developing skills to support them in becoming better students and learners.

The first lab students complete involves graphing and data analysis. Students are asked to analyze and identify a few different graphs, determining if the graph is appropriate for the data given, and are then asked to make some of their own graphs using Microsoft Excel. Not only does this reinforce the necessity for quality data and appropriate displays of data, but it often introduces graphing tools, which are important in other disciplines as well. The next lab has students think about "doing science" where students revisit the steps of the scientific method, discussing the importance of following the method. Students are also given a simple question and then develop a hypothesis, and plan an experiment to test that question. The following week, students go out to the field to conduct their experiments, collect data, which is then analyzed and presented the following week. This three week mini field research project allows students an opportunity to practice not only following steps to complete a task, collecting and analyzing their own data, but allows for presentation skills to be practiced, including oral presentations and making a Powerpoint presentation. In subsequent weeks prior to the research project, labs include detailed opportunities for students to learn about conducting library research, accessing primary literature, and more examples of working with data that will more specifically apply to the project. Other labs focus on reading maps, careers in the geosciences, and making oceanography relevant to them, using local oceanographic examples, and sometimes visiting local research institutions.

The benefit to this structure is that students feel more confident with their research projects, because they are more familiar with research skills, data analysis, and presentation skills because it has been practiced throughout the semester. These are not new concepts and students are often more willing to truly take ownership of their projects because of this it seems. However, this has not come without challenges. One of the biggest challenges is student absences. When a student must be absent, they are missing the links of how all of these skills fit together to not only develop a strong end of semester project, but they often lose some of the relevance and how it can apply to their own student learning in general.

While the success of this structure has been somewhat dependent on the student, and the effort they make in completing the assignments, I have found that many of the cross-curricular skills like using Excel and Powerpoint, writing succinct, yet detailed, memos, and even conducting library research, are new to many students. Many of the geoscience specific skills are also new, and some find those in particular more challenging. However, because the assignments increase awareness of important skills, and allows for practice, many students end the semester more comfortable with the skills, and feel better armed to take control of their own learning, which I would consider a success.