

Investigating the influence of outreach type on participation of secondary students in extracurricular activities with a Bahamian environmental education non-profit

Olivia Patterson
Program Coordinator
Friends of the Environment
Abaco, Bahamas

2014 EE Costa Rica 2

Abstract

Environmental education is provided by Friends of the Environment (FRIENDS) in Abaco, Bahamas to local schools in support of the Bahamian science curriculum. Methods of outreach include both on-campus and off-campus activities, however gaps have been identified in outreach for high school students. As a means to improve high school outreach, this project surveyed current high school students and recent graduates to investigate how methods of outreach may impact student likelihood to participate in extracurricular activities with FRIENDS. Outreach type had no measurable influence on student likelihood to participate in FRIENDS activities, however results indicated that most students have either heard of FRIENDS and/or are interested in participating in a FRIENDS-led activity. Students currently participate primarily in pro-social and sport-related activities and showed a preference for internships and service clubs. Students indicated they are most available after school, as compared to summer. Open responses from students provided further guidance for future development of student programs and community outreach.

Keywords: non-formal education, extracurricular activities, student participation, outreach

Investigating the influence of outreach type on participation of secondary students in extracurricular activities with a Bahamian environmental education non-profit

Friends of the Environment (FRIENDS) is a grassroots non-profit organization based in Abaco, Bahamas. FRIENDS' mission is to preserve and protect Abaco's marine and terrestrial environments to achieve sustainable living for the wildlife and people of Abaco (Friends of the Environment, 2014). The main vehicle for accomplishing this is environmental education. Since 2006, FRIENDS has provided approximately 10,000 environmental education opportunities for Abaco students. The role of FRIENDS is to provide non-formal education in science and conservation themes that support the Bahamian curriculum. FRIENDS has made an effort to work with all 27 schools in Abaco, however the majority of programs have targeted students under the age of 13. It has been noted that students who choose a career in science often make the decision to do so early on and stick to it (Eshach, 2007). However, students often require additional engagement and opportunities to gain experience to bolster their college and job applications. Extracurricular activities are known to provide good opportunities for learning, leadership, and social and personal development (Eccles & Barber, 1999; Hancock, Hyjer Dyk, & Jones, 2012). FRIENDS realized a need to fill the gap in high school level programming to encourage student development in science and is undertaking measures to design programs to support the Bahamian curriculum as well as student career aspirations. The development of an "Abaco Research and Conservation Center" as a new facility and program of FRIENDS will help provide unique opportunities for young Bahamians to learn and work hand-in-hand with researchers, whether they are currently enrolled in school or have graduated. The research center is scheduled to be constructed in 2015 and this project is being undertaken to inform programming at the research center and seeks to determine whether FRIENDS' method of outreach (outdoor education versus classroom-based education) affects a student's likelihood of participating in an extracurricular activity organized by FRIENDS. This project has numerous goals, including:

(a) finding out whether participation in outdoor activities with FRIENDS makes students more likely to choose to participate in an extra-curricular activity by FRIENDS.

- (b) finding out what type of extracurricular activity would help students fulfill their goals for education or career development, learn critical skills for Bahamas General Certificate of Secondary Education (BGCSE) exams and coursework, and determine the appropriate times and format in which to offer the activities.
- (c) finding out if there are any links between learning opportunities with FRIENDS and extracurricular involvement of Abaco high school students
- (d) guiding FRIENDS' high school outreach program and determine how best to engage students in extracurricular activities

Methods

To capture the opinions of current and past high school students from Abaco, Bahamas, students in 10th - 12th grade and those who have graduated in the last five years (including those attending university) were surveyed. A requirement for survey participation was that students must currently attend, or have graduated from, an Abaco high school. An electronic survey was distributed to graduates using the online survey tool Qualtrics (2014) and was shared via the author's Facebook page as well as FRIENDS' Facebook page (Facebook, 2014). Hard copy surveys were distributed at a Government-organized teacher's workshop, delivered to local high schools, and distributed when FRIENDS' education officer made school visits. Most of these interactions were coordinated through biology teachers, since all students enrolled at local schools participate in that subject. A letter was distributed along with the survey to explain the project and to give contact details for the principal investigator and project advisor, and to share a message from the Miami University Research Ethics and Safety Office (Appendix B), which was also duplicated on the survey. Data were collected between October 22 - November 3, 2014. Hard copy surveys were entered into Qualtrics to combine them with previously gathered online responses, using Qualtrics effectively as a database. Sample size varied for each question because students were not required to complete the survey in its entirety. The survey covered a range of topics including demographics (Questions 1-3), career plans (Question 4), familiarity with

FRIENDS and willingness to participate in FRIENDS activities (Questions 5-7, 10-14), participation in extracurricular activities (Questions 8-9), time management (Questions 9, 15), and an open question for suggestions on any program that might assist with the respondent's personal or career development (Question 16) (Appendix A).

Demographics

The target population was primarily minors, so no sensitive data was collected; the survey included minimal information about student age, grade level/educational status, school type (public or private), and school district (Figure 1). The bulk of Abaco's high schools are concentrated in Central Abaco; many students commute by ferry and/or bus to attend high school. An attempt was made to gather responses from each district in Abaco; at least one school per district is represented in the data. The approximate 10th-12th grade population of the surveyed schools is 430.

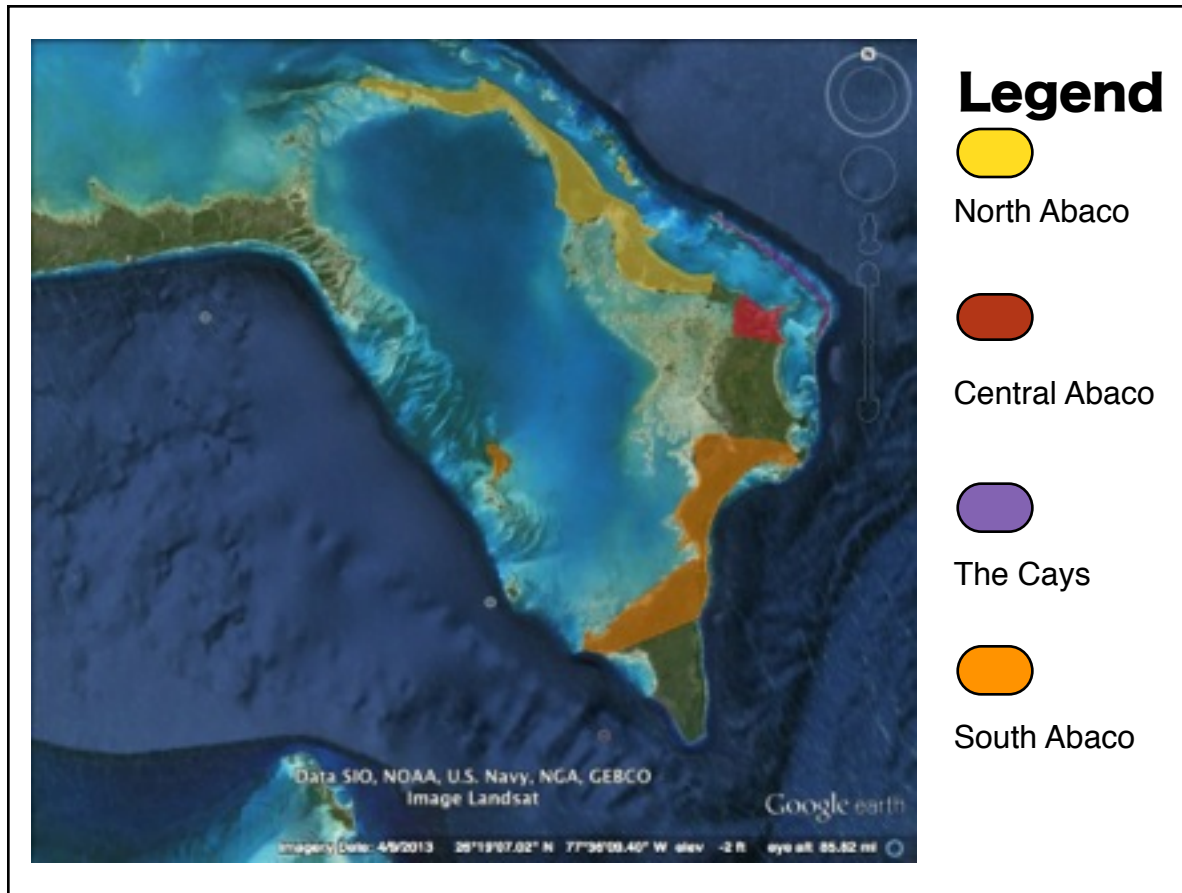


Figure 1. The regions of Abaco Island where schools are found (adapted from Patterson, 2013). Most high schools are located in Central Abaco, with the exception of a single high school in each of North and South Abaco and The Cays.

Career Plans

Respondents were asked about their career plans including their intention to seek a job or attend college. Answer options were also provided in the present tense for graduates (e.g. I have graduated and am already attending college/already have a job).

FRIENDS: Familiarity and Participation

Students were asked if they were “familiar with FRIENDS before today” so that the presence of a FRIENDS representative during survey distribution did not impact their answer. To gauge the reach of FRIENDS’ education program students were asked which of the following school-based activities organized by FRIENDS they had

participated in: an in-class presentation, school assembly, off campus field trip, science fair, or none. This question also served a dual purpose of helping to determine whether the type of outreach affects a student's likelihood of participating in extracurricular activities offered by FRIENDS.

Extracurricular Activities

This study sought to gauge the extent of student participation in extracurricular activities by offering a list of 16 of the most well-known opportunities in Abaco and by asking students to estimate the number of hours spent on each activity per week. The list of activities was generated by FRIENDS staff who are also community volunteers and parents. Total number of activities per respondent was calculated. The intention was to also calculate the average number of hours/week spent on extracurricular activities, however not all students who participate in extracurriculars listed the time involved. For analysis, activities were grouped into categories of *prosocial* (community service clubs and church); *performing activities* (drama club, art club, music lessons, and Junkanoo - a Bahamian festival, preparation for which includes costume design and music practice); *team sports* (school and community teams); *academic clubs* (after school classes, Toastmasters, and Eco-Club); *FRIENDS activities*; and *other* (Eccles & Barber, 1999).

Question 11 provided Likert-type data so the data were analyzed using mode and median as measures of central tendency (Boone Jr. and Boone, 2012). For ease of analysis, each response was assigned a number code (e.g. Definitely=1, Possibly=2). Numbers were then converted back to a text response for ease of understanding (Patterson, 2013).

Time Management

The amount of time already committed by students to extracurricular activities and homework (Appendix A, Questions 9 and 15) could be useful in determining student availability for other programs which FRIENDS hopes to start.

Results

Demographics

Respondents ranged in age from 14-21 ($M=16.41$, $SD=1.54$), and they represented senior grades of public high schools in North, Central, and South Abaco, and private high schools in Central Abaco, as well as recent graduates (Figure 2). Most of the respondents attend public high schools.

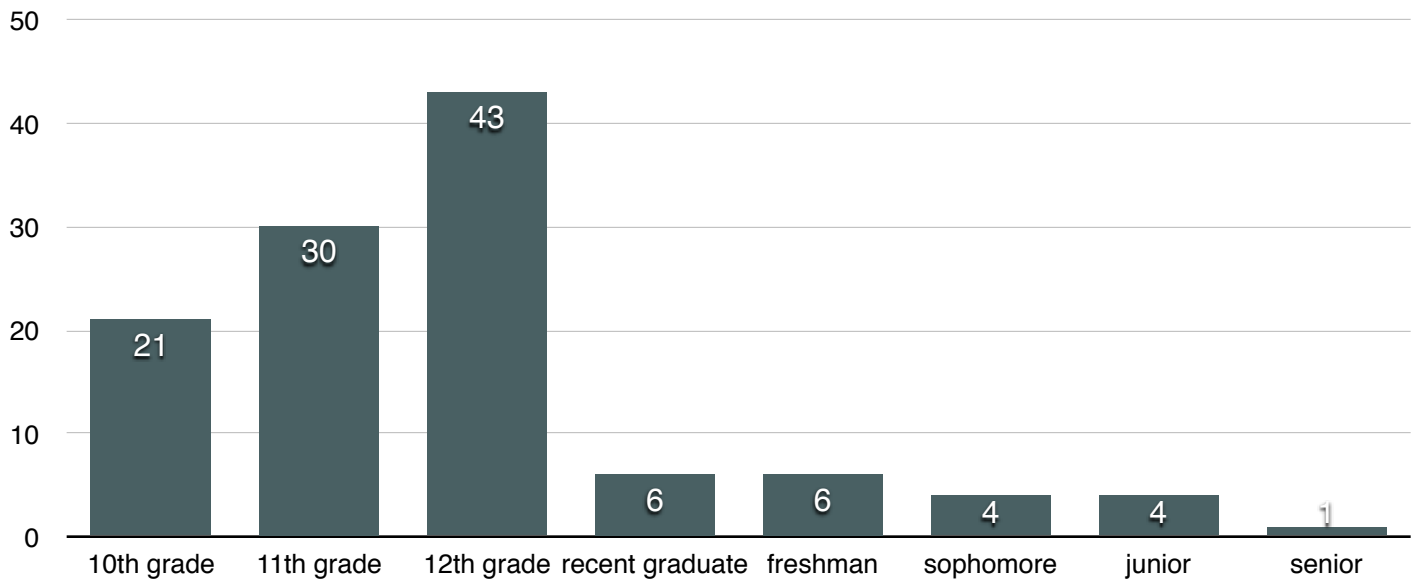


Figure 2. Educational background of students (n=117)

Career Plans

The majority of current high school students responding to the survey plan to attend college after graduating (76.3%, n=97). Of those who have graduated, 78.9% are attending college (n=19).

FRIENDS: Familiarity and Participation

Eighty-eight percent of respondents had heard of FRIENDS prior to taking the survey, and only 30.8% of respondents had not participated in a FRIENDS-led activity through their school. The most commonly participated-in activities were off-campus field trips and in-class presentations (Figure 3). Of the 10 students who had not heard of

FRIENDS prior to taking the survey, 70% were interested in doing a FRIENDS activity through their school, 20% were not, and 10% were not sure.

● In class presentation ● School Assembly ● Off campus field trip
● Science fair ● Have not participated

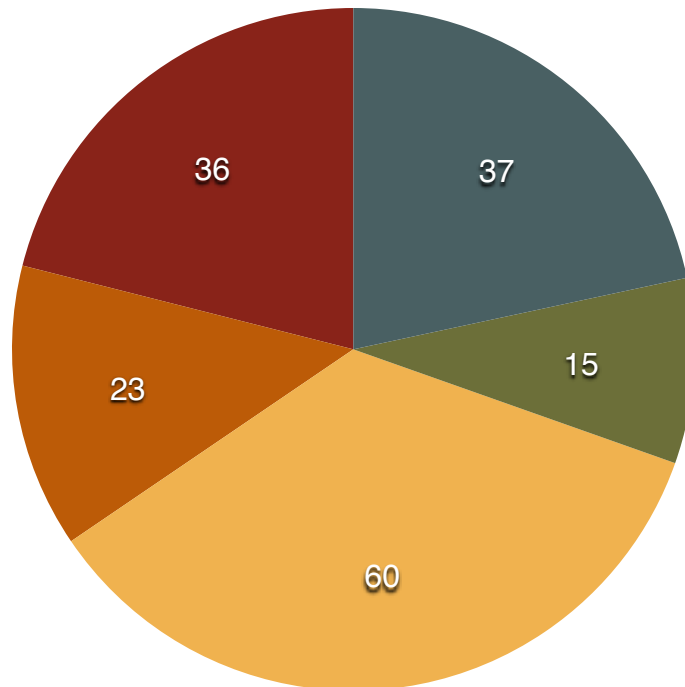


Figure 3. Participation in FRIENDS activities through schools (n=117). Students were asked to select all activities in which they had participated; 26.5% of respondents had participated in more than one activity.

Extracurricular Activities

More than three quarters of students (84.6%, n=117) report participating in extracurricular activities, which compares to a study by Moore, Hatcher, Vandivere, & Brown (2000) in which approximately 83% of US students aged 12-17 participated in extracurricular activities. Not all participants (Hancock et al., 2012) noted the number of hours per week committed to each activity, so it was not possible to determine the amount of total time per student for extracurricular activities. The most common activities that students took part in were prosocial activities and sports. Median activity

type participation was two (out of 6 types: pro-social, performance, team sports, academic, other, FRIENDS activities).

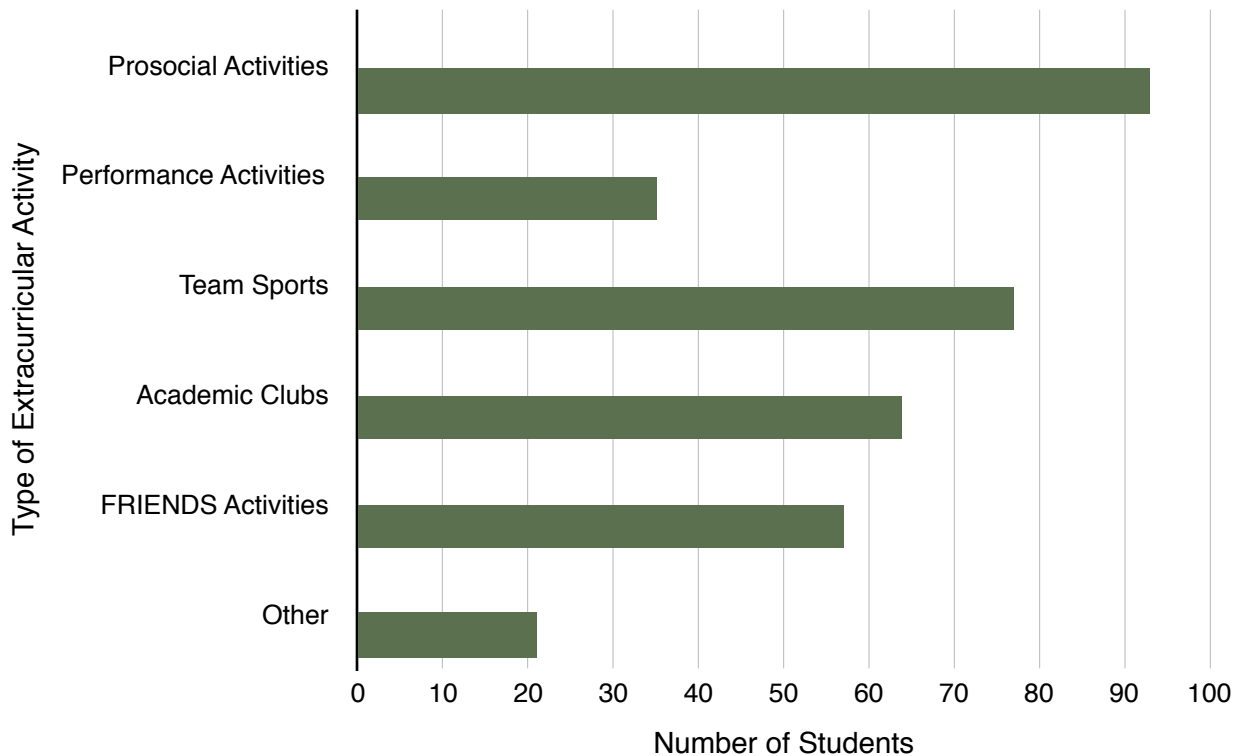


Figure 4. Student participation in community extracurricular activities (n=102).

Nearly half of respondents (48.7%, n=117) report having participated in extracurricular activities offered by FRIENDS, though 6 of those respondents also said they had not heard of FRIENDS prior to taking the survey. Only three respondents indicated that they had participated in a FRIENDS extracurricular activity, but no other school or community activity. Half of the students (51.3%, n=115) are “definitely” interested in participating in an extracurricular activity led by FRIENDS.

Of the three choices given for extracurricular activities with FRIENDS, students stated that they would prefer to participate in an internship/work experience, an after-school service club, and an after-school science club, in that order.

When asked about the preferential timing for an extracurricular activity with FRIENDS students first selected after-school (50.4%, $n=117$) and then summer (33.3%). Students appear to be most available on Tuesdays, Wednesdays, and Fridays, though it should be noted that this may vary depending on which community students live in.

Table 1. Results of Mann Whitney U tests to investigate influence of outreach type on student interest in participating in FRIENDS extracurricular activities.

	n1, n2	U	p	z
Field trip versus In class presentation	28, 14	219.5	0.53	0.62702
Off campus versus on campus	37, 18	344.5	0.84	0.20628

Data for students participating only in field trips was compared with students participating only in in-class presentations for its impact on student interest in participating in FRIENDS extracurricular activities, resulted in no significant difference ($p>0.05$). Off-campus activities (field trips and science fair) were lumped and compared with on-campus activities (in-class presentations and assemblies) and no difference was found in their impact on student likelihood to participate ($p>0.05$).

Time Management

While students responded that they do homework for a range of 1-48 hours per week, the median response was five hours. An outlier of 120hrs/week was removed, as that is impossible if a student were attending school five days a week.

Open Response

Students were given the opportunity to add comments at the end of the survey regarding any other programs that FRIENDS might be able to offer to help support their personal or career development. Students gave a variety of responses relevant to their needs and the needs of their community. For example:

- *BGCSE classes for practices. Physics and chemistry and biology if possible.*

- *Career workshops, science workshops, field trips to tour The Abaco's.*
- *To do more activities in the communities in North Abaco, so the students [can] be more active in their community.*
- *More summer camps, and more internships.*
- *More field trips.*
- *[Teach] swimming, because I have noticed many children in Abaco cannot swim.*

Discussion

Even though FRIENDS has not focused on high school education, the survey revealed that organizational outreach has still been fairly effective within this group. Students seem to have a positive opinion of the organization considering that those who are either unfamiliar or have not participated in a FRIENDS activity are mostly interested in participating in future activities.

It was a bit surprising that participation in field trips (or off-campus activities) did not impact a student's likelihood to participate in extracurricular activities with FRIENDS. It was thought that off-campus activities, more than on campus activities, would give the students an idea of what participating in a FRIENDS extracurricular activity would be like.

Future studies could look at the effects of gender on participation (Eccles & Barber, 1999), as well as leadership roles within extracurricular activities (Hancock et al., 2012) and how these may influence future participation in extracurriculars with FRIENDS. Fredericks and Eccles (2006) mention that school-based activities reach the majority of students, where extracurricular activities may only reach the more motivated students. A useful addition may be to survey students for their intended major focus of study when they attend college. This would help identify the proportion of the student population interested in the sciences; these are the students that would require more in-depth experiences with FRIENDS nearing the end of their high school career. Longitudinal studies may provide the most reliable data on student participation (Fredericks & Eccles, 2006), however that was not possible for this study. Sampling

from public and private schools helped get a cross-section of students from different socio-economic backgrounds to reduce any influence on the results.

Useful feedback provided by respondents helped support existing programs and those currently under development at FRIENDS such as an after-school inquiry club for junior high, and activities to build skills for BGCSE coursework. Student feedback also challenged FRIENDS to become more involved in remote communities, and to offer more opportunities related to work experience/internships and technical training, which should fall under the purview of the future Abaco Research and Conservation Center.

FRIENDS should continue to engage high school students through their schools in order to reach a wider cross-section of the student population and balance that by offering more specific extracurricular activities targeting students with career aspirations in the sciences.

Action and Reflection

Friends of the Environment (FRIENDS) has identified a need to offer programs for high school students; up to this point the majority of our programs have been targeted to students aged 6-13. Offering high school level programs will give continuity to our education program and support the interests of students as they progress through their educational career. FRIENDS also hopes to support career development by providing extracurricular opportunities to learn about science and the local environment.

A pilot after-school club for junior high students is currently being developed, which was inspired by student interest in an inquiry-based summer camp called Nature Detectives held in summer 2014. The club is scheduled to start in January 2015 and participants will act as another resource to provide feedback on student motivations and extracurricular interests. Senior high students showed a greater interest in internships and community service versus science clubs, which may reflect their needs to fulfill graduation requirements and build their resumes. Capacity for FRIENDS to offer internships is currently limited, however we currently accept 3-5 short-term interns per year. I expect that capacity to widen once the Abaco Research Center is in operation. I think we can improve our current intern program by encouraging participation from

students in communities across the island. We can also work with each intern to determine their particular academic and career goals and build an internship experience to help support that.

Students from North Abaco utilized the open response question more than any other group. I was impressed with their thoughtful feedback and the fact that they expressed a need for FRIENDS to do more community work in North Abaco. This has been a challenge for the organization, which is based in Central Abaco, however if we can build our high school programs we can help groom future volunteers and community participants for North Abaco, which would strengthen community outreach. An interesting solution presented by a student was to provide presentations that can be given over the internet. FRIENDS can investigate the usefulness of creating narrated presentations that teachers can use in their classrooms. There may be potential for students in the after-school program to create short video presentations on their projects and share them with others.

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Appendix A: Survey

"The purpose of this research is to assess student interest in extracurricular activities offered by Friends of the Environment and is being conducted as part of Olivia Patterson's work in a Master's program at Miami University in Oxford, Ohio. The survey should take about 5-10 minutes to complete; you may stop at any time and you may skip questions if you do not feel comfortable answering them. Confidentiality of responses will be maintained to the highest degree possible. Completing this survey will in no way affect your grades or opportunities to participate in future activities with Friends of the Environment. If you have any questions or would like more information about programs at Friends of the Environment, you can contact Olivia Patterson at Olivia@friendsoftheenvironment.org (or 367-2721) or her graduate advisor, Jamie Bercaw at bercawj@miamioh.edu. If you have questions or concerns about the rights of research subjects, you may contact the Research Compliance Office at Miami University at (513) 529-3600 or humansubjects@miamioh.edu."

The Miami University Research Ethics and Safety Office has reviewed this survey and methods for subject protections and determined that the information collected without identifiers about the students is minimal, and the risks to the participants low. If you have questions about this determination, please contact Miami at humansubjects@miamioh.edu.

DEFINITION: "extracurricular": extracurricular activities are those that are not part of your normal school courses and take place outside of your classroom routine.

1. What is your age? _____

2. Select the option that best represents your school: (or the school you attended in the last year)

___ Central Abaco public school

___ Central Abaco private school

___ North Abaco public school

___ None

___ Other _____

3. What best represents your current education level?

___ 10th grade student

___ 11th grade student

___ 12th grade student

___ recent high school graduate (graduated in last 5 years and have not attended university)

___college freshman/ first year university

4. What is your plan after graduating high school?

___look for a job, enter work force

___attend college/university

___I don't know

___volunteer/gain work experience

___I have already graduated and have a job

___I have already graduated and am attending college/university

___I have already graduated, but have not decided what my next step is

5. Have you heard of Friends of the Environment before today?

___Yes (go to Question 6)

___NO (skip to Question 7)

___not sure (skip to Question 7)

6. If yes, have you participated in a Friends of the Environment activity through your school?

Select all that apply.

___In-class presentation

___school assembly

___off campus field trip

___science fair

___I have not participated in a Friends of the Environment activity through my school

7. If no, would you like/have liked your class/school to participate in a Friends of the Environment activity?

___yes

___no

___maybe/not sure

8. Do you participate in any extra-curricular activities or clubs (outside your regular class time)?

___yes (go to Question 9)

___no (go to Question 11)

9. Check any extracurricular activities you have been involved in over the past school year and estimate how many hours per week each activity takes.

- | | |
|--|---|
| <input type="checkbox"/> Interact | <input type="checkbox"/> Other school sports |
| <input type="checkbox"/> Junior Achievers | <input type="checkbox"/> Other community sports |
| <input type="checkbox"/> Key Club | <input type="checkbox"/> Junkanoo |
| <input type="checkbox"/> Toastmasters | <input type="checkbox"/> after-school classes |
| <input type="checkbox"/> Drama Club | <input type="checkbox"/> art club |
| <input type="checkbox"/> Swimming | <input type="checkbox"/> church activities |
| <input type="checkbox"/> Basketball | <input type="checkbox"/> Eco-club |
| <input type="checkbox"/> judo, karate, or mixed martial arts | <input type="checkbox"/> music lessons |

10. Have you participated in any extra-curricular activities with Friends of the Environment?

- after-school club/Discovery Club
- internship or work experience
- summer camp
- field courses (summer 2013 or 2014 only)

11. Would you be interested in participating in an extracurricular activity led by FRIENDS?

- Definitely
- possibly
- neutral
- not sure
- no

12. What type of activity would you prefer that FRIENDS offer? Rank them in order of preference, 1 being your favorite and 3 being your least favorite

- after-school science club (conducting your own experiments, learning how to use scientific equipment, exploring nature)
- after-school service club (joining a group of other students to undertake community projects to improve the environment like beach cleanups, planting trees and recycling projects)
- internship/work-experience (work closely with FRIENDS staff and/or researchers to learn how to run a conservation non-profit organization, and participate in field research as opportunities arise)

13. When would you prefer an extracurricular activity with FRIENDS take place?

after school

mid-term break

summer

I am not currently attending school

14. If you selected "after school" in Question 13, what day of the week would be preferable?
(e.g. Monday, Tuesday...)

15. How many hours per week do you do homework?

16. Please use this space to share additional information on any other resources, activities or experiences that Friends of the Environment may be able to offer that you feel would benefit your personal development or career development

Appendix B: Informational Letter for Parents and Teachers

Dear Parents/Guardians and Teachers,

The purpose of this letter is to ask your assistance in distributing the attached survey to students in 10th-12th grade in Abaco high schools, and also those who have graduated in the last 5 years from Abaco high schools.

This survey is part of a research project being conducted through my master's program at Miami University of Ohio and in support of my work at Friends of the Environment. The goal of the survey is to gather information from students in both public and private schools regarding their current and potential future involvement in extracurricular activities.

Friends of the Environment is a local non-profit organization that is working to conserve Abaco's marine and terrestrial environments for sustainable living for Abaco's wildlife and people. Friends of the Environment is seeking to create new educational opportunities for high school students and the information provided during this survey will help us to design a program that suits the needs of local students.

If you have any questions you can contact me at Olivia@friendsoftheenvironment.org or 242-577-2647, or my graduate advisor, Jamie Bercaw at bercawj@miamioh.edu. If you have questions or concerns about the rights of research subjects, you may contact the Research Compliance Office at Miami University at (513) 529-3600 or humansubjects@miamioh.edu."

The Miami University Research Ethics and Safety Office has reviewed this survey and methods for subject protections and determined that the information collected without identifiers about the students is minimal, and the risks to the participants low. If you have questions about this determination, please contact Miami at humansubjects@miamioh.edu

Please contact me so that I may pick up the surveys, or return them to the office at Friends of the Environment in Marsh Harbour.

Your assistance is greatly appreciated!

Sincerely,

Olivia Patterson
Program Coordinator,
Friends of the Environment

(under IRB Approval #00865r)