



HIKING THE GRAND CANYON



THE UNIVERSITY OF ARIZONA
Cooperative Extension



AZ# 1903-2021
Published August 2021

Hiking the Grand Canyon with 4-H Healthy Living Ambassadors: The What, How, and Why of Taking Youth on a Challenging Adventure

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Introduction:

This publication describes the preparation and organization of a 4-H youth development challenge adventure experience that culminates with hiking the Grand Canyon. The purpose of this article is to provide youth service professionals with the information needed to replicate a similar challenge experience. Details are provided regarding training, preparation, logistics, and safety. We have divided the article into the following sections:

1. Background information, which we have titled, “A Challenging Adventure: What is it?”
2. Instructional information, which we have titled, “Logistics: How is It Done?” and
3. Evaluation, which we have titled, “Evaluation: Why Do We Do It?”

The authors have endeavored to provide readers with some key points to consider when planning, implementing, and evaluating a challenging adventure for youth. In this article we describe a Healthy Living Ambassador program that incorporated this challenge activity, but that is not a necessary component. This could be a stand-alone outdoor challenge activity, which can take many different forms (e.g., participating in a marathon, climbing a mountain). We further recognize that the details of each expedition will vary depending on when and where the adventure takes place, but we hope that our experience inspires readers to provide similar opportunities for young people to learn and grow.


A Challenging Adventure: What is it?

Each year for the past decade, Arizona 4-H has taken a group of youth to hike the Grand Canyon. The idea for the hike started at the conclusion of the Apache County 4-H Summer Camp program in June, 2008, when a group of camp counselors suggested organizing a celebratory activity to mark a successful 4-H summer camp.



Start of the Adventure

For the next 14 months, the returning 4-H Summer Camp counselors worked together to plan, organize, and implement the first-ever Arizona 4-H Grand Canyon hike, scheduled for October, 2009. The team of youth and Cooperative Extension professionals decided that the hike would be 15.9 miles (Adkison, 2006), starting at the South Kaibab Trailhead, proceeding down to the Colorado River and up by way of the Bright Angel Trail. The first year there were seven teens and two adults that completed the inaugural hike. Each subsequent year, more and more teens and adults asked to do the hike. Over the years more county 4-H programs have decided to get involved including: Cochise, Pima, Pinal, and Santa Cruz. As many as 80 youth have participated annually, hiking routes ranging in length from 9 to 15.9 miles. All in one day.



All in one day, you might ask? You take teens on a hike of the Grand Canyon and you do the entire hike in one day? The answer is yes. Understand that the youth are well prepared, safety is a paramount concern, and adult supervision is prevalent.

Background on the Healthy Living Ambassadors 4-H Club Program

With the support of a Children, Youth, and Families at Risk (CYFAR) USDA grant in 2012 (The University of Arizona Teens Advocating Sustainable Change SCP Project, Award Number: 2012-41520-19428), the Pima County Cooperative Extension, through a collaborative initiative between Family, Consumer, and Health Sciences and 4-H Youth Development, started the 4-H Healthy Living Ambassador (4-H HLA) program. The 4-H HLA program offers middle and high school students the opportunity to be trained as leaders within the community in promoting healthy lifestyle choices, such as proper nutrition, physical activity, food budgeting, and healthy food preparation. The specific overarching goals for the CYFAR project were for participants to increase physical activity and consumption of fruits and vegetables. At the end of the first year, results of the program evaluation showed that while teens were increasing their consumption of fruits and vegetables, they were not increasing their physical activity. We decided to incorporate an activity that would motivate youth to increase their physical activity while at the same time introduce them to a recreational activity they might enjoy for a lifetime: namely, hiking and spending time outdoors in National or State Parks.

Living in Arizona, we are fortunate to have many trails and outdoor spaces easily accessible to both urban and rural youth. Our colleague in Apache County had been conducting a hike of the Grand Canyon already for several years. It made sense to build this activity into our existing 4-H HLA programming and make the hike a culminating event towards the end of the school year for our middle and high-school aged 4-H youth. The question is, would this opportunity to hike the Grand Canyon help youth achieve positive healthy living outcomes? Would the hiking opportunity motivate youth to be more physically active? Would the preparation and hike stimulate an interest in hiking as a lifestyle change? Would youth spend more time outdoors? Would youth gain an appreciation for nature and National or State Parks? These are some of the questions we posed for our program evaluation. The following article describes how we planned this excursion, what we hoped youth would gain as a result of participating in the hike, the results of our evaluation, and some lessons learned from our experience.

A program such as this is the type of adventure that pushes people, young and old, outside of their comfort zones and challenges them both mentally and physically. We posit that it also engages participants in a learning experience that is deep and impactful: giving those who dare to do it an experience that they will remember for their entire life. We believe that when we engage in this type of challenging and awe-inspiring activity, we learn that we can do more than we thought was possible. This is one-way teens grow and learn, they “learn by doing,” which also happens to be the 4-H motto, and we contend that hiking the Grand Canyon epitomizes that philosophy. Initially we set out to improve our program outcomes by increasing teens’ physical activity, but we discovered that the breadth of learning is far greater than we imagined.

Logistics: How is it done?



Teens begin the hike down South Kaibab Trail

Since 2015, the 4-H HLAs have participated in the Grand Canyon hike. Prior to hiking in the Grand Canyon, the youth are required to participate in a 4-H Healthy Living Ambassador program throughout the school year. Youth ages 12-18, who live in counties offering the program, are eligible to join at the beginning of each school year. The club activities include monthly community meetings, projects that focus on improving their own physical and emotional wellbeing, as well as volunteering in the community as educators of personal and community wellness. The Arizona counties with 4-H Healthy Living Ambassador Clubs are Pima, Pinal, Cochise, and Santa

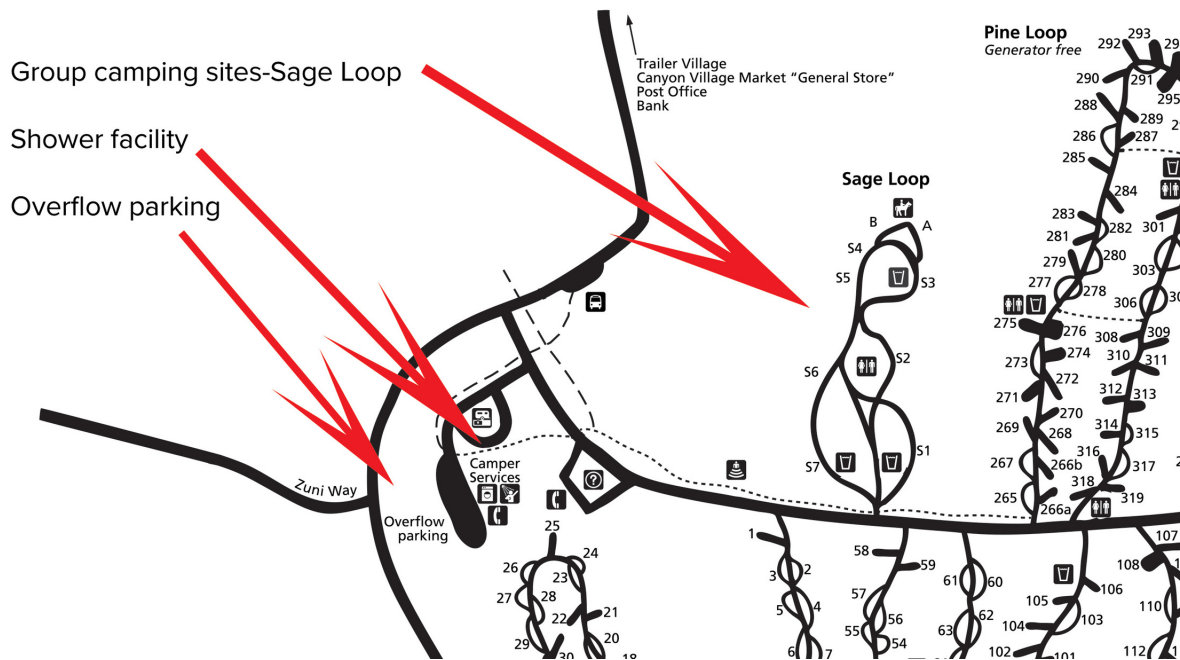
Cruz all located in Southern Arizona, along the border with Mexico. Most of the young people who have participated in this trip over the last five years are from underserved communities. To ensure access for all interested youth, 4-H enrollment and participation fees are covered through scholarships.

The opportunity for 4-H HLAs to train for and hike the Grand Canyon doesn't require the youth to pay any additional fees beyond the club annual membership. Youth may participate in the hike as long as they meet the prerequisites of the project. The funding used to cover expenses associated with this trip initially came from our CYFAR grant, which ended in 2017 (Award Number: 2012-41520-19428). Since then, our primary source of funding comes from a grant provided by the Walmart Foundation through National 4-H Council. The funds pay for staff time, transportation, food, camping permits, National Park entrance fees, and emergency medical supplies. Other supplementary grants have been acquired in the past to defray some of the costs. Parents and family members are not invited to attend with their children, with the exception of a registered nurse, who is also a certified 4-H Volunteer.

Youth Involvement in Planning: Throughout the years, youth have participated in the planning and facilitation of the Grand Canyon experience in a variety of ways. Youth have been instrumental in assisting with some of the fundraising for this program. Several times this program has been part of fundraising campaigns that require social media "likes" or "votes" and the youth have been a part of extending that reach and serving as spokespeople when asked about the program. In addition, youth have served on subcommittees to help develop the menu and create the designs for the t-shirts that everyone receives at the end of the hike. Lastly, youth were involved in an ethnographic evaluation that took place during the hike. Youth interviewed participants on the impact of the hike as it was happening.

Scheduling: Camping reservations in the Mather Campground in Grand Canyon National Park (South Rim) are typically made approximately one year in advance to ensure availability. Enough space is reserved to accommodate a maximum of 100 people (Sage Loop area is for group camping). The Mather Campground includes a bathroom with flushable toilets, potable water, tables, and a fire pit. Coin showers and laundry services are also within walking distance of the campsite.

Map of Mather Campground in Grand Canyon National Park (Sage Loop contains group sites):
<https://v>



The Grand Canyon trip is typically scheduled between the last weekend in March and the third weekend in April. This timeframe works well because it is toward the end of the school year (in Arizona) and acts as an incentive for youth to participate in a 4-H HLA program throughout the year. This time of year also has wonderful weather in Southern Arizona that is perfect for spending time outdoors while preparing for the Grand Canyon hike. Due to the significant elevation differences in the Grand Canyon, the weather is variable and somewhat unpredictable. The elevation at the bottom of the canyon is approximately 2,400 feet above sea level, while the elevation at the South Rim is approximately 7,000 feet. This elevation change can make for significant differences in weather conditions; approximately 20 to 25 degrees difference from top to bottom at any one time. There have been trips when we have been snowed on at the South Rim, with temperatures in the low 20's, while other year's experienced 80 degree temperatures at the Colorado River.

A Friday – Sunday schedule is always chosen for the trip timeframe, which requires the youth to be excused from school for one day. The schedule is as follows:

Friday:	8:00 a.m. Cochise and Santa Cruz Counties meet at Pima County Cooperative Extension (PCCE) office in Tucson, AZ
	9:00 a.m. Depart from the Pima County Extension Office
	Meet for lunch at the Sunset Point rest stop, between Phoenix and Flagstaff (Pinal County meets us at this point)
	Arrive at the Grand Canyon by 4:00 p.m., set up camp (Apache County 4-H arrives)
	6:00 p.m. Dinner Evening program includes conversations around the campfire regarding goal setting, the importance of preparation, and making sack lunches for Saturday.

Saturday: 5:00 a.m. wake-up and breakfast
6:00 a.m. Departure—hikers going to the bottom (Hiking option #3)—hike starts at 7:00 a.m.

8:00 a.m. Departure—hikers going to Indian Gardens (Hiking option #1) and/or Plateau Point (Hiking option #2)

7:00 p.m. (or before) Dinner

8:00 p.m. Camp fire and s'mores

Sunday: 6:30 a.m. Wake-up
8:00 a.m. Pack-up and leave campsite; Stop at Desert Tower to shop for souvenirs.

Eat lunch at Anthem food court in North Phoenix.

4:00 p.m. Arrive back at the PCCE office (parents take their children home!)

Participation in the Grand Canyon Hike: Qualifying 4-H HLAs are given the option to participate in this project in mid-January. To participate, the 4-H HLAs are required to complete a commitment form that outlines the requirements of the project and asks them and their parents to sign the statement indicating that they understand the requirements.

These requirements include:

1. Log at least 50 miles of hiking or running during the 2 months prior to the trip
2. Participate in at least two 4-H led practice hikes during the 2 months prior to the trip
3. Participate in at least one 4-H led hike to the top of Mount Wrightson in the Santa Rita Mountains. Those who would like to attempt the 15.9 mile hike in the Grand Canyon are required to complete this hike in 7 hours or less. Those who make it to Baldy Saddle and back in 7 hours or less may do the 9 or 12 mile hike in the Grand Canyon.

Information youth are asked to provide with the commitment form include:

- Personal contact information for them and their parent
- Date of the Mount Wrightson hike that they plan to attend (there are typically two dates offered)
- Food restrictions and food preferences (i.e. traditional, vegetarian, or vegan)
- A description of why they would like to attend the trip
- Camping equipment needs

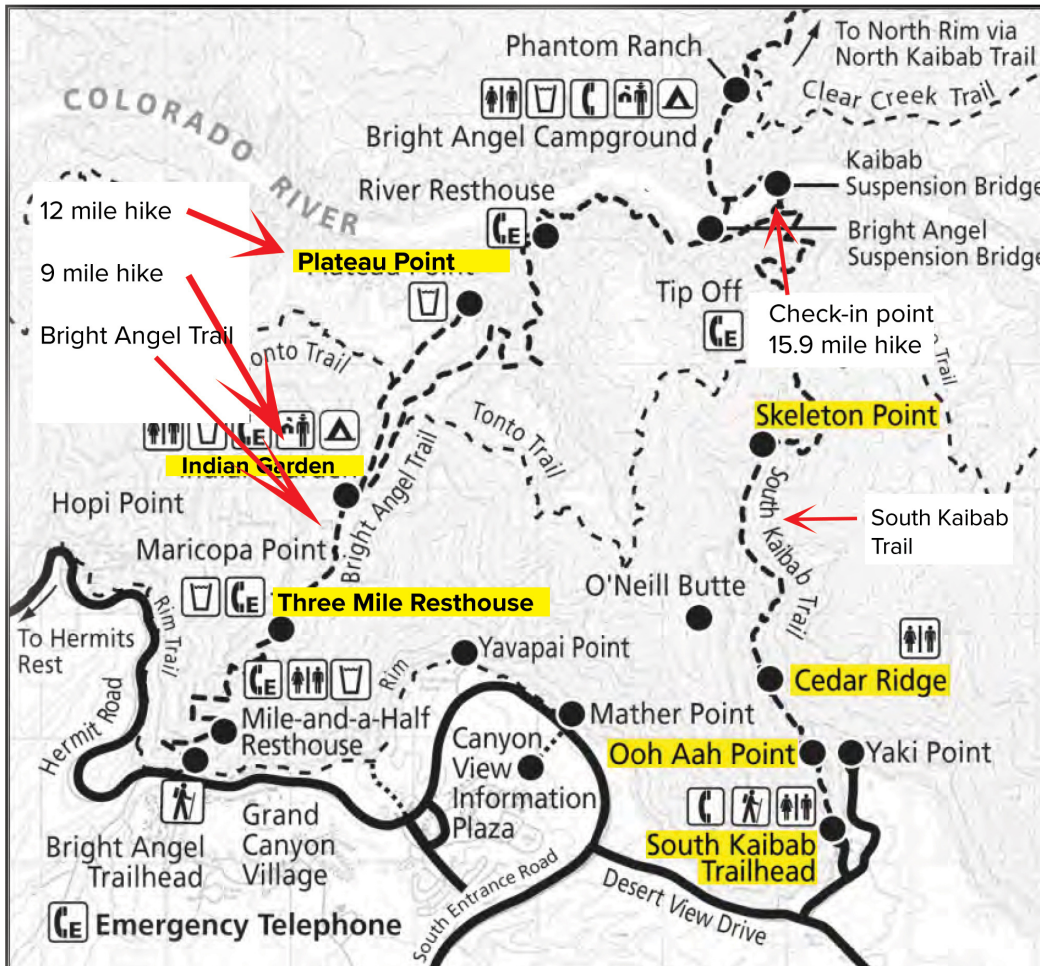
Hike Options—Participants are told that they will be able to select from one of three hiking choices in the Grand Canyon:

Option #1 = 9 miles

Hike down Bright Angel Trail to Indian Gardens and back. Indian Gardens is an oasis with large cottonwood trees, picnic tables, and water. This hike is nine miles (4.5 down to Indian Gardens and 4.5 miles back to the rim of the canyon). This is a strenuous hike with many switchbacks and very steep in most places. It is the most common hike into the Grand Canyon. It would give any hiker a true sense of being in the Grand Canyon and experiencing the size of the canyon. This hike will be difficult and will require adequate preparation.

Option #2 = 12 miles

Hike down Bright Angel Trail to Indian Gardens and then hike onto Plateau Point and look into the inner gorge to see the Colorado River. This hike is an additional three miles (it is 1.5 miles from Indian Gardens to Plateau Point and 1.5 miles from Plateau Point back to Indian Gardens). The entire hike is a total of 12 miles. This hike will be difficult and will require adequate preparation.



Option #3 = 15.9 miles

Hike down the South Kaibab Trail to the Colorado River and hike up Bright Angel Trail. This hike is 15.9 miles and is very strenuous and difficult. This hike is for those that are in excellent shape and will require a significant amount of preparation.

Participants can wait until the Friday of the trip to make a decision about which hike they will be doing. There is always at least a 2 to 10 adult-youth ratio for each hike. Most of the 4-H youth typically choose to do the longest hike, so they can see and feel the cold water of the Colorado River.

[For detailed maps see <https://www.nps.gov/grca/planyourvisit/upload/brightangeltrail.pdf> and <https://www.nps.gov/grca/planyourvisit/upload/southkaibabtrail.pdf>]

Training to Hike the Grand Canyon: A wide variety of practice hikes are utilized for this training, with the intent of starting with shorter, less steep hikes and increasing in difficulty with each passing week. The youth are also encouraged to hike with family and friends to ensure that they have at least 50 miles of hiking or running before the trip. Practice hikes in Pima County occur in the Tucson Mountains, Rincon Mountains, Catalina Mountains, Santa Rita Mountains, Catalina State Park, Saguaro National Park, Tucson Mountain Park, as well as smaller urban hikes, such as Tumamoc Hill. In order to appropriately train for the Grand Canyon, it is essential to include both long and steep hikes to ensure that youth are prepared for such a physically demanding challenge. Youth are also given an illustrated training guide for ways to improve their physical readiness without leaving home. Youth are required to track their 50 miles of preparation on either a training log or through a phone app.


Certified adult volunteers and staff are recruited to chaperone the young people on training hikes throughout the region. At least one Designated Campus Colleague (i.e. certified 4-H volunteer, 4-H staff or faculty, or AmeriCorps member) and one other adult, are required to attend each training hike. If possible, at least one practice hike is offered per weekend for the two months of training leading up to the Grand Canyon trip. The adult chaperones select their own practice hikes and record the hike details on a Google Calendar that is shared with youth participants and their parents. The calendar shows the details of each hike, including date, time, length, elevation, what to bring, and transportation details. Hike details are accessed through www.alltrails.com and links to specific trails are provided in the Google calendar. 4-H youth and their parents are reminded of weekly hikes through a group text messaging app called Remind. They are asked to text the practice hike leader to let them know they will be attending. The youth are told to bring plenty of water, snacks and/or lunch (depending on the length of the hike), to wear a hat and sunscreen, and to watch the weather forecast to ensure they are dressed appropriately.

As part of all the hikes, at least two adult chaperones act as the leader and sweeper, with the leader being in the first hiking position and the sweeper staying with the slowest hiker. This method ensures that no youth are left behind or leading since there is always the potential of getting lost. It is important for the adult chaperones to choose hikes they are familiar with to ensure that the chosen hike is appropriate and that they know the surroundings and trail system.

As a prerequisite to participating in the Grand Canyon hike, youth must first demonstrate their capability by completing at least one of two hikes to summit Mount Wrightson, located 50 miles south of Tucson in the Santa Rita Mountains. We have determined that is an appropriate assessment of a hiker's ability to ensure that youth are physically and mentally ready for the Grand Canyon. It is a total of 10 miles with 4,000 feet of elevation gain. These hikes occur on consecutive Saturdays, one and two weeks before the Grand Canyon trip. A hike completion timeframe of seven hours was chosen



Summit Mt. Wrightson



to ensure that the participants are capable of completing this difficult hike within a reasonable amount of time. Hikers check-in with 4-H adult chaperones at the summit.

The participants are instructed to bring at least three liters of water, lunch, snacks and sun protection. They are given mini-medical kits that include bandages and moleskin for blisters, electrolyte tabs for their water, a map that shows the trail and points of interest, and a list of adult chaperone phone numbers. Prior to beginning the hike, the youth are asked to use the restroom at the trailhead and listen to instructions to ensure they know the trail route. The youth are told about the Leave No Trace philosophy, whereby we leave the environment in even better condition than we found it by ensuring that all trash is taken out and to stay on the trails to avoid erosion. The youth are instructed on what to do if they need to go to the bathroom, told to work through tired pain but to stop and walk back down if they feel injured. The buddy system is also required to ensure that no one is left alone. The youth are encouraged to stay with someone they are pacing with, rather than always staying with friends who may have different fitness levels.

Hiking Safely in the Grand Canyon: Safety is of paramount importance when hiking the Grand Canyon anytime, but most especially with youth, as there are many dangers that exist; including falls, dehydration, heat stroke, cold exposure, sun burn, and venomous creatures. All of these dangers are first addressed on the practice hikes, which is why two 4-H led practice hikes and 50 miles of hiking or running are required for participation. During the practice hikes, youth are taught how much water they should be drinking, they learn the difference between a sore muscle and an injured ankle, and they experience how differences in elevation can affect their ability to breath. They discover the clothes and shoes that work best for them and they learn if the shoes they have selected are appropriate for the many steps they will be taking.

One of the biggest risks is getting lost, although that risk is somewhat variable, depending on the hike location. In order to ensure that communication can be optimized in the Grand Canyon, walkie-talkies are used by adult chaperones to communicate with one another. At least one satellite phone is also carried by an adult chaperone to ensure that emergency personnel can be notified if all other communication measures fail. Since the youth and adults come from different counties and do not know everyone, they are given a small green ribbon to tie on their daypacks so they can identify others in the group if they need assistance during the hike. Youth are informed that park rangers are regularly patrolling the trails, but that they should not be relied upon to help unless someone is lost or a serious medical issue arises. All hikers are also given the same mini-medical kit as is used for the Mount Wrightson hike, which includes a map of the trails in the Grand Canyon (with locations of restrooms and where water can be refilled). In addition, one adult chaperone is always assigned to be in the lead and one at the end to ensure that the youth are all accounted for along the way. Youth also check-in at turn-around points on each of the hikes. Most of the young people have cell phones but those cannot be relied upon because cell phone service in these remote areas can often be an issue. The adult chaperones also play a role in providing extra food or water, if necessary, reminding youth to eat and drink regularly, practice sun safety, and to always watch the trail for snakes. The youth are told that they should always be in eye-shot of at least one other person (their hiking buddy) to ensure that they are never left alone. Practicing these skills while hiking allows the youth to learn by doing, since that is the 4-H way, and the best way to prepare and have fun, while simultaneously staying safe.

A Note of Caution: The National Park Service advises visitors to the Grand Canyon not to attempt a hike from the rim to the river and back in one day, especially from May to September. They go on to explain, “Depending on how prepared you are, your trip can be a vacation or a challenge, a revelation or an ordeal. Over 250 people are rescued from the canyon each year. The difference between a great adventure in Grand Canyon and a trip to the hospital (or worse) is up to YOU.” We want the reader to know that we do not dismiss or take this warning lightly. Nor should you if you decide to replicate this program either in the Grand Canyon or elsewhere in a similarly challenging location. Proper preparation of both the youth participants and the adults supervising them is an integral part of the program. Assessing the abilities of your hikers helps to ensure that they are participating in the hike option that matches their level of ability. In 2020, the National Park Service instituted a new policy regarding group hikes or runs in the Grand Canyon (<https://www.nps.gov/grca/learn/management/sup.htm>). There is an application to be completed and a fee of \$250 per group for extended day hikes in the canyon. The pertinent part reads as follow:

Organized Group Rim-to-Rim and Extended Day Hike/Run

Who is required to obtain a permit: Any organized, non-commercial (12-30 participants) or not-for-profit group (up to 30) conducting rim-to-rim and extended day hiking and running, including rim-to-river-to-rim, and rim-to-rim-to-rim that are operating in the inner canyon. The inner canyon is defined as the area below the Tonto Platform (Tipoff and Indian Garden) from the South Rim and below Manzanita Resthouse (Pumphouse Residence) from the North Rim. Groups are only permitted one permit per group. Groups may not break into smaller groups on different permits to accommodate group size.

Groups whom must obtain a permit:

- Organized Non-Commercial Groups are defined as any group traveling together, such as scouts, a club, a church, a meet up group, or a family/friend group that has created its own itinerary. Group size - 12-30 people.
- All Not-for-Profit Groups are defined as a group that may meet the criteria for a non-commercial group if the organization derives no taxable income from providing leisure/recreational services. Groups must prove 501(c)(3) status. Group size - up to 30 people.
- All groups part of a Fundraiser. Group size - up to 30 people.

Equipment: The youth and adult participants are expected to be able to supply their own hiking shoes/boots, and a small backpack that is large enough to hold multiple water bottles or a water bladder and the food they will be bringing to each hike and the Grand Canyon. If the youth choose to buy a new pair of shoes or boots, they are encouraged to do so at the beginning of the training so that the boots can be broken in before the Grand Canyon hike. The most common injury from hiking is blisters from shoes or socks that do not fit properly. Properly trimmed toenails is another precaution, since long toenails have been a problem in the past.



Setting up tents

Camping equipment; including tents, sleeping bags, and sleeping mats, have been purchased over the years with grant funds and are loaned to any youth that needs them. Youth who have their own camping equipment are asked to bring it. The equipment is stored in a 4-H trailer that is pulled by a large SUV and distributed at the campground upon arrival on Friday evening using a check-out list. The equipment is returned to the trailer on Sunday morning and checked off on the same list.

Youth are assigned tents based on their gender identification. Adults stay in separate tents with other chaperones of the same gender identification. Youth are asked to set up their own tents and adults assist as needed. This is a great opportunity for youth who are inexperienced in the outdoors to gain more skills they can use in the future if they choose to do more camping.

Cooking and food preparation equipment is provided by the county staff who are in charge of providing and preparing all of the food at the campground.

A packing list is emailed to the participants and their parents so they know exactly what to bring to be prepared. Participants are expected to have warm clothes, such as a heavy coat or parka, knit hat, gloves and warm socks to arrive prepared for cold weather (nighttime temperatures at the south rim of the canyon in late March and early April can be below freezing). They are told to be mindful of wearing clothing layers that can be easily removed and stored in their backpack while hiking.

Food: Youth and adult chaperones are asked to provide their own food for all practice hikes. The youth are encouraged to bring healthy food on their practice hikes, such as sandwiches made with whole grain bread, fruit, granola bars, or trail mix. They are typically given homemade granola bars and beef jerky for hikers to eat on the Mount Wrightson hikes and the Grand Canyon hike. Food for the Grand Canyon is the responsibility of one county group and has rotated between Santa Cruz, Pima, and Pinal Counties.

The menu has stayed the same for the last several years because it is healthy, simple, energy-filled, and typically liked by most of the participants:

Friday Lunch: Pizza (purchased from Costco) on the road (bring a lunch if you cannot eat cheese)

Friday Dinner: Spaghetti with Marinara Sauce (both meat and meatless), Salad w/dressing, Garlic Bread Gatorade, Hot Chocolate, Coffee, S'mores (Chocolate, Marshmallows, Graham crackers)

Saturday Breakfast: Oatmeal (Brown sugar, raisins, walnuts, milk), Muffins/Bagels (Cream cheese), Fresh Fruit – Bananas, Oranges, Apples, Coffee, Hot Chocolate

Saturday Lunch: Peanut Butter (or sunflower butter) and Jelly (Honey) Sandwich, Granola Bars, Oranges, Apples Nuts, Trail Mix, Peanut Butter Crackers

Saturday Dinner: Fajitas (Chicken, Steak, Vegetarian) with Vegetables, Corn/Flour Tortillas, Rice, Beans, Gatorade, Coffee, Hot Chocolate, S'mores

Sunday Breakfast: Breakfast Burritos (Eggs, Potatoes, cheese) or (Eggs, Chorizo, Potatoes), Oatmeal, Muffins/Bagels, Fresh Fruit – Bananas/Oranges/Apples, Coffee, Hot Chocolate

Sunday Lunch takes place at a food court north of Phoenix.

The food at the Grand Canyon campground is prepared by the county staff (and their youth) who have volunteered to help. On Friday evening, everyone is responsible for preparing and packing their own sack lunch and snacks for the hike (everything is supplied). Everyone puts their lunch in their day pack so it is ready for the following day. All hikers are also given another mini-medical kit, including a map of the trails in the Grand Canyon. On Saturday morning, breakfast is set up to have everyone prepare it themselves before leaving for the hike. Everyone eats the meals together on Saturday night after the hike and Sunday morning before departure.

Transportation: There are a few key points to keep in mind concerning transportation.

- If using university vehicles, reserve, two to three months in advance, an adequate number to accommodate the anticipated number of participants.
- With the University of Arizona, drivers of 15-passenger vans or Suburban SUV must have completed the High Occupancy Vehicle (HOV) training.
- Each vehicle had a driver and back-up drive who also acted as navigator and communications person with others in the caravan.
- Routes and rendezvous points were reviewed by drivers and navigators and cell phone numbers printed for each vehicle.
- Vehicles were also matched in groups of two or three to always be in sight of each other.
- A rest stop off the highway was used for lunch.
- Refueling of vehicles occurred in Flagstaff.
- To get organized prior to entering the park, we rendezvous at a gas station in Valle, Arizona, approximately 25 miles south of the entrance to Grand Canyon National Park. We arrange the caravan so that the first vehicle is prepared to pay park entrance fees and lead everyone to the Mather Campground.
- There are usually more vehicles than are allowed at the campsite, so some vehicles are parked in the lot where the shower facilities are located, while others are left at the campsite and used to transport hikers to and from the trailheads.
- Before the hike, a pick-up point is designated at the Bright Angel Trailhead and hikers are instructed to wait there to be picked up by one of the vans shuttling hikers back to the campground after they have completed their hike.
- Two or three adults who do not hike the canyon are assigned to begin running shuttles approximately 6-7 hours after the first group departs, to ensure that the fastest hikers are picked up soon after they exit the canyon.
- Shuttles run every 20 minutes or so and make a stop at the shower facilities on each trip. The goal is to have all hikers out of the canyon before 7:00 p.m. A primary motivator is that showers close at 9:00 p.m.!
- On Sunday morning, the vans are loaded with equipment and departure happens as quickly as possible. Everyone meets up at the Desert Tower shop and viewpoint to give youth a chance to buy souvenirs and snacks and take a large group photo next to the canyon.

- The final meeting point is at the Anthem Outlet Mall where everyone buys their own lunch. All of the groups return to their home counties from this point.

[Please see Appendix A for an example of our Grand Canyon Hike Task Master List.]

Evaluation: Why Do We Do It?

Desired Outcomes: In designing the Grand Canyon hike project, Extension professionals developed a logic model to outline the sequence of inputs, activities, and outputs that lead to desired short- mid- and long-term outcomes.

Inputs	Activities	Outputs	Short-term Outcomes	Mid-term Outcomes	Long-term Outcomes
<ul style="list-style-type: none"> • Program staff • Teacher and parental support • Practice hike calendar • Required forms and equipment • Program financial support • Transportation 	<ul style="list-style-type: none"> • Youth participate in training hikes • Youth engage in instruction on self-care and safety • Youth complete and document 50 miles of practice hiking • Youth accomplish the qualifying hike • Youth hike the Grand Canyon at the appropriate hiking distance 	<ul style="list-style-type: none"> • ## practice hikes of increasing length and challenge • ## snack and first aid kits prepared • ## Self-care and safety lessons delivered • ## Healthy Living ambassador club meetings held 	Youth: <ul style="list-style-type: none"> • increase ability to set challenging goals • develop outdoor skills and learn how to stay safe • increase the amount of outdoor physical activity • increase likelihood of accomplishing goals • will meet peers from different parts of Arizona and develop relationships with peers different from themselves 	Youth: <ul style="list-style-type: none"> • feel a sense of belonging, inclusion • appreciate that physical activity can be fun • appreciate nature and State/National Parks • are more self-reliant during outdoor experiences • gain self-confidence • Youth feel they have the ability to achieve future goals • report a sense of pride and self-accomplishment • gain insight to diversity in others 	Youth: <ul style="list-style-type: none"> • have sense of autonomy in regard to their physical activities • are healthy, happy, contributing members of society • are advocates for healthy living • are stewards of the environment • become global citizens

The extent to which short- and mid-term desired outcomes are attained is measured through self-reports on pre and post evaluation surveys. We use open-ended questions to elicit reflections on youth experiences without incorporating predetermined concepts. We do not know how youth are going to respond to our inquiry as to what they gained from the experience. They may validate our expected outcomes or not. They may offer some other construct that we had not considered, which could inform future direction of the program and evaluation. Long-term outcomes are expected based on previous research demonstrating that when youth are exposed to programming in a high-quality developmental context, they are more likely to experience such pro-social outcomes (Arnold, 2016; Roth & Brooks-Gunn, 2016).

In the results section we present the findings from our content analysis, which informs the ongoing development and implementation of our program and demonstrates the extent to which we were able to achieve our programs goals.

Method: To inform the development and implementation of this youth development program, we have been administering a pre/post evaluation survey to our 4-H participants since the first 4-H HLA hike in 2015. Pre-surveys were administered when the 4-H HLA initially registered to participate and the post either immediately after the hike or within a week after completing the hike. The evaluation was deemed exempt from Institutional Review Board oversight as it is for evaluation purposes only. The findings we share in this article are not to be considered generalizable beyond this program. However, others may choose to use similar methods to assess and inform their own youth development programming.



Continuing the Adventure

In addition to collecting demographic data (which was collected for reporting purposes) on the pre-survey, we also asked youth participants to tell us about their physical activity level over the previous week, whether or not they had ever visited a National Park before, including Grand Canyon National Park, how they were preparing for the hike, and to rate how difficult they thought the hike would be. On the post-survey, administered approximately three months after the pre-survey, immediately after the youth have completed the Grand Canyon hike, we repeat the same questions as on the pre-survey, but alter the language to ask respondents to rate the level of difficulty of the hike and to list what they could have done better to prepare for the hike. While we have youth log their training miles, we do ask them to estimate the number of hours spent and miles walked while training for the hike. We ask them to list three things they learned from their experience of hiking the Grand Canyon, and how the experience influenced, if at all, things they might choose to do in the future.

For the purposes of this article, we were particularly interested in what youth learned from the experience of hiking the Grand Canyon. This item had been included in the survey for five hikes (2015-2019). We had 150 complete and matched pre/post surveys with each respondent providing three responses to that particular item for a total of 450 responses. We did not differentiate between responses based on the distance of the hike performed or if the respondent had hiked the canyon previously. For the purposes of this exercise, the authors concluded that all responses would be given the same weight regardless of the number of times hiked or length of the hike.

It is important to note that we did attempt to better understand some of our desired outcomes through the use of quantitative methods. Namely, we used the General Self-efficacy Scale (Jerusalem & Schwarzer, 1979), which measures an individual's perception of their ability to face difficult or challenging tasks and overcome adversity. It is designed to be used with adults or adolescents (12 years of age or older). The scale has ten items which include constructs such as goal setting and persistence to overcome obstacles. Items are not to be analyzed individually, but rather as a composite score. Examples of items include, "I can always manage to solve difficult problems if I try hard enough," and "It is easy for me to stick to my aims and accomplish my goals." The response scale ranges from 1 = Not at All to 4 = Exactly True. Data were analyzed using IBM SPSS Statistics 26 software. Demographic data were analyzed using descriptive statistics and are reported in the results section.

Qualitative data were analyzed using a content analysis procedure involving the four authors and two other youth development professionals. Survey responses were entered into an Excel spreadsheet verbatim based on what was written on the post-survey. For analysis, a separate spreadsheet was created with all 450 responses listed in one continuous column. The six "coders" were trained as a group and performed practice coding exercises on several of the youth responses selected randomly. Each step of the content analysis process was reviewed and each coder received written instructions. Coders worked independently until the final step of reaching consensus. Well established qualitative research methods were employed (Hsieh & Shannon, 2005; Taylor-Powell & Renner, 2003).

Content Analysis Procedure

Become familiar with data:

Know the data. Review 2 or 3 times.

1. Read data completely line by line without making any notations.
2. Read data a second time without making any notations. I recommend reading from the back pages forward this time or switching the order, but again reading every line.
3. Read a third time, making mental notes of any trends you are noticing.

Start marking up the data:

Describe the data.

4. Read through data again line by line, but this time highlight any key words or phrases for each response. It's okay if you are unsure—put a “?” next to it and go back later.
5. Read through again, but only the highlighted words or phrases and make notes on a separate sheet of common themes you are noticing—this could be a word or phrase that is repeated often (may be variation of structure or even a different word that has a similar meaning). Your “common theme” note should be no more than a few words.
6. Go through again and start placing a note of the common theme in the first blank column. You may want to use abbreviations or symbols to represent the common theme (e.g., “learned something” = LS). Again, if you are unsure, put a “?” next to the statement and go back later. It may be that some are just outliers—that's okay!

Synthesize common themes:

Label the data. Use 2-3 words.

7. Read through your common themes and see if any can be combined—is there an overarching theme that they might fit into? If so, in the next column write the overarching common theme that you came up with for those items associated with that overarching theme. Don't abbreviate this time—write it out—it won't kill you!
8. When you are satisfied with the themes you have come up with, write them out in the second column for each item (it might help to color code if it is too confusing to read!).
9. Now that you have your common themes, think of how these common themes might be categorized into broader concepts. So for instance a group of themes like, train more, pack better, dress in layers, might be called “preparedness.” Think big picture with these. This step involves categorizing based on their general composition. Write in the Broad Categories in the last column.

Compile results and work towards consensus:

**Interpret the data—Attach Meaning.
Relate to theory and practice.**

10. The completed tables were then combined into one table with six columns containing each coders list of common themes. One of the authors reviewed all the common themes and generated a draft set of themes that captured all those submitted. All coders then met to discuss each of the themes and reach consensus on a final set, which are presented in this article.

[Please see Appendix B for an example of our Content Analysis spreadsheet.]

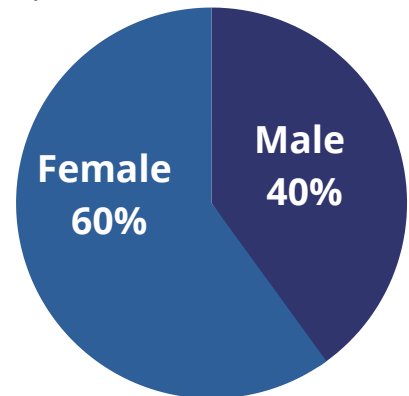
Results: The following graphs reflect demographic information about the youth involved in the Grand Canyon hike. Hikers were 12 to 18 years of age. More girls (60%) than boys (40%) participated in the hike and completed both a pre and post survey (see Graph 1) (N = 155).

Two-thirds of our hikers identified as Hispanic and one-third as non-Hispanic (see Graph 2). While race is not reflected in a graph, of those responding to the question about race (N=127 out of 155 completed surveys), 88% identified as White, 4% African American, 4% Native American, 2.4% as Asian, and 1.6% as Native Hawaiian or Pacific Islander. [Please see Appendix C for Pre and Post Survey.]

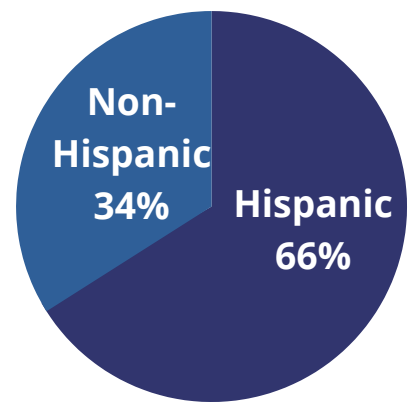
We also asked respondents to tell us whether or not they had previously hiked the Grand Canyon, visited any National Park, or visited Grand Canyon National Park prior to the present trip. Note that some of our 4-H youth have participated in more than one Grand Canyon hike as part of this program. For more than two-thirds of our respondents (68%), this was their first Grand Canyon hike (see Graph 3) (N = 155).

Given that we know one-third of our respondents had hiked, and therefore had visited the Grand Canyon and a National Park previously, we wanted to know if first-time hikers had visited the Grand Canyon or a National Park prior to this experience. Seventy percent of those respondents (N = 104) indicated that they had visited a National Park previously and just under half (45%) had visited the Grand Canyon before their participation in the 4-H trip (not shown in graph).

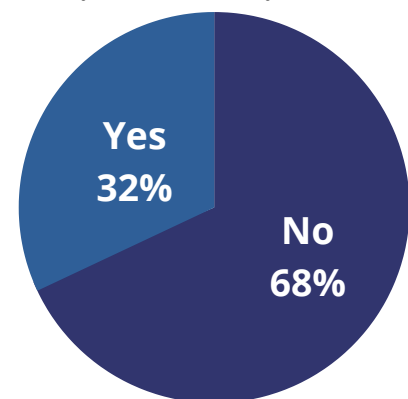
Graph 1: Gender



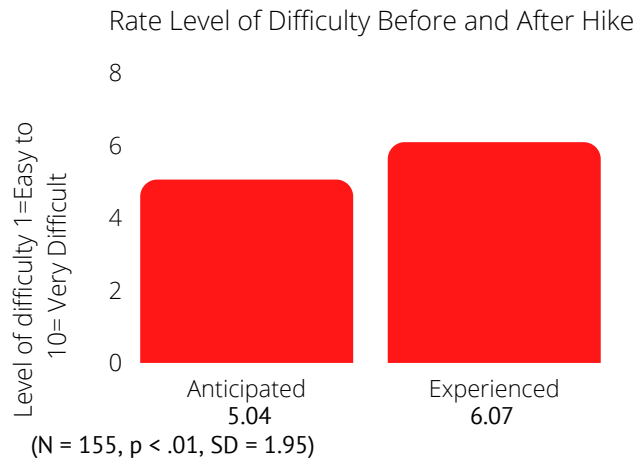
Graph 2: Ethnicity



Graph 3: Hiked the Grand Canyon Previously



In the pre-survey, we asked 4-H youth to rank the level of difficulty they anticipated the hike would be, and asked them again, after the hike was completed, to rate the level of difficulty they experienced. The rating scale went from 1 = "Very Easy" to 10 = "Extremely Hard." A T-test for paired samples was calculated to compare means of pre and post survey responses. Rating of difficulty on the pre-surveys averaged a score of 5, but increased significantly to an average score of 6 on the post-survey (N = 155, $p < .01$, Standard Deviation = 1.95).



As described in the Method section, we also attempted to better understand our desired outcomes for this program by employing the General Self-efficacy scale (Jerusalem & Schwarzer, 1979). The response set ranges from 1 = Not at All to 4 = Exactly true. There are ten items, so therefore the composite score can range from 10 to 40. We analyzed data based on respondents indicating that this was their first time hiking the Grand Canyon (N = 104). The pre score averaged 32.9 and the post score averaged 32.9. Needless to say, the T-test for paired samples revealed no significant difference between pre and post scores.

We also asked respondents to report the number of days over the past week they took part in regular physical activity for at least 60 minutes. The response set ranged from 0 days to 7 days. We found no difference in the amount of reported physical activity from pre (3-4 days per week on average) to post (3-4 days per week on average) (N = 150). However, an analysis of variance did show a significant difference between boys (approximately 5 days per week) and girls (approximately 3 days per week) on the pre survey ($p < .05$, N = 112), with slightly less of a difference on the post survey.

In an open-ended question, we asked respondents to answer the following question: “Would you hike the Grand Canyon again? Why or why not?” Rather than analyze the responses quantitatively, another interesting way to visualize the results is using a “word cloud.” The size of the words in the word cloud indicate the relative frequency of the word in all responses in comparison with other words (articles and pronouns were not included). While there is apparent support for repeating the “amazing” “experience,” there is also some hesitation expressed in words like “maybe” and “probably.”



We asked respondents, “How might this experience influence things you choose to do in the future? (For instance, might you: Take up hiking? Visit more National Parks? Never hike again? Spend more time outdoors?). Of the 146 responses, four provided negative responses such as, “I won’t do this again,” and eight gave more tentative responses such as, “I might go hiking more,” and “Maybe taking up hiking and spending more time outdoors.” But the vast majority responded positively about hiking more, spending more time outdoors, appreciating nature more, and generally being more active. A sample of quotes follows:

“Go camping more often. I love the outdoors and I’ve found a new appreciation for Arizona nature.”
“I will visit more National Parks and spend more time outdoors.”
“The outdoors are fun.”
“The experience has taught me to go outdoors more.”
“Go hiking more often because I get to see places I haven’t seen before.”
“I will definitely do more hiking and visit more parks. I will spend more time learning about my surroundings.”
“I will definitely like to continue hiking as a pastime. I really enjoy having so much time to think.”
“The coping mechanisms I discovered in this hike will hopefully help me get through other challenges I face later in life.”
“This makes me want to be healthier and explore the world more.”

Lastly, we asked respondents what they learned from this experience and then analyzed their answers using Content Analysis (described in the Methods section). Specifically, we asked: “What are three things you learned from the Grand Canyon experience? For instance, what did you learn about yourself by hiking the Grand Canyon?” The categories shown in Table 1 represent the themes that emerged based on the analyses and consensus of six “coders.” The results are in no particular order. The “Notes” column provides additional insights to the construct and the “Quotes” help to illustrate the category in the words of the hikers. Note that some quotes may pertain to more than one category.

Table 1. Results of Content Analysis

COLLECTIVE CATEGORIES	NOTES	QUOTES THAT EPITOMIZE CATEGORY
Preparation/Practice/Planning ahead	Includes logistics and safety	“Always drink a lot of water.” “Pack less.” “Get good sleep beforehand.” “First-aid kits are essential.” “A break makes a BIG difference.” “Get your electrolytes.” “Follow the rules.”
Appreciation & Experience of Outdoors	Both good and bad experiences	“The Grand Canyon is really big.” “I like the wildlife in the canyon.” “I learned that the river is cold.” “Nature is so beautiful.” “I hate rocks.”
Friendship & Companionship	Includes making friends and the “buddy system”	“I need people cheering me up.” “I can make friends when I least expect it.” “I love my friends a lot.” “New things about my partner.” “Teamwork/encouragement.”

COLLECTIVE CATEGORIES	NOTES	QUOTES THAT EPITOMIZE CATEGORY
Awareness of Physical Abilities	Includes personal limitations	“I need to rest a lot.” “I get really cranky when I get tired.” “Going up steep hills is tough for me.” “I learned my toes matter.” “I am stronger than I thought I was.”
Mental Resilience/Perseverance	Includes grit, mental awareness, and having a positive attitude	“I can push myself to accomplish things.” “I can do hard things.” “That I easily gave up.” “I can do anything I set my mind to.” “Keeping a positive attitude will get you far.”
Self-Realization/Perception	This includes introspective assessments and self-discovery	“I learned not to give up.” “I learned that I am stubborn.” “I connected with myself and nature.” “You need to be patient.” “I can get through rough patches.” “I shouldn’t underestimate myself.”
Fun & Enjoyment	Self-explanatory	“I learned how much I like to hike.” “It’s fun.” “Always have fun.” “I love camping!” “I enjoy nature.”


Discussion: There are several inherent challenges to interpreting results from a program evaluation. Most program evaluations, such as the one described here, are not research projects with quasi-experimental randomized control designs. Consequently, it is difficult to attribute effects directly to the program being evaluated. In the manner that we have chosen to conduct our evaluation, that is, through qualitative means, one might argue that it is difficult to say anything about our outcomes with any degree of precision.



Hikers plunge into Colorado River.

However, one can also make the case that through high-quality youth development programming, that is, providing fairly intensive opportunities for young people to be exposed to essential elements of positive youth development, a program is most likely contributing to some degree to the outcomes sought. We present our case and let the reader decide.

In this section, we first review then examine our short- and mid-term desired outcomes to determine the extent to which they align with our findings. We also ask ourselves: if we find alignment, what can we say about it? If we do not find alignment, is it because we did not look for it in our evaluation or is it



that we are not sufficiently addressing that element in our program? Next, we look at some of the theoretical frameworks that guide youth development programming and assess to what extent our programming and findings overlay those frameworks and where there are gaps that need to be filled.

Short-term Desired Outcomes:

- Youth increase ability to set challenging goals
- Youth develop outdoor skills and learn how to stay safe
- Youth increase the amount of outdoor physical activity
- Youth are more likely to accomplish goals they set for themselves
- Youth will meet peers from different parts of Arizona and develop relationships with peers different from themselves

Mid-term Desired Outcomes:

- Youth feel a sense of belonging, inclusion
- Youth appreciate that physical activity can be fun
- Youth appreciate nature and State/National Parks
- Youth are more self-reliant during outdoor experiences
- Youth gain self-confidence
- Youth feel they have the ability to achieve future goals
- Youth report a sense of pride and self-accomplishment
- Youth gain insight to diversity in others


Observed Emerging Themes:

- Preparation/Practice/Planning Ahead
- Appreciation & Experience of Outdoors
- Friendship & Companionship
- Awareness of Physical Abilities
- Mental Resilience/Perseverance
- Self-Realization/Perception
- Fun & Enjoyment

In Table 2 below, we have attempted to align the themes that emerged from our content analysis with the desired outcomes we identified in the development of this project, and to better illustrate the underlying themes, we have provided a sampling of quotes from youth participants. The quotes, of course, only provide an example of the language youth used to describe what they learned from the Grand Canyon experience, which includes preparing for the hike, traveling to the and from the national park, camping, hiking, spending time with other hikers, and consuming foods associated with camping and hiking.

Table 2. Aligning Desired Outcomes with Emerging Themes

Desired Outcome	Related Emerging Theme	Sample of related Quotes
Youth increase ability to set challenging goals	Mental Resilience/Perseverance	“I can push myself to accomplish things.” “I can do hard things.” “I can do anything I set my mind to.”
Youth develop outdoor skills and learn how to stay safe	Preparation/Practice/Planning Ahead	“First-aid kits are essential.” “Get your electrolytes.” “Follow the rules.” “I need to bring salty foods.”
Youth increase the amount of outdoor physical activity	Appreciation & Experience of Outdoors	“Nature is so beautiful.” “The Grand Canyon is awesome and worth it.”
Youth are more likely to accomplish goals they set for themselves	Self-Realization/Perception Mental Resilience/Perseverance	“I can get through rough patches.” “I shouldn’t underestimate myself.”
Youth will meet peers from different parts of Arizona and develop relationships with peers different from themselves	Friendship & Companionship	“I can make new friends when I least expect it.”
Youth feel a sense of belonging, inclusion	Friendship & Companionship	“Sometimes what keeps me moving forward is not my own strength, but the love of friends.”
Youth gain insight to diversity in others	Friendship & Companionship	“Making new friends is good.”
Youth appreciate that physical activity can be fun	Self-Realization/Perception Fun & Enjoyment	“Hiking is one of my favorite physical activities.”
Youth appreciate nature and State/National Parks	Appreciation & Experience of Outdoors	“The Grand Canyon is really big.”
Youth are more self-reliant during outdoor experiences	Awareness of Physical Abilities Self-Realization/Perception	“I am stronger than I thought I was.” “I shouldn’t underestimate myself.”
Youth gain self-confidence	Mental Resilience/Perseverance	“I can do anything I set my mind to.” “I shouldn’t underestimate myself.”
Youth feel they have the ability to achieve future goals	Self-Realization/Perception Mental Resilience/Perseverance	“I can do anything I set my mind to.” “I learned that everything in life is worth it.”
Youth report a sense of pride and self-accomplishment	Mental Resilience/Perseverance	“I can push myself to accomplish things.” “I can do hard things.”



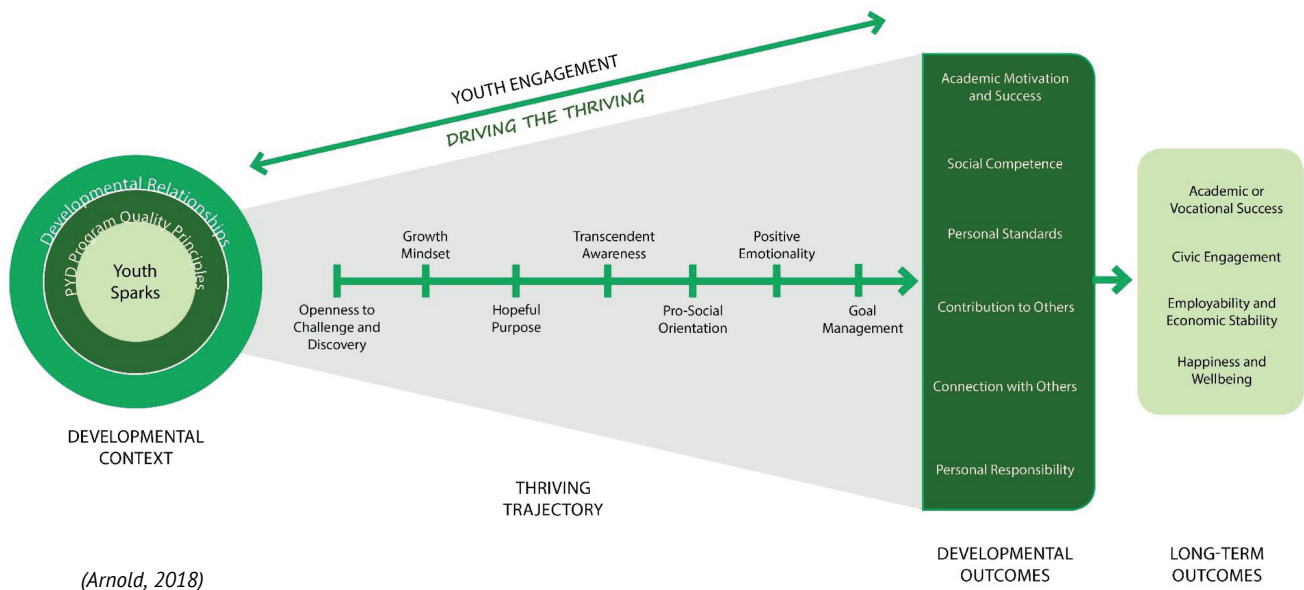
While the questions pertaining to what youth learned about themselves were asked in the context of the Grand Canyon experience, many of the responses appear to go beyond that present experience. Even though we are unable to quantify the extent to which we are achieving the desired outcomes for this project, we have a sense for the majority of these concepts that we are on the right track, such as: goal setting, accomplishing goals, achieving future goals, sense of belonging, self-confidence, and pride in their accomplishment. A few of the concepts may not be as clear. For instance, we learned through the results of one of our quantitative questions that youth did not report any change in the amount of physical activity they were participating in, at least in terms of their estimate of days active in a typical week. We did not specify in that item the extent to which the activity was held out-of-doors, so we do not know if that changed. One might speculate that outdoor activity increased over the three months between pre and post surveys since the youth had to hike at least 50 miles and participate in the qualifying hike prior to hiking the Grand Canyon. Presumably, that would result in more outdoor physical activity.

Another construct for which we don't have strong evidence pertains to meeting and developing relationships with other youth from around Arizona who are different from themselves. We can say implicitly that youth are meeting other youth from around the state. Youth come from five to six counties, some of which are located in the southern part of the state and others in the northern part of the state. Adult chaperones participating in the practice hikes, the Grand Canyon hike, and the camping experience, can attest to the bonding that occurs among youth through these experiences. The nature of these hikes is such that the pace individual hikers set tends to naturally create small clusters of hikers. Often these hikers are from different geographic areas and likely do not know each other prior to the hikes, but get to know each other by spending hours together hiking and camping. It may be that neither words nor numbers can adequately express the comradery that develops from the time the 4-H youth first meet, to the final campfire that takes place after the Grand Canyon hike is completed.

Evaluations may tell us how our program is doing, but it might also tell us about our program evaluation! We do see room for improvement in both arenas. Each year we have made adjustments to the program itself in terms of refining the experience for the 4-H youth participants: increasing their accountability, involving them in the planning, and providing ongoing opportunities for youth from different parts of the state to connect before and after the hike. We also recognize the need to refine our evaluation methods. Perhaps the General Self-efficacy scale is not the appropriate instrument for this particular activity. With recent theoretical work on the 4-H Thriving Model, we are exploring ways to incorporate those concepts and the associated scales into our program evaluation. We are also taking some of the concepts from our qualitative content analysis and translating those into more quantifiable survey items. This is not to say we will abandon our use of open-ended questions. No, there is value and richness in understanding program impacts through the words of the youth involved.

Finally, we wish to know how this program fits with what we know about positive youth development best-practices. Below is a diagram of the 4-H Thriving Model (Arnold, 2018). A useful exercise is to overlay our program outcomes and evaluation findings to determine how they fit this model.

4-H Thriving Model



We start with “Youth Sparks.” As defined by Arnold (2018), “a spark is a passion for a self-identified interest or skill, or a capacity that metaphorically lights a fire in a young person’s life, providing energy, joy, purpose, and direction.” Can the Grand Canyon hiking experience be considered a “spark” based on this definition? We believe so. The experience may spark an interest in hiking, but that’s not the only objective. More importantly, the experience may provide the confidence needed to try new and challenging things, it may ignite an interest in visiting State and National Parks, or simply reveal an appreciation for spending more time outdoors, in nature.

Moving from left to right along the Thriving Trajectory are seven constructs starting with Openness to Challenge and Discovery and ending with Goal Management. Below we outline how the Grand Canyon hike experience aligns with the seven Thriving Trajectory constructs:

Openness to Challenge and Discovery: Have an intrinsic desire and willingness to try new challenges.

One of the desired outcomes of the project is that youth will increase their ability to set challenging goals. The theme identified through our content analysis, which relates to this construct, is “Mental Resilience/Perseverance.” In their own words, youth mentioned pushing themselves to accomplish goals, to do things that are hard, and acknowledging the challenge they faced in completing the hike.

Growth Mindset: Cultivate a growth mindset that emphasizes effort in learning over innate ability.

Another of our desired outcomes involves youth developing outdoor skills and learning how to stay safe. We associated the theme, “Preparation/Practice/Planning ahead” with this outcome. Additionally, as a result of this program, we expect youth to be more self-reliant during outdoor experiences, which we associated with “Awareness of Physical Abilities” and “Self-Realization/Perception.” This activity is based on learning by doing. In their own words, youth described the learning that occurred in very practical terms such as packing more wisely, “ah ha” moments about their physical abilities and limitations, and self-reflection about not underestimating what they are capable of doing physically and mentally.



Hopeful Purpose: Believe in a hopeful future and purpose in life.

Our desired outcome that aligns with this construct involves youth feeling they have the ability to achieve future goals, which was associated with the theme, “Mental Resilience/Perseverance.” Youth expressed confidence in tackling obstacles they might encounter in the future and seeing value in hard work to accomplish goals.

Transcendent Awareness: Are connected to something greater than the self that provides meaning and purpose in life and shapes everyday thoughts and action.

While we did not identify an outcome directly aligned with this Thriving Model construct, we do have an outcome related to a sense of belonging and inclusion, which was captured in the theme, Friendship & Companionship. Consistent with that, youth described the power of support that comes collectively from others in statements such as this one, “Sometimes what keeps me moving forward is not my own strength, but the love of friends,” and “to help one another often.”

Pro-social Orientation: Demonstrate the pro social values of respect, honesty, responsibility, empathy and helping.

Evidence for this particular construct may be more indirect and perhaps observed by the authors of this article more so than captured in the formal evaluation. In general, two of our desired outcomes are associated with this construct: Youth feel a sense of belonging, inclusion and Youth appreciate nature and State/National Parks. One of the most rewarding aspects of supervising youth during this experience is observing how much they support each other, most especially as the hike becomes more challenging. Examples of this include carrying backpacks for others, sharing food, and providing encouraging words. There are also elements of having greater respect for the natural surroundings and showing responsibility for oneself and others.


Positive Emotionality: Are able to express and manage emotions appropriately.

The Grand Canyon experience provided many opportunities for youth to be self-perceptive as demonstrated in the emerging theme of “Self-realization/Perception.” Youth are encouraged to check-in on their emotions during the hike and to be cognizant of how their emotions might change as the day progresses. Examples of self-perception include statements youth report about feeling cranky when they are hungry or tired, and also the importance of keeping a positive attitude.

Goal Management: Set and manage goals, with perseverance toward goal achievement.

While our quantitative assessment of goal setting and perseverance towards achievement of goals did not show any change from pre to post on this construct, we do feel there is qualitative evidence that supports this concept as part of the program. Our stated desired outcome is that youth will increase their ability to set challenging goals and to accomplish goals they set for themselves. In our content analysis we labeled such evidence as: “Self-Realization/Perception” and “Mental Resilience/Perseverance.” In their own words, youth expressed the ability to get through rough patches, not to underestimate themselves, to push themselves to accomplish goals, and their ability do anything they set their mind to.

Some thoughts on Adventure Education: The activity described in this article is considered by its authors to be a form of “adventure education,” which has been defined in different ways in youth




development literature (Sibthorp, Paisley, Gookin, & Furman, 2008) and, for such activities that leave youth unaccompanied, has been criticized as unnecessarily risky (Davidson, 2004). In our title we use the phrase “challenging adventure.” The word “adventure” is defined as “an unusual and exciting, typically hazardous, experience or activity.” Hiking the Grand Canyon, especially the 15.9 mile route in one day, is certainly challenging. We believe that through proper preparation and training, guidance and supervision, we have reduced the level of risk to a minimum. As one of the authors puts it, “youth are given the illusion of autonomy.”

Certainly, on this hike youth are not in the company of an adult every step of the way. Due to bends and curves of switchbacks, and variable pacing of hikers, youth may not even be within sight of an adult most of the time. But they are by no means unaccompanied. Adult chaperones are placed at the front and rear of the hikers and sporadically throughout. Adults hike with groups of youth and make a habit of going ahead and falling behind to check on other pairs or groups of youth. No youth is to hike by themselves and if such a situation is observed, it is immediately remedied. Youth check-in at the bottom of the canyon and adults “keep tabs” on them throughout. Have we experienced injuries on these hikes? Yes. Blisters are the most common, but also the occasional scraped knee or elbow, chafing of various body parts, and certainly sore muscles and joints. Consistent with the findings of Sibthorp et al (2008), the incidence of injury is no different than other types of adventure activities. This is not to insinuate that we will let our guard down or take our safety measures for granted. We continue to emphasize safe practices on the part of youth and adults alike. Also, consistent with the conclusions of Sibthorp et al (2008), and supported by our evaluation findings, is that the challenge inherent in hiking the Grand Canyon enhances the learning and growth of the youth involved.

A few reflections and lessons that the authors learned along the way:

- Invest in decent equipment or partner with an organization that specializes in renting equipment. We have purchased equipment that we now have to maintain which can be challenging. We have also partnered with our University Outdoor Recreation department who will loan/rent at a discount but they sometimes don't have all of the gear we need.
- Make sure you check that people have the equipment needed and be specific. For example, "Do you have a 32oz water bottle?" "Yes." "Is it filled with water?" "Oh, you want me to fill my water bottle?"
- Remind teens that calling their parents/guardians from the bottom of the Grand Canyon is not allowed. We have had situations where teens call their parents, "This is so hard, I don't think I can make it. I think I'll just live here." The teen is going to get out of the Canyon but now the adult is going to spend the rest of the weekend worrying that their teen might be building a home in a rock outcropping. Phones are for photos only.
- Interpret the experience for other hikers. One year, a group of teens was overwhelmed with excitement and enthusiasm, they started hooting and making noise. While we asked the teens to take it down a notch we also had to point out to other hikers that this enthusiasm for the Canyon is what is going to protect it, we need young people to fall in love with this natural spaces. When you explain to others what the mission of the trip is...they get it.

- Bring motivational snacks something that you can keep in your pack that you can share when someone needs a power pellet of energy. These can be a Starburst, Werther's candy, etc. (e.g., not something that melts). When things get challenging a little boost of unexpected love in the form of a candy does wonders.
- Find an awesome team to work with. You could be at home relaxing on your sofa, but yet here you are giving all of these teens and amazing experience but the logistics of this epic adventure is challenging so make sure you have a team that helps and is ready for anything.
- Make sure people clip their toenails! There is nothing like a mid-hike sweaty toe pedicure. You'll want to try to avoid that. Also, bring clippers in your first aid kit.
- Stop and enjoy. This is a life-changing trip for you too.
- Hydration is more important than physical conditioning. Someone who is of average physical condition but completely hydrated, will be better off than someone who is in top physical condition but dehydrated. Hydration is the difference between getting tired and bouncing back with some energy after resting and getting tired and not being able to bounce back with any energy during the rest of the hike.
- There is something that draws me to the Grand Canyon. I am captivated by the breadth and depth. It is magical to see it and to hike it. I never tire of its grandeur. There is a magnet that draws me to it. I cannot explain it and I choose not to fight it.
- I must have half of my mental and physical energy left in my tank when I get to Indian Gardens. The 13 miles down the South Kaibab Trail and up the Bright Angel Trail to Indian Gardens represents the 'halfway' point for me. The final 3.5 miles are as hard (or harder) than the first 13 miles. There are some 70-ish continuous switchbacks above Indian Gardens to the top.
- The temperature is the single most critical factor in determining how 'easy' or 'hard' the Grand Canyon hike will be that day. The hotter and sunnier it is, the harder the day will be. I would rather it be cold at the top when I begin because it will be warm at the bottom. If it is mild at the top when I begin, then it will be very hot at the bottom.
- I don't know exactly why I started hiking the Grand Canyon, but I know why I hike it now. The main reason I hike it now is simple: because I can - because one day (in the future) I cannot.
- When it is 1250 F at the bottom of the Grand Canyon and I am standing with my feet and legs in the 480 F Colorado River water, I will get an ice cream-type headache. Somewhere in the 'middle' of my body will be the optimal temperature between water so cold it is like a million needles poking my feet and temperature so hot my head is about to spontaneously combust.
- You can mentally wear yourself out before you even begin the hike. You must pace yourself mentally just as you pace your physical self during the hike. Without your mental edge the hike can beat you up (sometimes very badly).
- A thousand pictures are taken at every switch back during the first two miles down the South Kaibab Trail because of its beauty and grandeur. Not one single picture is taken during the last two miles up the Bright Angel Trail because every ounce of mental focus and every single muscle is used to take the next step in a quest to get out of the hole. What starts out in the morning as a social, energetic, breathtaking adventure, becomes an effort that is singularly focused on getting to the top and flat ground.



Conclusion: We have described a 4-H youth development experience that involves what we consider to be a challenging adventure with exceptional opportunities for young people to learn and grow. We have provided the reader with the nuts and bolts, so to speak, of what the project entails and how one might replicate it or devise a similarly challenging activity for a youth group. We also laid out the program evaluation we conducted to identify what we expected youth to gain from the experience and how well we were able to achieve those desired outcomes. We further overlaid our outcomes with the theoretical Thriving Model developed by Dr. Arnold (2018).

The reader may be able to detect that the Grand Canyon hike experience occupies a special place in the heart of each of the authors. We truly believe that youth who have gone through the full experience of committing to the hike, training for it, qualifying for it, and then doing it, gain much from their accomplishment. Our evaluation does not compare this experience with other similar positive youth development experiences, so we cannot make claims comparing one to another, and do not. We do believe however, that the youth are telling us in their own words that they experienced some substantial revelations as a result of participating in this hike. From our content analysis we were able to identify emerging themes related to self-perception, resilience, perseverance, awareness of abilities, appreciation for the outdoors, a sense of accomplishment, and the value of companionship.

We suggest that hiking the Grand Canyon creates a memory youth will have for a lifetime. Proving that would entail a very long longitudinal study, which we are not prepared to undertake. We invite the reader to try it for themselves, if they have not already, or to undertake a similarly challenging adventure with a group of youth and see what happens!

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Appendices:

Appendix A: Example of Master Logistics Spreadsheet

Appendix A: Example of Master Logistics Spreadsheet

Grand Canyon Hike Task Master List

Task	Responsible	Helpers	Date to be accomplished	Notes
March 23rd Wrightson				
Pick up vans from motorpool				
Fill up large orange water jug and bring snacks, medi-kits, first aid kit and GC binder for March 23rd Wrightson hike				
At Tucson High, check off kids and make sure each child has medical form in binder, water and food				
At Wrightson trailhead, review rules, distribute snacks and medi-kits				
Leader				
Sweeper				
March 30th Wrightson				
Pick up vans from motorpool				
Fill up large orange water jug and bring snacks, medi-kits, first aid kit and GC binder for March 30th Wrightson hike				
At Tucson High, check off kids and make sure each child has medical form in binder, water and food				
At Wrightson trailhead, review rules, distribute snacks and medi-kits				
Leader				
Sweeper				

Appendix B: Sample of Content Analysis Spreadsheet

	A	B	C	D
1	Responses to Q 14 : highlight key words and phrases after reading thorough twice.	Note Common Themes Abreviated	Combined Common Themes	Broader Categories or Concepts
2	More water			
3	I can do hard things			
4	I have a lot of endurance			
5	Buddy system			
6	I was in great shape			
7	Can push through hard times			
8	Pack less			
9	I'm getting stronger			
10	I need to climb stairs			
11	I learned what true camping is			
12	It's really cold			
13	It so beautiful			
14	That I'm invincible			
15	I learned I could go fast			
16	Drink plenty of water			
17	You need to be patience			
18	Not underestimate			
19	Hiking is harder than running			
20	I learned to not give up			

Appendix C: Pre and Post Surveys

2018 GRAND CANYON HIKE EVALUATION

PRE

Name: _____

1. How difficult do you think the Grand Canyon hike will be for you? Circle the appropriate number.

1 2 3 4 5 6 7 8 9 10
 Very Easy Extremely Hard

2. Have you ever **visited** a National Park? Yes No

3. Have you ever **visited** the Grand Canyon before? Yes No

4. If yes, have you ever **hiked** the Grand Canyon before? Yes No N/A

5. List three things you should do to prepare yourself to hike the Grand Canyon:

6. In a typical week, how many days do you take part in any regular physical activity long enough to work up a sweat (heart beats rapidly)?

- 0 days
- 1 days
- 2 days
- 3 days
- 4 days
- 5 days
- 6 days
- 7 days

7. Are you a Male or a Female?

8. Which county are you from? Cochise Pima Pinal Santa Cruz

9. What is your ethnicity? (Select one) Hispanic or Latino Not Hispanic or Latino?

10. What is your race? (Select one or more)

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White

11. **Directions:** Please select the appropriate response for each item below.

#	Item	1 Not at all	2 Hardly true	3 Moderately true	4 Exactly true
1.	I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	If someone opposes me, I can find the means and ways to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	If I am in trouble, I can usually think of a solution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	I can usually handle whatever comes my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	I try to find ways to reach my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	I try to set goals for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	I try to consider challenges when making future plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	I try to observe how others solve problems and learn from them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	I try to push myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PLEASE COMPLETE BOTH SIDES OF SURVEY

Appendix C: Pre and Post Surveys

2018 GRAND CANYON HIKE EVALUATION POST

Name: _____

1. How difficult for you was the Grand Canyon hike? Circle the appropriate number.

1 2 3 4 5 6 7 8 9 10
 Very Easy Extremely Hard

2. Had you ever **visited** a National Park before this trip? Yes No
3. If yes, had you ever **visited** the Grand Canyon before this trip? Yes No
4. Had you ever **hiked** the Grand Canyon before this trip? Yes No N/A
5. List three things you could have done better to prepare yourself to hike the Grand Canyon:

6. In a typical week, how many days do you take part in any regular physical activity long enough to work up a sweat (heart beats rapidly)?

- 0 days
 1 days
 2 days
 3 days
 4 days
 5 days
 6 days
 7 days

7. Are you a Male or a Female?
8. Which county are you from? Cochise Pima Pinal Santa Cruz
9. What is your ethnicity? (Select one) Hispanic or Latino Not Hispanic or Latino?

10. What is your race? (Select one or more)
- American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

11. Would you hike the Grand Canyon again? Why or why not?

12. How many hours did you spend preparing to hike the Grand Canyon? (An estimate is fine) _____

13. How many miles did you walk in preparing to hike the Grand Canyon? (An estimate is fine) _____

PLEASE COMPLETE BOTH SIDES OF SURVEY

14. What are three things you learned from the Grand Canyon experience? For instance, what did you learn about yourself by hiking the Grand Canyon?

1. _____

2. _____

3. _____

15. How might this experience influence things you choose to do in the future? (For instance, might you: Take up hiking? Visit more National Parks? Never hike again? Spend more time outdoors?)

16. Directions: Please select the appropriate response for each item below.

#	Item	1 Not at all	2 Hardly true	3 Moderately true	4 Exactly true
1.	I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	If someone opposes me, I can find the means and ways to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	If I am in trouble, I can usually think of a solution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	I can usually handle whatever comes my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	I try to find ways to reach my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	I try to set goals for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	I try to consider challenges when making future plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	I try to observe how others solve problems and learn from them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	I try to push myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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