Linking Southwest Heritage Through Archaeology

Year 6 Annual Report
The Linking Southwest Heritage Through Archaeology Program acknowledges the traditional lands of the Tohono O’odham on which the University of Arizona resides. As this program visits many other traditional tribal lands and sacred places, with gratitude we honor the land itself and the stewards who have worked to protect it, in addition to respecting the spaces we enter.
LINKING SOUTHWEST HERITAGE THROUGH ARCHAEOLOGY
YEAR 6 REPORT

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Executive Summary

Group picture from Archaeology Southwest/UA Preservation Field School in Cliff, NM.

Linking Southwest Heritage Through Archaeology (LSWHTA) is a non-formal, experiential education program for high school students and teachers in the Tucson area. It is a collaboration between the National Park Service (NPS) and the University of Arizona (UA). The LSWHTA participants include individuals with Indigenous/Native American or Hispanic heritage. LSWHTA applies a critical pedagogical framework to Southwest archaeology in the United States called ArchP4. Participants engage in the study of Southwest archaeology while visiting National Parks, museums, UA laboratories, archaeological field schools, and other heritage sites in Arizona.

This year 13 students, two counselors, and one teacher from 5 high schools in Tucson participated in LSWHTA. LSWHTA is designed to increase participation from communities with historically low levels of engagement with the NPS by recruiting participants with southwestern heritage.

Now in its sixth year, the program has run each year since 2013 with the exception of 2014. In previous years, the Environmental Education Exchange (EEE) was hired as a subcontractor to the UA and piloted LHHTA in the summer of 2013, with Dr. Barbara
Mills (School of Anthropology, UA) as overall PI. The next LHHTA program took place during the spring of 2015, with Dr. Barnet-Pavao Zuckerman (then of the UA’s Arizona State Museum and School of Anthropology) serving as its director. The EEE managed the program each year through 2018. The UA assumed full oversight of the program as a collaboration between the School of Anthropology (SoA) and the College of Education (CoE), with Dr. Sara Chavarria, Assistant Dean as co-PI with Mills. The program was renamed as Linking Southwest Heritage Through Archaeology in 2018 to broaden participation to include Native Americans in addition to those with Hispanic/LatinX heritage.

NPS aims to develop a stronger relationship with communities with southwestern heritage and increase their engagement and visitation to National Parks. NPS does this by creating space for participants with southwestern heritage to visit National Parks and share dialog with crucial partners of the NPS through the LSWHTA program.

In addition to the UA and the NPS, critical partners in the LSWHTA program include local experts in natural history and archaeology who offer additional opportunities for students to engage in archaeology, local history, and environmental science. Institutional partners include the Archaeology Southwest, Arizona State Museum, Mission Garden-Friends of Tucson’s Birthplace, Mission San Xavier del Bac, Pima County Community College Centre for Archaeological Field Training, and Tohono O’odham Cultural Center and Museum. National Park Service units that we visited were Grand Canyon National Park, Montezuma Castle National Monument, Montezuma Well, Saguaro National Monument (West), Tumacácori National Historic Park, Tuzigoot National Monument, Western Archaeological and Conservation Center, and Wupatki National Monument.

The LSWHTA program provided students and teachers with iPads as an incentive and a tool to deepen engagement during experiences. Participants took pictures, created videos, recorded audio, and wrote notes during their experiences in the LSWHTA program. Participants later used media recorded on their iPads to create a Spark page and Spark video that described how their experience in the LSWHTA program connected to the ArchP4 framework.

This report provides an overview of the 2019 LSWHTA program. Recruitment began in fall 2018 and the actual program took place from spring through summer of 2019.
LSWHTA Goals & Framework: A Call To Action

Goals

The LSWHTA program aims to expose high school students and educators to the natural and cultural resources and values of the National Park Service (NPS). The LSWHTA program extends the benefits of natural and cultural resource conservation to students from communities with historically low levels of engagement with the NPS. Communities with historically low levels of engagement include participants with southwestern cultural heritage, especially Hispanic/Latinx/Xicanx and Indigenous heritage. While previous years prioritized students with Hispanic heritage, this year the University of Arizona’s School of Anthropology (SoA) and College of Education (CoE) expanded recruiting efforts to students with Native American or Indigenous heritage.

Several program participants had never visited a National Park or had been camping before participating in LSWHTA. It is crucial that LSWHTA participants visit National Parks because these parks allow the participants to learn about themselves and the history of the people who have lived in the Southwest. The goal of frequent visits to national and state parks and other heritage sites, supplemented by LSWHTA programming, is to develop participant’s identities as scholars and critical thinkers. Another goal of the LSWHTA program is to develop participant agency so that participants feel comfortable asking critical questions, engaging in dialogue with others, and visiting parks and other heritage sites after the conclusion of the program. This year the LSWHTA team created the ArchP4 framework (Figure 1), which applies a critical lens to experiential education through archaeology. Participants in LSWHTA are asked to apply ArchP4 to their study of archaeology through lectures, activities, and visits to National Parks.

LSWHTA participants are also given iPads to use throughout the program which they keep after the program completion. The use of the iPad encourages digital literacy, which is a valuable skill for students and educators. Participants use their iPads to type notes from lectures or activities, to record video and audio, to take photographs, and to create a reflective Spark page with videos for their final presentation and for posting online. Participants learn how to use technology as a tool to record, assess, and share learning. The LSWHTA also encourages participants to be mindful when learning and exploring National Parks. The LSWHTA team had discussions with participants about when it was appropriate to use technology as a tool and when participants would benefit from putting their iPads away to appreciate their surroundings.
Participation in LSWHTA also encourages emotional and social strengths. Participants are asked to practice active listening, respect, and gratitude, which are valuable social skills for both students and educators. Participants develop interpersonal skills throughout the program. Participants are regularly asked to work together as a team, assume responsibility, care for one another, motivate themselves and each other, and take on a leadership role within their groups. Coordinators regularly ask participants to share feedback and learning with the group which develops their communication skills. Participants also develop intrapersonal skills throughout the program. Participation in LSWHTA increases self-esteem, open-mindedness, self-discipline, and emotional resilience. Participants develop their emotional resilience and self-discipline during the program because they accomplish tasks out of their comfort zone while coordinators maintain the group's safety and support the emotional, intellectual, and physical needs of participants. Coordinators provide positive feedback to participants, encourage inclusion in social activities, and provide scaffolding during activities that increase participants' self-esteem. The LSWHTA team encourages open-mindedness by asking participants to be critical of their thinking and perspectives and to listen to the stories and perspectives of others. Participants also broadened their social networks by building friendships with others from a variety of schools in Tucson. Developing inter- and intrapersonal skills also further develops participants' agency and identity.

„The best thing about this program was having a deeper understanding of archaeology and applying fieldwork by going to labs and learning about tree dating to going camping and doing things like excavating, point provenience, and just having a good time overall and learn new things, and meet new and interesting people who also had the same love for archaeology”

- LSWHTA Student
The LSWHTA team developed ArchP4 to provide structure to a critical perspective on the study of archaeology and to encourage participants to deepen their study of their own and the region’s heritage. The ArchP4 framework is composed of four components: (1) archaeology as people and place, (2) archaeology as practice, (3) archaeology as personal, and (4) archaeology as a profession. The four framework components are summarized below.

**Archaeology as People and Place**

Southwest Archaeology Student Scholars visit and explore various archaeological sites, labs, and educational facilities throughout Arizona and New Mexico gaining hands-on experiences in archaeology and cultural heritage.

**Archaeology as Practice**

Archaeologists, naturalists, and community experts provide workshops and presentations on the methods used in excavation, preservation, and interpretation. Cultural experts provide education on the historical and cultural significance of sites.

**Archaeology as Personal**

Student Scholars are supported in exploring their personal and cultural connections to cultural sites and archaeological practices. Guiding questions encourage students to use their own funds of knowledge and cultural identities to reflect on and interpret the sites and archaeological practices.

**Archaeology as a Profession**

Student Scholars engage with the University of Arizona through visits to labs, academic departments, and other campus facilities. They also will engage with professors, researchers, and undergraduate and graduate students and explore various career and educational pathways in archaeology, anthropology, education, history, Mexican American studies, and Native American studies, to name a few.

**LSWHTA ArchP4 Framework Visual**

The focus of archaeology is to study past peoples and the places they lived by looking at what they have left behind. From artifacts, landscapes, architecture, and stories, we gain insight into who they were, how they lived, and what they did. Archaeological sites and laboratories play a crucial role in analyzing and interpreting stories, but National Parks and other cultural and educational facilities also play a role in telling the stories of the people and places we visit.
Archaeology as Practice

The practice of archaeology extends to archaeologists, laboratory technicians, culture experts, and heritage preservation specialists, to name a few. Each role involves a variety of methods used in excavation, preservation, interpretation, and education on the historical and cultural significance of sites. The practice of archaeology is broad and includes several practices and fields of study which work together to piece stories together and educate people on them.

Archaeology as Personal

Since archaeology involves uncovering, piecing together, or interpreting the histories of certain peoples, many communities have deep personal and cultural connections to the sites and places we visit. In the greater Southwest, this primarily involves Native American communities and for post-European sites, a variety of communities, but especially those with Hispanic roots. Some participants may be able to connect directly to the sites we visit while others may have to explore similarities between their own cultures and identities and those that they are learning about in the LSWHTA program.

Archaeology as a Profession

Archaeology as a profession can take place in a variety of spaces such as college or university laboratories and academic departments, cultural resources management companies, non-profits, and local, state, and federal land management agencies. Archaeology can also take place as educators in National Parks or non-profit organizations, positions that often overlap with various careers and educational pathways in archaeology, anthropology, education, history, Mexican American Studies, and American Indian Studies among others.
Overview & Evolution of the LSWHTA Program

Archaeology is the humanistic and scientific study of the ancient and recent human past through material remains. Archaeology is a subfield of anthropology, the study of humans in all times and places. Archaeology helps us understand not only where and when people lived on the planet, but also why and how they have lived. It examines changes in culture and the cause of changes in culture over time. Archaeologists are primarily associated with material remains in their contexts and may be conducted in the field or the laboratory. Much of today’s archaeological employment is through cultural resources management (CRM), including municipal, tribal, state, and federal agencies. While many archaeologists conduct fieldwork, an important part of understanding the past is through the study of museum collections. Today, many archeologists are working with living communities and modern descendants of ancient peoples, although more work needs to be done to include the perspective, stories, and work done by living communities and modern descendants of ancient peoples in the protection and interpretation of cultural resources.

LSWHTA allows participants to learn about the history of the Southwest through archaeology. Archaeology allows people to interpret and protect the material remains of ancient peoples of the Southwest. In many cases, only archaeologists record the material remains of ancient people and protect the remains from modern developments. Western colonizers and their descendants have historically marginalized the descendant communities of ancient people of the Southwest. Archaeology presents an opportunity for marginalized communities to learn about their ancestors through material remains. Participants in the LSWHTA apply a critical framework to the interpretation of material remains by archaeologists. Participants are encouraged to examine connections between their southwest, Hispanic, and indigenous heritage and the history constructed by archaeologists in the Southwest.

“Carbon dating, zooarchaeology, and dendrochronology were all terms I was unfamiliar with until this program. I now know that archaeology has many career options and I am definitely now considering studying one in college”

- LSWHTA Student
Evolving Community Partnerships

LSWHTA was named Linking Hispanic Heritage Through Archaeology (LHHTA) prior to 2018. The LHHTA program was originally an outgrowth of a relationship between the NPS, the University of Arizona’s School of Anthropology (SoA), and the Environmental Education Exchange (EEE). In 2005 Dr. Stanley Bond, Chief Archeologist of the National Park Service, visited Tucson to help build collaborations between the NPS and the University of Arizona. Along with Jeremy Moss, who was Park Archeologist for Tumacácori (TUMA) National Historic Park at the time, they met with Dr. Barbara Mills, who was the Director of the School of Anthropology. During this visit, they discussed the potential for a high school outreach program that would be a collaboration between TUMA’s cultural preservation program and the University of Arizona, and that would expose students to National Parks, expand their career horizons, and introduce high school students to the UA campus.

During his tenure as Superintendent of the Juan Bautista de Anza National Historic Trail, Dr. Stanley Bond had partnered with the EEE on the development of a historical documentary on the de Anza Expedition from Southern Arizona to San Francisco, California. Knowing of the depth of connection that EEE has in the local community and especially with local schools, Stan Bond reached out to the EEE as a partner for this high school-based initiative for Hispanic students. EEE co-founder and education director, Trica Oshant Hawkins, took lead responsibility for the program’s development and implementation. An additional partnership was developed with the Archaeology Department at the University of Arizona, involving both Dr. Barbara Mills and Dr. Barnet Pavao-Zuckerman. For funding, Pat O’Brien, Ph.D., Cultural Resources Officer for the National Park Service and coordinator for the DSCESU, became part of the original planning team.

Once the program commenced, the EEE reached out into the community, expanding the partnerships to include high school resource personnel, directors and staff of various regional museums, and historical and archaeological related educational institutions. The EEE maintained and strengthened these relationships after the pilot LHHTA program ended, which greatly facilitated the development and execution of the second and third LHHTA programs. Throughout the third session of LHHTA, the EEE continued to coordinate and manage the program, and the UA continued to provide classroom space and resource personnel. Also, EEE identified several new partners and projects and incorporated them into the program during the third LHHTA program in 2016. In 2018, the program rebranded as the Linking Southwest Heritage through Archaeology (LSWHTA) to be more inclusive of non-Hispanic populations.
This year (2019) the UA School of Anthropology and College of Education assumed full responsibility for the development of the LSWHTA program. LSWHTA maintained partnerships with individuals from the NPS and local community initially established by the EEE, and expanded it to include new opportunities in the community.

**Evolution of LSWHTA Programming**

The EEE offered the pilot of LHHTA during the summer of 2013. EE Exchange selected twelve high school students and two teachers to participate in the LHHTA pilot. During the pilot, EEE held a kick-off meeting in early February. After the kick-off meeting, the participants spent two spring weekends at an excavation hosted by the University of Arizona’s Archaeology Field School at Mission Guevavi in southern Arizona, a unit within TUMA, with Dr. Barnet-Pavao Zuckerman as the director of the UA Field School. The group then took a three-month hiatus until the first week of June at the start of the participants’ summer break. Participants met from 8:00 am to 4:00 pm, Monday through Friday for a month. Several students dropped out of the program during the three-month hiatus because they were pursuing post-graduation opportunities or needed summer jobs. Ten students participated in the summer session of the pilot LHHTA program. The two teachers initially recruited remained in the program throughout its duration.

The second session of LHHTA was offered during the spring of 2015 to avoid student drop-out caused by summer schedule conflicts in 2013. Participants of the 2015 LHHTA program met on Wednesdays after school and on weekends throughout the spring and through mid-May. The 12 students and two teachers recruited for the program remained engaged throughout the program. Participants experienced stress during the program because they had to complete their final digital stories during school final exams. A drawback of the adjusted schedule was that participants were not able to visit some facilities that were not open during the weekends or evenings.

![Customized NPS bag: pin collecting was very popular with the students.](image-url)
In 2016, the EEE decided that the LHHTA program would best start in the spring with regular meetings and continue through the summer to avoid issues presented by an all-summer or all-spring program schedule. The new schedule would better accommodate participants’ school schedules in the spring while offering engaging spring activities and building anticipation for opportunities for participants to bond in the summer. Meeting three days a week in the summer allowed participants to have summer jobs if necessary. This new schedule resulted in nearly full retention of participants; only one student was not able to complete the summer portion of the program due to circumstances out of their control. An advantage of the new schedule was that participants were able to attend the University of Arizona’s summer Archaeological Field School, run in collaboration with Archaeology Southwest, and visit Grand Canyon National Park in northern Arizona. These additions to the schedule allowed for additional camping opportunities which were highly ranked by students in the pilot program.

In 2017, the EEE used the same program schedule as followed in 2016. In 2017, regular program meetings began in late February with participants meeting two to three times a month after school on Wednesdays and occasional weekends throughout the spring. In June, the participants met all day Monday through Wednesday, which included two overnight camping trips. In 2018, the EEE maintained a similar program schedule used in the previous two years. Some adjustments were made to accommodate essential dates for a variety of school districts.

Participants learning to map artifacts in excavation units at Pima Community College’s “simulated dig.”
2019 Program Start-up and Design

Recruiting and Hiring Student Program Coordinators

In previous years, college students from the University of Arizona and Pima Community College were recruited as interns to assist staff from the UA and EEE. Starting this year, principal investigators Dr. Sara Chavarria and Dr. Barbara Mills took the initiative to assemble a team of culturally responsive project coordinators. We believe the success of our programming this year was contingent on the fact that a majority of the coordinators identify with a strong Latinx or Indigenous identity, which created a sense of connection and familiarity to the student and educator participants. Also, each coordinator brought a wealth of specific skills, knowledge, or lived experiences that played an equally important role. In total, there were four project coordinators, comprised of three undergraduate students and one graduate student who were all students at the UA during their recruitment and on average worked between 10-20 hours a week.

James Burton was a Literacy, Learning, and Leadership major who has years of experience in outdoor education settings. His knowledge of outdoor activities, camping, and informal education was vital in planning various engaging activities and successful camping adventures. He received his BA in Education from the UA in May, 2019.

Rebecca Perez was a Literacy, Learning, and Leadership major within the College of Education, and a first-generation college student and first-generation American. She has a wealth of knowledge relating to environmental education and land stewardship. Rebecca also has years of experience working in informal education spaces and designed multiple lesson plans and activities that had a strong focus on culture, identity, land protection, and strengthening critical thinking skills. She received her BA in Education from the UA in May, 2019.

Tony Viola, IV, is a member of the Pascua Yaqui Tribe of Arizona, a first-generation college student and Literacy, Learning, and Leadership major. Tony knows the Indigenous peoples and their experiences in the Greater Southwest and years of mentoring and supporting underrepresented undergraduate students on campus. Tony will be a senior at the UA next year.

Stephen Molinares is of Yaqui heritage, a graduate student in the Applied Archaeology MA program in the School of Anthropology, and an experienced field archaeologist. He graduated Pima Community College with an AA degree, and the UA with a BA in Anthropology. Stephen was instrumental in sharing his knowledge relating to the field of archaeology, focusing on the methods used in excavation,
preservation, and interpretation. Furthermore, he was also able to share information on the histories and cultures of the people and places that were visited by participants throughout the program.

Overall, each coordinator was crucial in completing all necessary tasks that relate to logistical planning, such as transportation, meals, technology, and outreach efforts to recruit students. The culmination of various skills, knowledge and lived experiences paired with multiple salient identities created a welcoming and reflective space for participants to deepen their knowledge on the field of archaeology and the people it focuses on, as well as a possible career and educational pathways.

Recruiting High School Student Scholars and Educators

A core focus of this program is recruiting high school students from the greater Tucson area who have an interest in and relation to the heritage, cultures, and histories of the Southwest. Likewise, educators with similar interest and connections are also recruited from various high schools to participate in the program. To include students and educators from multiple different districts, schools, and grade levels, the LSWHTA team handled the outreach efforts on multiple fronts.

The primary method of connecting to potential students involved visiting local high schools in-person to speak with counselors and present in classes. Through visits to the counselor’s offices, team members were able to simultaneously recruit educators while also asking counselors to disseminate the information further to students. One teacher from Cholla High School, Joy Noriega, was a past participant in the program and opened her classroom for us to discuss the program, pass out applications, and field any questions. Flyers with information on the program were dispersed at all in person locations and left with students and educators to share with others.

Information in the form of email and flyers were shared, by us, with various program and their respective coordinators, such as TRiO–Upward Bound, AVID, and multiple district-based Native American Education Programs, that all worked with students throughout the Tucson Area. Kimberly Daingkau-Begay, the district coordinator of the Native American Education Program for Amphitheater Public Schools, was essential in recruiting Indigenous-identifying students on behalf of the LSWHTA program and working with the local high school to allow full program participation.

Students and educators were given application deadlines to fully complete their packets and send the information to the project coordinators. We conducted phone interviews with educators who were interested and three were selected; two counselors and one teacher. Student applications were reviewed holistically by the entire LSWHTA team ending with 13 student participants chosen to be the 2019 Southwest Archaeology Student Scholars.
A preexisting network of connections among various educators and programs was crucial in successfully recruiting students. Some connections involved previous participants in the program. We also made new connections, such as recruiting a counselor from Sunnyside. Additional materials necessary to recruit students involved updating and recreating previous recruitment flyers and developing a website (swheritge.arizona.edu), which allowed for applicants to learn more about the program.

First day of the program at “base camp” in the School of Anthropology’s Southwest Archaeology Laboratory, University of Arizona
Outreach to Project Partners

Given that LSWHTA has been on-going for six years, previous schedules and contact lists have provided a framework model for creating the annual program schedule. This year, the LSWHTA team worked to build a tentative timeframe for the 2019 program schedule by cross-checking school district schedules and holidays. From there, site locations were selected by looking at the previous year’s schedule and maintaining a majority of the same locations or by adding new ones, such as the Tohono O’odham Cultural Center and Museum. Once a time frame and ideal locations were solidified, community partners were contacted by staff.

Dr. Barbara Mills, the only returning LSWHTA staff member, took the lead in contacting community partners. Through email communication and phone calls, multiple park rangers, directors, coordinators, or curators were contacted to schedule visits. Some locations required fee waivers to be completed or requested additional information regarding group logistics or reviewing the interactive activities of the day. Representatives from the locations that were hosts in previous years remembered the program and were eager to have the new group return. The LSWHTA staff arranged transportation to and from the locations using the UA motor pool and served as drivers for every trip.

Community partnerships play a crucial role in providing student scholars and educators with hands-on learning experiences in the field, in university laboratories, and by experiencing and learning from places with precious archaeological and cultural value. The NPS, UA, and multiple communities and cultural locations allow us to learn about archaeology, both in the field and behind the scenes, to understand the vital role it plays in understanding the past peoples and their cultures.

“I learned more about the surrounding cultures in more depth than I previously knew. Along with visiting National Parks and even picking up a new skill – flint-knapping.”

- LSWHTA Student
Program in Action: Site Visits & Activities

The following is an overview of the tours, activities, lectures, and field trips that students participated in during the program. Appendix A includes a list of all 2019 student and educator participants. Appendix B provides the LSWTHA 2019 Calendar “at a glance.”

Program components are divided into several general areas and include:

- Field Trips to National Parks and Monuments
- University of Arizona Lectures and Labs (including the Arizona State Museum)
- Preservation Archaeology Field School
- Other Cultural, Historical and Educational Sites
- Team Building and Other Activities

Group picture at the Casa Grande Ruins National Monument.
Field Trips to National Parks and Monuments

LSWHTA participants visited eight National Parks and Monuments during the program. Additionally, because of the summer session that allowed for weekday meetings, participants visited the Western Archeological and Conservation Center, operated by the National Park Service. Park Service personnel (including Supervisors, Branch Chiefs, and Park Rangers) were contacted in advance to coordinate a personalized tour or program for the students. LSWHTA staff informed each respective Ranger of the program’s relationship with the Park Service, the focus and experience of the group with archaeology and Hispanic and Indigenous heritage, and the program’s objective of including a career component (Rangers were asked to share their own stories of how they got involved with NPS). LSWHTA staff also secured fee waivers in advance of each visit. For 12 out of 13 of the students, this was their first time visiting the Grand Canyon.

Casa Grande Ruins National Monument

Casa Grande Ruins National Monument is an important site belonging to the Ancestral Sonoran Desert peoples that archaeologists refer to as the Hohokam. It is notable for having the best-preserved platform mound structure, the big house from which Casa Grande gets its name. It was also significant for its extensive irrigation system, highlighting the Hohokam’s mastery of canal building. It was the first prehistoric and cultural reserve established in the United States and among the first declared National Monuments.

The LSWHTA participants had their first field trip to Casa Grande National Monument. While at the historic site, they visited the on-site museum and learned how the Ancestral Sonoran Desert people built the “great house.” With the assistance of the park rangers, the group then helped to preserve the walls by slinging mud onto them in order to help protect them for the future. The trip concluded with a tour and lectures around the monument, including an area with dense surface artifacts.

“This was my first time visiting the Casa Grande Ruins and I was also visiting other places I had never been to. They were all so unrealistic. Overall, I thought they were so breathtaking!”

- LSWHTA Student
Participants slinging mud to stabilize an ancient abode wall at Casa Grande Ruins.

**Saguaro National Park (West)**

Saguaro West is a national park in Tucson that is famous for its picturesque sunsets and landscapes, which include the iconic Saguaro cactus. The park is also significant to this program because it is on traditional lands of the Tohono O’odham people who utilized many of the native plants both as a source of food and as a resource for making clothing and other material goods. Saguaro West also contains archaeological significance at places like Signal Hill, which has petroglyphs thought to have been created by the Hohokam.

This field trip was the closest one for our Tucson area participants, yet many had never been to Saguaro NP before. We met with park ranger Cam Juarez, the NPS cultural outreach coordinator, and he spoke about the importance of parks and what led him to be a ranger. Cam pointed out how rare it is to have a Latino ranger but inspired all of them to realize that though it is not common, it is not impossible. After a tour of the visitor center, Cam led the participants on a short hike up to Signal Hill where participants could see several petroglyphs.
Tumacácori National Historic Park

Tumacácori National Historic Park is a historic mission southeast of Tucson. It is protected by the NPS, which has chosen to stabilize and not restore it. As such it is no longer used as a church and instead is now used as a tourist attraction and museum. They also use the preservation process as a tool to work with Indigenous peoples and to better understand traditional methods and techniques of working with adobe. LSWHTA participants toured to grounds of this national monument to get an idea of the size of the area and proximity to the nearby river. Casas Grandes interpreter ranger, Rick Collins, led the group in an adobe-brick making activity using the same methods used to build the mission. He then led a tour through the mission church building and helped foster great discussion on the historic graffiti inside the building.

Montezuma Castle National Monument

Montezuma Castle is an archaeological site associated with the Sinagua archaeological culture. These people used the nearby Beaver Creek to grow their crops, which consisted mainly of corn, beans, and squash as well as other local foods such as amaranth and pine nuts. They also supplemented their diet by hunting large and small game. This National Monument consists of several cliff dwellings, the most iconic being the 20 room pueblo from which the monument gets its name. Although “Castle A” a ~50 room pueblo that was excavated by NPS archaeologists in the 1930s is also well known and part of the monument.

Park Interpretive Ranger, Laura Burkhart, met us at Montezuma Castle and was our guide throughout the trip. Upon arrival, she asked the students to consider what makes a house a home and to keep that question in their mind as they viewed the cliff dwelling. Laura had a host of discussion prompts and activities to keep the
students thinking, including asking the students what roles or professions they think they would have played had they lived in the area around the time the castle was inhabited. She was also our guide and ranger for Montezuma Well, and Tuzigoot.

Ranger Laura Burkhart at Tuzigoot Center talking to student and educator participants.

Montezuma Well

The group’s tour of Montezuma Well was again led by Laura Burkhart, who led the group on a hike up to the rim of Montezuma’s Well, and continued to challenge the participants to think critically about the concept of a home and what makes a home different from a residence or other buildings. Participants then discussed the importance of the water source for agriculture both past and present while walking down below the well to a natural drainage point, where the ancient and modern occupants of the area had dug irrigation canals to help maximize their access to the water. We gathered in the shaded area between the irrigation canal and Beaver Creek to discuss “leaving your mark.”

Montezuma Well is a detached unit of Montezuma’s Castle National Monument. It is a natural spring that ancient peoples used as a water source, which has a water flow of around 1.5 million gallons every day. It is associated with the Sinagua archaeological culture in the past; today, many tribes trace their affiliation to the site.
For example, the Yavapai are associated with this site through their emergence story. A unique feature is that the well leaks out of the side of the rock surrounding the well, which was channeled by ancient peoples who created an irrigation canal to divert water to desired locations.

Tuzigoot National Monument

Tuzigoot (an Apache term meaning crooked water) is a 110-room multistory pueblo also built by the people archaeologists identify as the Sinagua. The people who occupied Tuzigoot were a part of a vast trade network that spanned the greater southwest and stretching down into Mesoamerica as evident by the remains of scarlet macaws that archaeologists discovered during excavations. They lived at Tuzigoot and farmed in the Verde River Valley and its tributaries from ~1000 CE to ~1400CE. The group was greeted in the morning again by Laura Burkhart, who guided us through the ruins of the monument. Students were then free to hike the trail to the top of the ruins and explore all that it had to offer. The Visitor Center was toured and served as the lunch picnic spot for the group as well.
Grand Canyon National Park

Only two out of the thirteen students in the program had ever been to Grand Canyon National Park before this trip. LSWHTA staff gave participants the option to be blindfolded for the approach to the canyon to make the reveal and initial viewing from the rim that much more significant. The LSWHTA trip to the Canyon included a rim walk, a tour of Tusayan Ruins, a visit to the Desert View Watchtower, a tour of the Visitor Center and bookstore, reflection time while watching the sunset over the canyon, and late night stargazing lead by one of the coordinators.

The Grand Canyon National Park is archaeologically significant in many ways. The first being that it has evidence of humans going back to the end of the last ice age, approximately 12,000 years ago, based on the presence of Clovis and Folsom projectile points. The Grand Canyon also has over 4,000 archaeological sites, most being Ancestral Puebloan sites, but some are also historic sites. This number is expected to grow as NPS archaeologists have only surveyed 3 percent of the park. Students looking into the Grand Canyon.
Wupatki National Monument

The visit to Wupatki included a lecture and discussion from the park rangers on site. The rangers gave each student a thorough pamphlet to help them with their self-guided tour of the monument. Afterward the group was able to tour the visitor center and gift before a picnic lunch.

Wupatki is an archaeological site located nearby Sunset Crater Volcano close by Flagstaff, Arizona. It is a site that shows aspects from many areas of the greater Southwest. It strongly resembles other Ancestral Puebloan sites in its use of masonry room blocks. Unusual for an Ancestral Pueblo site is the presence of a communal structure that archaeologists have interpreted as a ballcourt, which is similar in profile to the ballcourts used in the Hohokam world. Wupatki’s ballcourt is also significant for being made of masonry instead of the earth as were the Hohokam ballcourts.

Western Archaeological and Conservation Center (WACC)

Although not a National Park, WACC offered the opportunity to see a wide diversity of artifacts from National Parks across the west. Participants learned about conservation and preservation of these artifacts in a tour designed specifically for LSWHTA.

WACC is significant in that it is the repository for western National Parks. WACC contains artifacts from the Southwest that span millennia. The oldest artifacts it houses include Paleoindian artifacts such as Clovis points. It also houses historic objects dating to the twentieth century.

“One of the main trips we went on, was the Grand Canyon. This trip was one of my favorites because I had never been to the Grand Canyon before. But now, because of the program, when I tell people that I am from Arizona, I can say I have been to the landmark that makes Arizona unique.”

- LSWHTA Student
University of Arizona Labs & Lectures

The partnership with the UA allows for access to archaeology professors, laboratories, and associated resources, including the Arizona State Museum (ASM). Lab visits included a tour of each laboratory, an overview of research conducted at that lab, a lecture overviewing that particular discipline and the role it plays in archaeology, and often, a hands-on activity allowing students to engage with the subject interactively. The program has established a strong relationship with these labs as we have been collaborating with them each year. The lab visits were done on a combination of Wednesday and (their) spring break visits. The ASM labs were all visited the same day as tours of the collections, which made for a long day that we will break up in the future.

Zooarchaeology Lab, Arizona State Museum (ASM)

An on-campus lab where participants got hands-on experience learning about zooarchaeology and where staff introduced participants to some of the applications of zooarchaeology. The participants also got a brief tour of the UA comparative faunal collection, which is visited and used by zooarchaeologists from around the world, and were shown some of its more popular specimens. The lab visit was led by Dr. Nicole Mathwich, who was a past staff member of the LHHTA program and therefore knew how to engage the students in a lively tour and discussion.

Bioarchaeology Lab (ASM)

Another on-campus lab, the bioarchaeology lab in the Arizona State Museum provided the participants with an overview of bioarchaeology and principles of how bioarchaeologists learn about people by looking at their bones. The tour was led by UA graduate student Adam Foster. While there are no real human remains laying out in this lab, the participants got to use plastic bones for some hands-on bioarchaeology activities. These included trying to identify bones, measuring bones, and trying to reconstruct the human skeleton. Note: because we have Native American students in the program, we are ensuring that this visit is optional to students and limiting the tour to 30 minutes in future, with the hands-on lab activities in a separate location.

“The program also introduced me to a whole other side of archaeology that I didn’t know about, which was the science aspect of it.”

- LSWHTA Student
Southwest Archaeology Lab, Pottery/Ceramics, School of Anthropology

This lab highlighted the importance of ceramic analysis to the field of archaeology. Dr. Mills led this activity and was able to provide expert insight for all the questions students had about Southwest pottery and ceramics. We also utilized this space as our basecamp, a place where we could leave our gear and where we could meet for important discussions and snacks, for the duration of the program.

Dendrochronology Lab, Laboratory of Tree-Ring Research

Staff, including Dr. Ronald Towner, introduced the science of tree-ring dating to the students, who had never heard of it before. Tree ring dating gives archaeologists a better understanding of the timelines of archaeological sites. Staff shared examples of tree ring cores, and dating techniques along with an overview of the history of the science itself and why the University of Arizona is a pioneer in the field.

Radiocarbon Dating Lab, Department of Physics

Carbon dating and C14 was discussed to show how historic organic material can be dated. Thanks to the lab technician, Marcus Lee, this was one of the most engaging labs on campus for our students. The fact that Marcus was Native American helped to relate this to some of our participants.
Other Arizona State Museum (ASM) Activities

In addition to the ASM labs, participants visited the museum on several occasions, where we conducted a variety of educational activities, tours, and discussions. Participants had opportunities to view the Paths of Life exhibit on multiple occasions; this is because it served as an essential reference for the final digital story project. On one of our days at the museum, museum staff gave the participants tours of the collections in the back, not open to the public. The museum is home to an extensive basketry collection and an equally extensive pottery collection, both of which were opened up to the students by ASM staff members. Arthur Vokes provided a tour of the Archaeological Repository. They also visited the Preservation and Conservation Lab, coordinated by Dr. Nancy Odegaard and her staff. On top of the tours of these collections, there were some discussions fostered by the staff, including the topic of repatriation.

Hailey in front of ASM.
Preservation Archaeology Field School

LSWHTA participants attended the Preservation Archaeology Field School in Cliff, New Mexico as their last camping trip. The field school is a partnership between the University of Arizona and Archaeology Southwest and typically recruits undergraduate university students from around the country for this summer program. They are supported to a large extent by the National Science Foundation’s Research Experiences for Undergraduates (REU) Site Program and attracts students with a variety of backgrounds. Our group was able to participate in applying excavation techniques, documentation of artifacts, and participate in various experimental archaeology activities, a signature element of this field school. The experimental archaeology lessons and activities led by Alan Denoyer, addressed using traditional techniques and tools to build an adobe house structure, flint knapping to make stone tools, stone drilling for jewelry design, and atlatl throwing. Other staff included Dr. Karen Schollmeyer (Director), Leslie Aragon (Field Director), and Teaching Assistants Kelsey Hanson, Even Giomi, and Max Fortuno, all with MA degrees.

“Excavating at Gila River Farm and getting hands on experience helped make it easier to understand what the process is for an archaeologist when an artifact is found or when ruins are being searched for.”

- LSWHTA Student
Historical, Cultural, & Educational Sites

In addition to visiting numerous National Parks, museums, and university laboratories, participants were also able to visit, engage with, and learn from locations that had a strong cultural or heritage value. These locations were often located in the community, off-campus, and not under the administration of the National Park Service. The locations we visited during the 2019 cycle involved visiting the Tohono O’odham Nation, a local non-profit organization, and a community college. A brief overview of each site is provided below.

San Xavier Mission

A Historic National Landmark south of Tucson, historic San Xavier Mission is a preserved church with strong significance to the colonial experience in the area. Participants were able to tour the entire grounds and were given handouts with reflection questions on what happened here and what impact a place like this could have on the people in the area. Students were challenged to observe the art and architecture and find symbols that merged Native American and European colonial imagery.

San Xavier Mission, unlike Tumacácori, is still in use as a church and provides regular services so is continually maintained. Another significant and unique aspect of San Xavier is that the Tohono O’odham Nation manages it instead of the U.S. government.

Friends of Tucson’s Birthplace - Mission Gardens

Located in Tucson, the Mission Gardens features heirloom Sonoran Desert-adapted fruit orchards and vegetable gardens interpreting 4,000 years of agriculture in Tucson. Mission Garden staff guided participants throughout the garden, which has been designed to replicate a Spanish Colonial walled garden. While on their tour, gardening, harvesting, and processing techniques used at the time were showcased to the students.

Centre for Archaeological Field Training at Pima Community College

Pima Community College (PCC) in Tucson has a highly regarded archaeology program; of which Stephen Molinares can attest (he went through this program before transferring to the UA). During this visit, the participants were able to learn about the field techniques used in archaeological excavation. After a short lesson
conducted indoors (we went in June = 100 degrees), the students went out to the simulated archaeology site located on the grounds of the college. Students were divided into two groups and each group took turns learning how to map and document a site and how to locate and identify artifacts. All artifacts on this site were deliberately placed there by the instructors for our own edification. Participants learned excavation process such as proper sifting techniques, artifacts collection, artifact bagging and documentation, and proper washing of different artifacts in the lab. This trip directly preceded our trip to the field school in New Mexico, and the timing was perfect, so the group knew what to do once they got to an active archaeological site.

Participants washing artifacts at the Centre for Archaeological Field Training, PCC.

Tohono O’odham Nation Cultural Center and Museum

Our field trip to the Tohono O’odham Nation Cultural Center and Museum included a brief tour and lecture about the history and importance of both the tribe and the museum. After the tour, museum staff scheduled a block of time designated for the participants to explore the rest of the museum and learn more about different aspects of Tohono O’odham history, such as a library with books and yearbooks from the boarding school era or the displays dedicated to past and active duty O’odham service members. Mr. Stephen Curry, Director, assisted in making the arrangements for our group.
Additional LSWHTA Program Elements

Engaging Through Technology

All participants received iPads to be used as tools for recording and documenting their activities. This year, participants downloaded applications (apps) that allowed them to manage photos and videos and create movies on the iPads in advance of giving the devices to the students. These apps included iMovie and iPhoto.

Students were assigned personal iPads and allowed to use them during LSWHTA activities and outings. At the end of each outing, the iPads were handed back to staff so staff could store iPads in a safe place until the next meeting. Staff dedicated several sessions to familiarizing students with their iPads as documentation tools, and to teach the basics of the applications for capturing and storing photos and videos, taking notes, and editing movies. Students were quickly adept at using the iPads to take notes during lectures, photograph and annotate events, and create movies. Participants also used their iPads to create a Spark Page, which contained pictures and videos taken throughout the program, which would serve as their final presentation for the program.

Team Building and Other Activities

Team building took place from Day One for our participants since we had not met them, nor had most of them met each other. Meeting us and each other, getting to know the campus, and getting to know their new iPads were our priorities for the first day. Using some simple icebreakers and team building activities, we were able to get to know the whole group and have them get to know each other. Dr. Barbara Mills spoke on the history of the program and the importance of archaeology providing an excellent introduction for the participants. With the Festival of Books on the UA campus coinciding with our first day, there was a prime opportunity for the participants to experience an event that takes place on campus only once a year. A scavenger hunt involving groups of three was the focus of the afternoon. Participants used their iPads to take pictures of different Festival of Books tents and UA buildings around campus to prove they completed each prompt in the hunt. Included in the prompts were to find the NPS and Archaeology Southwest booths as well as other relevant spots.

Besides the introductory lecture and Festival of Books scavenger hunt, the first day included icebreakers and other team building activities that included: (1) a formal statement of recognition of tribal lands; (2) the In Lak’ech poem; (3) the unity clap
activity; (4) a five finger contract; (5) several name games, (6) a tournament of rock-paper-scissors; and (7) a circle activity for introductions.

Originally our first day was planned to take place at Saguaro National Park West, however, our ranger at that park needed to attend the Festival of Books, and he could not commit for that day. This change of plans worked out well as it provided a perfect atmosphere for the kick-off of our program. For the future, having the first day take place in and around our basecamp will provide an excellent start to the program, allowing participants to be familiar with where all pick-ups and drop-off will be and an understanding where “basecamp” is located.

On other days we designed activities to enable participants to get used to the idea of camping and to help build interest and engagement with National Parks. They also serve to help build bonds between participants in the program. For example, since most participants (students and educators) had never camped before, we spent time setting up tents on the UA campus lawn. This worked well and made setting up camps in the three different places we overnighted considerably easier for the participants.

Crystal and Hailey successfully setting up a tent, UA Campus.
The final activity was celebratory and included presentations of the participants’ final productions. Utilizing Adobe Spark, all participants created a reflective, multimodal production consisting of text, images, video, and audio. Reflective of their time in the program, students and educators closed out their participation by presenting their work in a collaborative classroom format at the CoE. A celebratory lunch and distribution of certificates were followed in the Student Union Memorial Center at the UA Campus. Family members were invited to the Saturday event to view presentations and celebrate the overall hard work of the participants. Nearly all participants attended and the lunch was attended by about 65 people in total.
Program Evaluation

Methods and Tools

Upon entering the program, LSWHTA participating students and educators were given a pre-test survey to gauge their current levels of knowledge relating to the field of archaeology and the many cultures of the Southwest. Also, the questions focused on the frequency of engagement with NPS locations, cultural and community centers, museums, and the UA. The last main component of the survey asked students to list future careers and occupations or fields of study that they were potentially interested in.

After their participation in the program, a post-test survey was administered that focused on similar components of the first, but added more evaluation components. Southwest Archaeology Student Scholars and educators were asked to reflect on their participation and rank the engagement level of site locations and activities completed during the program cycle.

Each survey was administered utilizing Qualtrics with URL web links either being preloaded onto iPads or sent to their emails. The summaries below are separated into pre-test survey results on frequency of engagement, a pre-test and post-test analysis of knowledge-based questions, student rankings of activities and site locations, and a pre-test and post-test analysis of potential careers and majors.
Summary of Findings

Frequency of Engagement

Prior to their participation in the program, student participants were asked to gauge how often they visited state or national parks; the UA; a meaningful cultural or religious site; and an archaeological site, history, or cultural museum. Students were given the option of selecting quite frequently (5 or more times a year), sometimes (once or twice a year), rarely (once or twice ever) or never. Their answers are presented in the charts below:

Overall, a majority of the students indicated they had low frequency in visiting state and national parks previous to starting the program. Seven students selected rarely, with 2 students selecting they have never visited. Three students did indicate they visit quite frequently and one student indicated they sometimes visit. These results reflect current studies showing people from communities of color are less likely to visit and engage in National Parks and outdoor recreation. Through their participation in LSWHTA, students from families and communities with low levels of visitation were able to experience and engage with multiple National Parks Service locations throughout the State of Arizona. In doing so, LSWHTA not only worked to support the National Parks Service’s Call to Action, but hoped to instill a new sense of park-going identities in their participants.
Regarding their frequency of visits to the UA campus, student responses are distributed somewhat differently compared to other locations. With four students selecting quite frequently and four students selecting sometimes, the majority of participants visit the UA annually. With three students selecting rarely, and two who had never visited, a portion of the participants still had little to no exposure to the UA before participating. It is worth mentioning that a majority of our participants were also involved in various college preparation programs, such as Upward Bound and AVID, which may have provided them the opportunity to visit the UA outside of LSWHTA activities. Through their visits to multiple university laboratories and the ASM, in combination with utilizing the Emil W. Haury Anthropology building as the LSWHTA central location, students gained valuable exposure to the campus setting and became more confident in navigation.
A majority of our student participants identified with intense pride in their cultural heritage and various identities. Some indicated that they had the opportunity to visit sites that connected to their cultural or religious practices. The chart above shows one of the evenest distributions, in comparison to visits to the UA or a national park. With only three students indicating they have never visited such a location, the majority of students have visited a significant cultural or religious site, with the range being from once or twice during their lifetime or annually of five times or more. It is also worth noting that through their participation, students were not only able to visit the sites that they had previous knowledge of being connected to but found new connections as they learned the rich history of the peoples involved at some places.
Before their participation in the program, student visitation to an archaeological site or historical or cultural museum was similar to frequency of visitation to a state or National Park. From the chart, we can see eight students, being the majority, indicated they rarely visit such a location with two students indicated they have never visited. One student visits such sites quite frequently while two visit sometimes. The primary overlap with visitation to a state or national park may be that most archaeological sites that are accessible to the general public fall in the categories of being a state or national park. The reason cultural museums and archaeological sites were all grouped into one answer, though their settings may be very different, is that they are all core components to experiential learning. Through their participation, those students who indicated they rarely or never visited such sites had the opportunity to visit multiple archaeological sites in Arizona and New Mexico, and to visit historical and cultural museums at the UA, Tohono O’odham Nation, and NPS locations. Our hope is that the participants continue to visit such places in the future.
Knowledge-Based Questions

With both the pre-test and post-test, we asked students five knowledge-based questions focusing on archaeology, culture, heritage, and history. We used the questions to gauge the knowledge levels students possessed in relation to entering the program, and the ways their participation strengthen or increase them. Students were able to choose strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, or strongly disagree. Those questions were as follows with the number of responses relating to strongly agree or somewhat agree displayed in the chart below.

Questions:

1. I know about the history of the Native American/Indigenous cultures of Southwestern Arizona.
2. I can describe the ways the early Spaniards impacted the Native American cultures of the southwest.
3. I can describe some of the ways plants were used by different cultures in the Southwest.
4. I know about Tucson’s Mexican and Spanish heritage.
5. I know quite a bit about the field of archaeology.
6. I can list and describe some of the human cultures that lived in the Southwest over the last 10,000 years.
It is worth noting that Question 5 was removed from this cross-analysis as it was not a knowledge-based question, but focused on interest as it asked students if they had a strong interest in the cultures and history of the Southwest. The reason it was not displayed in chart format is that for both the pre-test and post-test surveys, the student responses and averages stayed the same. Students in the LSWHTA program entered with a strong interest in Southwest cultures and history as nearly all indicated strongly agreed or somewhat agreed. This reflects the personal beliefs many students held and could have been a driving force that led them to apply to the program.

Across all questions, following their participation, students gained or strengthened their knowledge relating to the various topics of history, culture, heritage, and archaeology both relating to the Tucson area and the Greater Southwest. Following their participation, at minimum, 10 students or more felt they somewhat agreed or strongly agreed with all questions they were being asked.

The question that saw the highest increase was Question 7, which focused on the human cultures of the Southwest that stretch back over 10,000 years. Before their participation, two students felt they strongly agreed or somewhat agreed in being able to describe and list human cultures. After participation in the program, the number of students confident in their ability to list and describe the human cultures of the Southwest grew to 11. Questions 1 and 6 also saw steady growth as both questions doubled to 12 students from their original 6. Each question shows an increase in student’s awareness, reflecting the many impacts of their participation in the LSWHTA.

While all students were able to partake in both the pretest and posttest survey, one student survey was invalidated as it was incomplete during the time of the evaluation and cross-analysis. Sections that indicated 12 students in the chart above represent that all students who completed the post-survey were confident in relation to Questions 1, 3, and 6.
Rankings of Site Activities and Site Locations

During the post-test survey, students were asked to rate all LSWHTA site location visits and activities by levels of being interesting and engaging.

For the more general categories of activities, students were able to select very engaging and interesting (5), engaging and interesting (4), somewhat engaging and interesting (3), not too interesting or engaging (2) and not interesting and engaging at all (1). The average of each activity was taken and ranked in numerical order as follows:

- Overnight Camping Trips (4.8)
- Field Trips to National Parks (4.8)
- Archaeology Field School (4.4)
- Museums and Cultural Centers (4.3)
- Laboratories at the University (4.1)
- Digital Storytelling Work Time (4)

Overall, the average of each activity category was “engaging and interesting” and overnight camping trips and field trips to National Parks have the same average. Field trips to National Parks outside of the Tucson area often took place simultaneously with camping trips, such as with Grand Canyon National Park, so it is understanding that the average of both would be closely related. The top three also reflect activities or places that a majority of students have never visited or engaged with. The camping trips were noted as memorable to students as the group dynamic allowed for bonding among peers, and it was the first time camping for a majority of the students. The archaeology field school was also among the top three as it allowed for hands-on activities related to what students were learning about and discussing for months.
For visits to specific site locations, students were able to select very engaging and interesting (6), engaging and interesting (5), somewhat engaging and interesting (4), not too interesting or engaging (3), this did not interest or engage me at all (2), or I do not remember or did not attend (1). Since students were rating specific locations instead of general categories of activities, the last option was added for students who may have been absent or did not remember. The average of each site location was taken and ranked in numerical order as follows:

- Grand Canyon National Park (6)
- Montezuma Well National Monument (6)
- Montezuma Castle National Monument (5.5)
- Tumacácori National Historical Park (5.4)
- Wupatki National Monument (5.4)
- Tuzigoot National Monument (5.4)
- Mission San Xavier del Bac (5.1)
- Arizona State Museum (5)
- Tohono O’odham Nation Cultural Center and Museum (4.9)
- Casa Grande National Monument (4.75)
- Saguaro National Park - West (3.9)

The opportunity to visit museums, cultural centers, university laboratories, and NPS locations is the foundation for LSWHTA. For some students it is the first time they are able to visit such locations, as seen with their pre-test survey. From the results above, we see visits to NPS locations dominated, and were among many of the highest ranked locations. The trip to the Grand Canyon National Park received the same average as Montezuma Well National Monument, however a majority of students expressed it as their favorite trip of the entire program. All site locations average well indicating strong levels of engagement at most NPS locations, museums, and historical sites.
Potential Careers and Majors

In both the pre-test and post-test survey, students were asked to list four potential career or fields of study that they were interested in. The pre-test and post-test data were compiled into word clouds to show how students aspirations towards future careers and fields of study may have changed following their participation. Their answers to the same question from both surveys are separated and discussed below.

Pre-test survey word cloud:

According to the initial pre-test survey students listed a total of 38 future occupations or fields of study. Some students shared interests as a majority expressed interests related to medicine, film, journalism, psychology, archaeology, or being a veterinarian. There were also other options relating to being a lawyer, a dancer, or studying mathematics, American Indian Studies, or early childhood education. From this data we can see that students came into the program with a diverse set of future aspirations.
From the post-test data, we can see some changes in comparison to the pre-test survey. For starters, a total of 45 fields were listed for potential study or occupations, which was an increase from the original 38. Some areas from the original data set grew in popularity, as seen with archaeology, while some did shrink or disappear. In addition, new fields of study/occupations were added reflecting their participation in the program as seen with such terms as geology, zoology, and anthropology. The example of archaeology is worth mentioning in further detail as students gave specific examples that include, experimental archaeology, bioarchaeology, Mayan archaeology, and zooarchaeology. For the purpose of this word cloud they were grouped together under the larger field of archaeology, but we still recognize the significance of students indicating specific areas. Education also grew from the initial pretest survey which reflects the professional background and fields of study of half the LSWHTA staff who are from the College of Education. From both word clouds we can see students entered the program with strong aspirations towards higher education and future occupations, and that their participation in the program had a positive effect in broadening their horizons and exposing them to new possibilities.
Program Successes & Recommendations

The LSWHTA successfully exposed participants to the natural and cultural resources available at national parks as well as other heritage sites. LSWHTA participants successfully developed interpersonal skills. Participants showed improved communication skills with peers and LSWHTA staff, successfully presented their final reflection project to an audience, developed leadership skills, and worked well together as a team. Participants also showed improved intrapersonal skills. They showed improved confidence when visiting sites, working with coordinators, and working together to set up and break down campsites. Attendance and participation in program activities indicate improvements in self-motivation. Students successfully applied the ArchP4 framework as indicated by their final reflection projects, which included direct references to and concepts from the framework. Participants showed improved digital literacy skills as indicated by their final reflection projects, which included a Spark Page and Video as well as their photographs and use of iPads as a tool throughout the program.

The LSWHTA archaeology program was successful at scheduling engaging and interesting trips and activities, which is indicated by how highly participants ranked most activities and trips. The LSWHTA program also successfully increased participant knowledge of culture and archaeology in the southwest indicated by the evaluation results on knowledge of culture and archaeology. Lastly, the LSWHTA program successfully exposed students to a variety of fields of study as indicated by evaluation results that showed that participants are considering entering fields that they did not consider before participating in the program.

We have a number of recommendations for the program as it enters the 2020 recruitment year:

1. Collaborate with presenters and park rangers in advance to help shape site activities and introduce presenters and park rangers to the LSWHTA Framework. Collaborating with presenters and park rangers in advance ensures that activities are engaging and appropriate for high school students and educators. Activities and discussions will be created with the LSWHTA framework as a foundation to develop participants’ critical thinking skills, agency, and identity. Activities developed will be hands-on to ensure that participants are engaged. Discussions will focus on thinking critically about archaeology and connections to the lived experiences of participants. The LSWHTA team will discourage the use of lengthy lectures and advanced archaeological concepts without a proper introduction.
2. Develop contacts with local knowledge keepers, community members, elders, and others in the areas we visit. Incorporating local knowledge keepers, community members, elders, and others into LSWHTA programming broadens those perspectives participants are exposed to and connects their learning to the local community.

3. Build in more time into the schedule for team building, reflection, discussion, and activities, and working on final reflection project during trips and at base camp. Dedicating more time to team building encourages participants to build relationships with others and develop interpersonal skills. More time for reflection and discussion at the beginning and end of trips encourages participant assimilation and accommodation of new knowledge. Dedicating more time throughout the program to work on the final reflection project allows participants to practice presenting, editing, and creating content in a variety of mediums.

4. Introduce students to the framework and foundational archeological concepts in advance of site visits. For UA faculty and staff and NPS personnel, it provides the opportunity for these professionals to disseminate knowledge of their research and disciplines while learning how to communicate this with high school aged students. Introducing the framework at each site visit ensures that participants are thinking critically about their study of archaeology and that they are recognizing connections between the places they visit and their lived experiences. Introducing foundational archaeological concepts to participants at each site ensures that participants deepen their understanding of archaeology while at the site and that they can ask presenters critical questions.

5. Connect with Indigenous and Mexican, Latino/a, and Chicano archaeologists, anthropologists, and community leaders to present and accompany the student’s on-site visits.
## Appendices

### A: List of 2019 Participants

<table>
<thead>
<tr>
<th>Student Participant:</th>
<th>Grade Level:</th>
<th>High School:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alan Murrieta</td>
<td>Freshman</td>
<td>Pueblo High School</td>
</tr>
<tr>
<td>Crystal Cortez</td>
<td>Sophomore</td>
<td>Catalina High School</td>
</tr>
<tr>
<td>Ethan Cooper</td>
<td>Sophomore</td>
<td>Canyon Del Oro High School</td>
</tr>
<tr>
<td>Gaby Arciga</td>
<td>Sophomore</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Hailey Hanson</td>
<td>Sophomore</td>
<td>Catalina High School</td>
</tr>
<tr>
<td>Ismael Angulo</td>
<td>Sophomore</td>
<td>Pueblo High School</td>
</tr>
<tr>
<td>James Johannotberns</td>
<td>Junior</td>
<td>Canyon Del Oro High School</td>
</tr>
<tr>
<td>Maria Valencia</td>
<td>Junior</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Marla Terminel</td>
<td>Freshman</td>
<td>Pueblo High School</td>
</tr>
<tr>
<td>Martin Pacheco</td>
<td>Junior</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Michael Pompa</td>
<td>Junior</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Paul Sandoval</td>
<td>Sophomore</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Yaricsa Contreras</td>
<td>Junior</td>
<td>Cholla High School</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educator Participant:</th>
<th>Occupation:</th>
<th>High School:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brenda Boehler</td>
<td>Teacher</td>
<td>Cholla High School</td>
</tr>
<tr>
<td>Rubi Soto</td>
<td>School Counselor</td>
<td>Sunnyside High School</td>
</tr>
<tr>
<td>Theresa Toro</td>
<td>Senior Counselor</td>
<td>Pueblo High School</td>
</tr>
</tbody>
</table>
# B: 2019 Schedule of Activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Times</th>
<th>Activity/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2(^{nd})</td>
<td>8:00 am – 3:00 pm</td>
<td>Kickoff at the University of Arizona</td>
</tr>
<tr>
<td>March 13(^{th})</td>
<td>3:30 pm – 6:00 pm</td>
<td>Laboratory of Tree-Ring Research &amp; Accelerator Mass Spec Lab</td>
</tr>
<tr>
<td>March 21(^{st})</td>
<td>9:00 am – 5:00 pm</td>
<td>Arizona State Museum, Paths of Life Exhibit, Tour of collections, Conservation Lab, Bioarchaeology Lab &amp; Zooarchaeology Lab.</td>
</tr>
<tr>
<td>March 22(^{nd})</td>
<td>9:00 am – 4:00 pm</td>
<td>Casa Grande Ruins National Monument</td>
</tr>
<tr>
<td>March 30(^{th})</td>
<td>9:00 am – 4:00 pm</td>
<td>Tumacacori National Historic Park &amp; San Xavier Mission</td>
</tr>
<tr>
<td>April 6(^{th})</td>
<td>8:00 am – 5:00 pm</td>
<td>Saguaro National Park West, Tohono O’odham Museum &amp; Cultural Center</td>
</tr>
<tr>
<td>April 17(^{th})</td>
<td>3:30 pm – 6:00 pm</td>
<td>Southwest Ceramics Lab</td>
</tr>
<tr>
<td>April 27(^{th})</td>
<td>8:00 am – 5:00 pm</td>
<td>Mission Gardens and UA work day</td>
</tr>
<tr>
<td>May 4(^{th}) – May 5(^{th})</td>
<td>7:30 am – 6:00 pm</td>
<td>Montezuma Castle National Monument, Montezuma Well, and Tuzigoot National Monument</td>
</tr>
<tr>
<td>May 15(^{th})</td>
<td>3:30 pm – 6:00 pm</td>
<td>Western Archaeological and Conservation Center</td>
</tr>
<tr>
<td>June 3(^{rd}) – June 5(^{th})</td>
<td>7:00 am – 6:00 pm</td>
<td>Grand Canyon National Park, Wupatki National Monument</td>
</tr>
<tr>
<td>June 7(^{th})</td>
<td>8:00 am – 4:00 pm</td>
<td>Centre for Archaeological Field Training at Pima Community College</td>
</tr>
<tr>
<td>June 10(^{th}) – June 12(^{th})</td>
<td>7:00 am – 6:00 pm</td>
<td>Archaeology Southwest Preservation Archaeology Field School in New Mexico</td>
</tr>
<tr>
<td>June 14(^{th})</td>
<td>8:00 am – 4:00 pm</td>
<td>Last UA day to finish productions</td>
</tr>
<tr>
<td>June 15(^{th})</td>
<td>10:00 am – 2:00 pm</td>
<td>Digital Presentations and Graduation at UA</td>
</tr>
</tbody>
</table>
For more information please visit our website swheritage.arizona.edu or send an email to swculture@email.arizona.edu

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