



BASIS PRESCOTT
SENIOR PROJECTS 2021-2022



SENIOR PROJECTS

At this point in their senior year, BASIS Charter School students have completed a set of four BASIS Capstone classes to earn their BASIS Honors Diploma. In addition, many students are in the process of completing the prestigious College Board's AP Capstone Diploma™, a challenging, two-year sequence of AP Seminar™ and AP Research™, plus four other AP® Exams, all of which require extensive research, writing, and oral defense. The BASIS Diploma Senior Project marks the culmination of this hard work and perseverance.

Completed in the third trimester of a student's senior year, the Senior Project is unique, self-designed, and reflective of the students' varied academic interests and passions. Regardless of the discipline —business, art, humanities, science, engineering, social work, medicine, or law — each senior must develop and explore a research question. Creating an abstract that sets the tone of the research, participating seniors must submit a project proposal, and later, orally defend their methodologies.

Under the guidance of an external advisor who is a professional in their field, as well as a faculty advisor from their school, students dedicate 10-15 hours per week to the completion of their Senior Project. To document their journey, students post weekly blog entries about their experiences, successes, and challenges as they explore their guiding question. This journaling provides a unique viewpoint on the student activities and adds a reflective layer to their research process.

Throughout the development of the Senior Project, BASIS Charter Schools support their seniors every step of the way as they develop investigative skills and their own individual scholarly pursuits. The abstracts in this publication clearly illustrate each senior's ability to apply the knowledge, and intellectual curiosity they have acquired in the classroom to professional research methods and learning. At the successful conclusion of this project, students are eligible for a BASIS Diploma with High Honors, the most distinguished accolade offered by BASIS Charter Schools.

Each member of the BASIS Charter Schools network commends our seniors for their dedication, and motivation, not only for completing this Senior Project, but for their commitment to the BASIS Charter School Curriculum. Congratulations to them on this powerful achievement, and our best wishes as they move forward on their educational journey.



Carolyn McGarvey
Chief Executive Officer
BASIS.ed AZ+



Peter Bezanson
Chief Executive Officer
BASIS.ed Texas



Prescott SENIOR PROJECTS

IYLA BAKER



EVOLUTION IN ANT SPECIES

ABSTRACT: I studied the differences between two different types of ants. *Manica parasitica* was thought to be its own species and a social parasite that lived within the nests of *Manica bradleyi*. However, recently it was shown that *Manica parasitica* was actually the same species of ant, but with a tapeworm inside it which caused it to look vastly different. I helped researchers study the differences between these two forms of the one ant species and learned more about the processes behind doing so. I worked directly in the lab, extracting DNA from ants and then working with the DNA in order to create usable samples for later analysis. I also organized different samples that we had into one spreadsheet and assigned each specimen an identification number. I photographed samples so that they could be studied and compared based on their unique physical characteristics. In addition to doing the actual work that I was able to do throughout this internship, I read a lot of papers that helped to give background information on the research that I was contributing to. This was not only useful and interesting information, but it also helped me learn how to approach reading scientific papers. I also learned a lot of scientific vernacular that is useful to know in the future no matter what field I will end up working in. Overall, this project came with a lot of great experiences. Working in a research lab environment has taught me firsthand about what it really is to be a scientist.

- **BASIS ADVISOR:** Ms. Christine Bradford
- **ON-SITE MENTOR:** Christian Rabeling, ASU Associate Professor of Organismal Evolutionary Biology
- **LOCATION:** Arizona State University Biology Lab

SHALYSSA BURNS



EXAMINING PEDAGOGICAL PRACTICES IN PRIMARY EDUCATION

ABSTRACT: Our education system should benefit every child who enters it. However, there are many students whose schooling does not adequately prepare them for life because primary education is treated as a one-size-fits-all endeavor. This project sought to discover a model of education that would facilitate success for all students, by defining educational success and examining various pedagogical practices in order to find a more consistently effective model for K-12 schooling. Prescott College possesses a wealth of information about education, employing dozens of professionals in the departments of early childhood education and psychology. It is an ideal institution for researching the methodology of education and collecting data from teachers and professionals in related fields. By interviewing educational professionals and collecting data from a wide variety of non-educators about their own experiences within the education system, I was able to gain a deeper understanding of the successful aspects of our education system, as well as the aspects that students found lacking. Compiling experts' experiences and various educational strategies informed an idea of how to expand our current model to better serve all students and allow them a fair chance at educational success.

- **BASIS ADVISOR:** Ms. Katherine McKeown
- **ON-SITE MENTOR:** Dr. Andy Smith, Coordinator of Teacher Education Programs at Prescott College
- **LOCATION:** Prescott College

ABBIGALE NELSON



WHAT IT TAKES TO RUN AN ECOLOGICAL NON-PROFIT

ABSTRACT: Ecological Conservation seems to be a bigger topic today than ever. All around the world, people are trying to do their part to protect our planet and the creatures on it. Volunteer-run ecological nonprofits are crucial to the protection of plants and animals whose populations are steadily declining due to external circumstances. One such non-profit is “Malama I Na Honu”, which strives to protect the threatened Hawaiian Green Sea Turtles through “education, public awareness, and conservation.” My project focused on what it takes to run one of these ecological nonprofits, everything from everyday volunteering to working with government agencies. Throughout my time on-site, I worked with volunteers and scientists from Malama I Na Honu to help collect data, put up protective measures for the turtles, and participate in educational field trips with local schools, along with whatever other projects the organization needed help with. From this project, I gained insight into the benefits that volunteer-run organizations, like Malama I Na Honu.

- **BASIS ADVISOR:** Mr. Miles Hansen
- **ON-SITE MENTOR:** Debbie Herrera, Volunteer & Education Coordinator at Malama I Na Honu
- **LOCATION:** Malama I Na Honu

NICO STALLONE



LEARNING ABOUT GORE: RESEARCH AND EXPERIMENTS

ABSTRACT: The world of engineering does not stand on its own. The theoretical process of research and design interacts with the real world to produce concrete products and results. This interaction is often overlooked, especially by those outside the world of engineering or those who do not have experience in the field yet. Especially for high school students, this fact of the field is not touched upon. An understanding of this interaction is valuable, as it creates a true idea of what engineering actually is. By interacting with an already functioning business that heavily employs engineers, I have gained and can tangibly convey an understanding of this interaction. I have done my project at W.L. Gore, a company that focuses primarily on developing medical equipment. W.L. Gore is a good company to study due to its status as an established business that relies on engineering as part of its business plan. Engineers must interact with other parts of the company to create concrete products and I have studied this process at W.L. Gore. I have gained an improved understanding of these interactions through a series of interviews and interactions with non-engineering departments within the company. I chose this topic to gain and convey a better understanding of what engineering looks like in practice and how it interacts with the world of business.

- **BASIS ADVISOR:** Mr. Drew Wasikoski
- **ON-SITE MENTOR:** Eric Mokolke, Leader of Biosciences Research Scientists
- **LOCATION:** W.L. Gore and Associates, Flagstaff Facility

TYLER STRUVER



WHAT DOES IT TAKE TO GET AN ITEM ON A RESTAURANT MENU?

ABSTRACT: When you go out to eat, do you ever wonder what it took to get your meal to your table? I'm not only talking about how a server brought the plate to your table, or even how a cook in the kitchen seared the patty of your burger and then assembled the bun, lettuce, tomato, and the secret sauce. I'm talking about how someone's idea became a reality. I have worked with Prescott's own Vivili Hospitality Group in order to make my idea become reality because there is no better way to understand this process than going through it myself. This process included researching the history and culture of the dish I create, as well as researching the science behind the recipe of the dish and why certain ingredients or methods work while others don't. It also included dealing with the logistics of preparing food in a busy kitchen and working out how much the dish costs to make in order to set a price, and much more. I hope that by sharing what I have learned about everything that goes into creating a dish in a restaurant, everyone can appreciate the process and enjoy their dining experience a little bit more.

- **BASIS ADVISOR:** Mrs. Kimberly Weaver
- **ON-SITE MENTOR:** Chef Tony Burris
- **LOCATION:** The Barley Hound

EMMA WYMORE



THE THIRD SECTOR: HOW NONPROFITS FILL THE GAPS IN HIGH SCHOOL EDUCATION

ABSTRACT: Arizona is ranked 49th in public school spending per pupil in the US and consequently is ranked 49th in public school performance. Several private entities, such as BASIS Charter Schools, Inc. have taken the initiative to create alternative options for schooling in Arizona, but non-profit organizations —coined the “Third Sector—” have also responded. During my internship with Arizona Serve, I analyzed several topics, like how one defines education, by examining the role of nonprofit services and volunteer work. I began my project by learning how the nonprofit sector functions and the details behind why the United States' and Arizona's education system is criticized. Through qualitative research with non-profit staff and AmeriCorps high school seniors in both Prescott and Tucson, AZ, I uncovered the gaps that nonprofits already fill. The Launchpad Teen Center here in Prescott, AZ, for example, offers after-school programs, academic mentorship, and mental health services that schools often do not have the resources for; the John Valenzuela Youth Center in South Tucson provides a safe space for youth in the highest crime hours and pays for school fees that families often cannot afford. I used the data from several interviews to find solutions for schools and nonprofits to strengthen their teamwork and use each other's assets. My final product is a service project that creates a sustainable link between local schools and nonprofits to provide students with available resources to receive service or give service.

- **BASIS ADVISOR:** Mr. Brent Weaver
- **ON-SITE MENTOR:** Annie Reifsnnyder, Executive Director of Arizona Serve
- **LOCATION:** Arizona Serve



Prescott

1901 Prescott Lakes Parkway | Prescott AZ 86301

