Field research training program for pre-college youth shows consistent participant benefits over ten years

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Introduction

Experiential education aims to increase content knowledge and skills, delineate values, and increase readiness to contribute to society through direct experiences and reflection (AEE, 2017). The Shaw Institute for Field Training (SIFT) is an experiential program that engages St. Louis area high school youth in authentic field training experiences. SIFT aims to provide environmental research career exploration and early entry into the environmental biology career path.

At the Missouri Botanical Garden’s Shaw Nature Reserve, teens spend one week acquiring new skills and knowledge about different Missouri ecosystems. They learn necessary skills to conduct field research, including species identification, biotic and abiotic testing, ecological experimental design, scientific collaboration, and how to present scientific information. Upon completion of the training week, students are paid to work on a variety of research projects in multiple environments.

Over the last ten years, there have been 365 SIFT participants from 72 different schools and home school. SIFTers come from urban, suburban, and rural communities across the St. Louis area. As a large scale, long running program it is important to understand whether there has been consistency in the youth experience of the SIFT training week. Have the SIFTers in different cohorts had a similar experience? During summer 2017 we set out to assess the SIFTers’ perceptions of training week benefits, specifically focusing on affinity for experiential learning methods, knowledge and skill gain, and personal growth.

Materials and Methods

A climate survey was administered to all SIFTers on the Wednesday and Friday afternoons of the 5-day training week. For the first three days, teens participate in icebreaker activities, complete a team challenge course using newly learned GPS and map reading skills, develop observation skills through an isoped inquiry activity, participate in a biotic and abiotic aquatic measurement workshop, and spend a full day taking data at two aquatic sites. For the last two days, teens learn how to identify plants using field guides, how to assess prairie, glade, and woodland ecosystems, conduct an ant behavior study, and collaboratively design an observational or manipulative experiment.

The anonymous survey used both 5-point Likert-scale items and free response questions. Identical questions were asked on both days. The goal of this assessment tool was to capture student perceptions about the training week experience such that program modifications could be made as needed. Items were designed to assess social interactions with other SIFTers, level of difficulty of field skills, level of comfort working outdoors, thoughts about exploring environmentally-focused careers, critique of training week activities, and short answer questions that uncover knowledge gains and personal growth.

We chose to analyze three specific Likert-scaled items that are grounded in experiential education practice: (1) learning by doing, (2) perceived gain of new knowledge and skills, and (3) personal challenge leading to growth. Means were calculated for all Wednesday and Friday item scores. Tests of statistical significance were unable to be conducted due to the nature of the archival data for some cohorts.

Results

![Figure 1: The way we are learning things works for me](image)

![Figure 2: This program has taken me into new knowledge, skills, and activities](image)

![Figure 3: I have identified some new personal challenges to get comfortable with](image)

Discussion

The survey item data presented in Figure 1 suggests that teens find the SIFT training week framework to be an attractive form of education. “The way we are learning” in SIFT is specifically designed to be experiential and the high level of agreement across cohorts suggests the program utilizes a teaching style that works. It should be noted that the program may attract youth who enjoy this type of learning. A good number of participants are already interested in ecology and the outdoors, so the results on this item may simply be indicating successful recruitment of teens with an affinity for experiential education.

Data in Figure 2 suggests SIFTers perceive that they have been exposed to new knowledge, skills, and activities, as they responded with a high degree of agreement to the item. This corroborates earlier findings that participants do receive benefits from the program. Knowledge of environmental field research, skills for doing environmental field research, and knowledge about capabilities/interests were ranked among the top three benefits identified by participants in a post-program survey of cohorts 1 through 4 (Flowers et al., 2016). The jump in agreement from Cohort 1 to Cohort 2 is likely due to modifications made to the program after the first year. The similar levels of agreement by cohorts 8 and 10 compared to those of cohorts 2 through 4 supports the idea that the program continues to provide perceived benefits to participation.

The statement presented in Figure 3 asks if SIFTers have identified personal challenges to overcome. The data across all cohorts shows agreement, suggesting that participation in SIFT provides a challenging environment that can lead to personal growth. This indicates that the program is providing similar benefits for cohorts 8 and 10 as it did for cohorts 1 through 4. It should be noted that a very diverse set of participants from urban, suburban, and rural school districts have come through the SIFT program and yet the level of agreement holds somewhat steady over the six selected cohorts, suggesting the SIFT training week may support personal growth for most youth.

Based on the three item analyses presented here, we suggest that the experiential model provided by SIFT training has continued to provide participant benefits over ten years. These data are snapshots of participant perceptions on Wednesday and Friday afternoon of the SIFT training week. There are many more items on the climate surveys that provide additional points of self-reflection and assessment of acclimation to environmental field research. Analysis of additional items is recommended to better understand the whole picture of perceived benefits to participation in the training week.

The SIFT training week is a critical first step in a three-stage career exploration pathway. If, at the end of the entire SIFT program, participants find they enjoy field work research, they may then apply to the Tyson Environmental Research Fellowships (TERF) program the following year. In TERF they are placed on research teams at Washington University’s Tyson Research Center, and work alongside undergraduate and graduate students, post-doctoral researchers, technicians, staff scientists, and professors for a four-week summer experience. The SIFT and TERF programs work seamlessly as a two-stage progression of pre-college career exploration; however, many TERFers have gone on to become Tyson undergraduate research fellows, experiencing a third stage of career exploration.

Literature Cited


Acknowledgments

We thank Dr. Keith Beyer for advice and Tyson Research Center for support during summer 2017. The SIFT and TERF programs were developed as an informal science education research project funded by the National Science Foundation (DRL 0739874). Administration of the SIFT climate survey was approved by the Institutional Review Board at Washington University in St. Louis (IRB 201110063). Adam Vorel was a Cohort 5 participant in the SIFT and TERF programs.