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Journeying the James: A Study of a Multidisciplinary Environmental Education Program in the Non-Formal Sector

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Journeying the James: A Study of a Multidisciplinary Environmental Education Program in the Non-Formal Sector

Cover Page Footnote

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Introduction

The modern world is plagued with myriad environmental issues. As a result, not only is nature threatened, society as a whole is threatened. For instance, the effects of climate change can lead to increased diseases, biodiversity loss, lower crop yield and fish stocks, and increased natural disasters (Brander, 2010; Calzadilla et al., 2013; Kolmannskog & Trebbi, 2010; Rohr et al., 2011). Environmental education can make a positive difference (West 2015). It aims to make people care about the environment and promotes them to change their personal actions to support the environment.

Environmental education has also been shown to lead people to advocate for the environment and to become politically active (Goldman et al. 2015). Environmentally literate citizens will encourage political leaders to make environmentally responsible decisions. This is essential for sustaining the planet because, “environmental issues are political by nature...addressing them requires political action of the public” (Goldman et al. 2015, p. 637). On the other hand, a lack of environmental education intensifies our current problems because people continue to either harm the environment or remain apathetic.

The James River Association (JRA) is a Richmond based non-governmental organization that acknowledges the importance of environmental education. James River, also known as America’s Founding River, has historically been a resource for food, water, transportation, energy, recreation and more. The river has undergone an extreme transformation with the help of the JRA, whose mission is to restore and protect the James River and promote conservation. In the 1950’s and 1960’s, the river became extremely polluted due to factors such as industrialization, toxic chemicals, and sewage; it smelled and people could not swim in the river or drink from it. In recent years, while there have been incidents of illnesses from interacting

with the James, there has been significant recovery and signs of environmental progress in the James. Through efforts such as advocacy and outreach, the river has improved in many aspects including increased water quality and fish stocks. Still, even though the James has improved, there is a lot of work to be done in regard to protecting and restoring it.

One way the JRA strives to achieve this is via education programs. Scholars all around the world agree that environmental education (EE) is essential in protecting our planet. With global challenges ranging from climate change to food insecurity, the world needs environmentally literate citizens who can engage with these challenges in order to solve them (Heinrich et al. 2015; Stevenson et al. 2014). EE is a key factor in sustainable development, which can be defined as “development that meets the need of the present generation without compromising the ability of future generations to meet their own needs” (Brutland 1989, p. 41). Sustainable development requires consideration of factors that involve the environment, the economy, and society. This is an essential approach, because though environmental issues are scientific in nature, they are caused by social, economic and political factors (Goldman et al. 2015).

The goals of EE include providing ecological knowledge and promoting environmental stewardship (Stevenson et al. 2014). EE also requires that people possess the willingness, confidence, and skill to take action and make a difference (Smith 2007). There is evidence that caring about the environment must be paired with ecological understanding in order to lead to environmentally responsible behavior (Stevenson et al. 2014). This means that if a student cares about the environment, they still need to know why certain actions affect the environment in positive or negative ways before they change their behavior. This behavior includes daily life choices as well as political and economic choices. Similarly, environmental education has

potential to increase positive attitudes and behaviors towards the environment in students who were previously apathetic (Kwan et al. 2017). The United Nations Educational Scientific and Cultural Organization states that, “education can – and must – play a decisive role in providing learners across the world with the knowledge, skills and values to discover solutions to today’s sustainability challenges. This carries benefit for present and future generations” (UNESCO 2014, p. 3). EE is necessary on a global scale and it starts with education on a local level.

The James River Expedition (JRE) is one of JRA’s environmental education programs. The program has been running since 2011 and takes three separate groups of high school students from different counties in Virginia on six-day trips on either the lower, middle, or upper sections of the river. The cost to participants is \$150 although students with financial limitations receive a fee waiver. The JRE aims to teach the students about the social and environmental benefits the James River provides the state of Virginia. Some additional goals of the program are: to be a memorable experience, to foster skills in leadership and teamwork, to develop outdoor skills, and to boost an already present desire for environmental stewardship. The JRA education team uses a rigorous application process that includes several short essays and a teacher recommendation in order to select motivated and mature students.

Not only is the JRE an environmental education program, it also falls under two linked umbrellas of experience-based learning (EBL) and place-based education (PBE). As the name implies, EBL involves learning through experiences. Learners analyze experiences by reflecting, evaluating and reconstructing which can lead to thoughtful action (Foley 2000). EBL adds to positive outcomes such as improved cognition and it values a relationship between the learner and the content (Heinrich et al. 2015). In addition, research shows that outdoor experiences, and

adult role models to facilitate them, during a person's youth produce environmentally active adults. (Stevenson et al. 2014).

Because all of the students that participate in the JRE come from the James River watershed, the JRE is place-based. According to education writer David Sobel, PBE uses the local community and environment to teach concepts across the curriculum (Sobel 2004). It emphasizes hands-on, real-world learning experiences, helps students develop strong ties to their community, enhances appreciation for nature, and heightens commitment to serving and contributing as active citizens (Sobel 2004). The vision of PBE aligns closely with the goals of the JRE. Participating in real-world problem-solving learning activities can give children a sense of their ability to improve their communities (Smith 2007). Research shows that EBL and PBE are valuable methods for protecting the world's natural resources. According to Smith, "all of these educational experiences are aimed at developing in young people a sense of affiliation with the places where they live. Absent this affiliation, there is little chance that the forms of care essential to environmental and social stewardship will emerge" (Smith 2007, p. 192).

This study aims to investigate the James River Association's James River Expedition in order to determine if it has been successful in meeting its goals as well as the goals of EE. Thus, the paper is structured by two research questions: (1) Does the JRE meet the goals of EE? (2) Does the JRE meet its own established goals? This research can give insight on the impact of non-formal education, defined as education that "occurs outside the formal system, but through other organized learning settings" (UNESCO 2014, p. 20), and the impact that similar programs can have on youth across the state, region, nation, and globe.

Methodology

The research questions driving this study are as follows:

(1) Does the JRE meet the following goals of EE?

- Increase ecological knowledge
- Increase environmental stewardship

(2) Does the JRE meet the following goals as outlined by the JRA?

- Teach the social and environmental benefits of the James River
- Promote environmental stewardship
- Boost leadership, teamwork, and outdoor skills
- Provide a memorable experience

In order to answer the research questions, all participants from the past five years were given an internet survey in the summer of 2016. IRB approval was received prior to initiating this study. The survey was administered in English and included open and closed ended questions. The closed-ended questions were chosen to specifically address the goals of the JRE and EE. The open-ended questions were designed to have participants offer additional unprompted comments or reflections. Out of the 150 past participants contacted, 54 responded. All respondents that were not 18 years of age or older received parental consent before participating. The average researcher receives a 20% response rate and a sample size should not be fewer than 30 (Denscombe, 2007). This project received a 36% response rate and has a sample size of over 30. Therefore, it exceeds the standard yield for survey-based research and is adequate size to generate data and draw conclusions. All responses were collected on the online service JotForm and managed on Microsoft Excel. Quantitative data was analyzed using descriptive statistics such as percentages. Qualitative data was categorized into key themes.

In general, surveys are beneficial because they allow researchers to obtain participant impressions via empirical data that is quantifiable. However, a disadvantage is that respondents

might not give honest responses. In order to promote accurate answers, respondents signed a consent form before taking the survey which described the project and the confidentiality of responses. All names referenced in section three (major findings) of this paper are pseudonyms. Because this project aims to look at data in an objective manner, it uses a realist ontology and a positivist epistemology.

The main advantage of using an internet survey is that they can reach a large amount of people from a large geographic range. They can also be completed quickly and are low cost. Because of time and budget limitations, and because respondents come from all over the James River Watershed, an internet survey was the best choice for this study. Additionally, “internet surveys do not have any significant distorting impact on the nature of the information that is provided by respondents” (Denscombe 2007). This means that there is not a significant discrepancy between responses received through internet surveys and in-person surveys. Some disadvantages to this research strategy include the chance of bias because Internet surveys eliminate respondents who do not have internet access and internet surveys can be easily ignored. In order to prevent this, participants with phone numbers on file were also called. Participants were recruited with an e-mail introducing the researcher and project with a link to the survey.

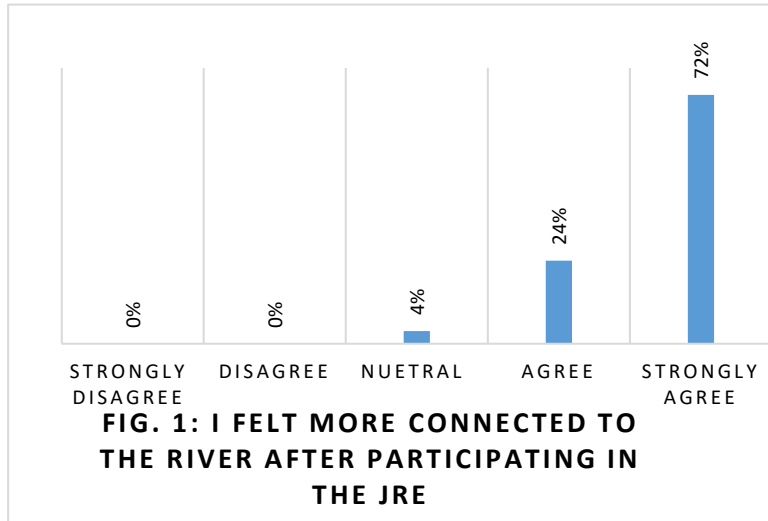
Major Findings

The following subsections outline the themes that both quantitative and qualitative data fall under. Subsection A relates to the first research question as well as the first goal outlined under the second research question. Subsections B and C relate the latter three goals under the second research question.

A. Environmental Education, Stewardship and Benefits of the James

One hundred percent of respondents reported that the JRE taught them ecological benefits of the James River. Every surveyed person confirmed that they learned something about the River’s ecology from the program. This theme is a theme that appears in the qualitative data.

Jane from the “It [the JRE] intertwined the waterways were local and systems, ecosystems, dynamics, and



2012 JRE said, taught me how Virginia with nearly all infrastructure including local pollution town water

management.” Mark, from 2013 mentioned that now they “regard the river by seeing it as an ecosystem with health concerns that needs to be nurtured and cared for.” Several other respondents mentioned greater ecological understanding of the river after the JRE. However, Mary from 2015 said, “... I would love to have learned even more about the specific plants and animals of the James as well as gone into more detail about the problems the river is facing.” On a social level, the majority of respondents reported that they felt more connected to the river after the JRE (Fig. 1).

Ninety-three percent of respondents answered “yes” to the question “after the Expedition, did you change any of your actions/ the way you regard the river?” When asked to explain, many more respondents reported another theme, increased environmental stewardship. Bob from 2014 said, “not only do I appreciate the river more now, but I also better understand the issues surrounding water quality and why it is imperative to protect our waterways.” Ashley from 2015 stated, “I felt more responsible to take action and to spread what I had learned to other people.”

Other respondents who answered yes to this question mentioned more consciousness, concern, appreciation, respect, and passion for the James. Some said that they changed their household activities such as using less water and fertilizer. Some mentioned more attention paid to the river, a need for action and advocacy, studying more, cleaning up the river, and spending more time outdoors. This data supports previous research that says EE and PBE leads to further action and environmental stewardship (Foley 2000; Smith 2007). The data also aligns with Stevenson et al. (2014) paper, which says that ecological understanding is necessary for environmental stewardship. The 7% that answered “no” stated that it was because they did not live close to the river or that their actions before the program did not harm the river.

B. Leadership, Teamwork, and Outdoor Skills

The majority of respondents either agreed or strongly agreed that the JRE both taught

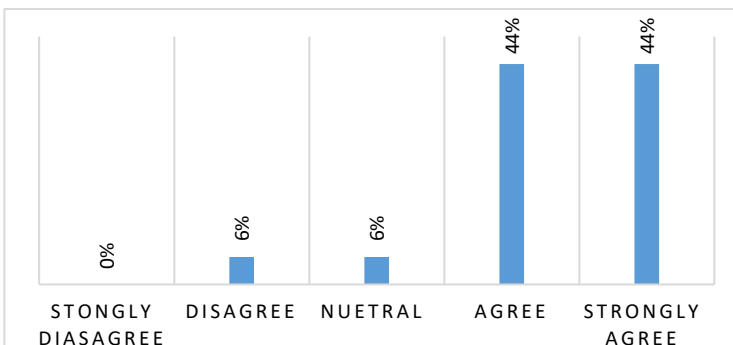


FIG. 2: THE JRE TAUGHT ME HOW TO WORK ON A TEAM

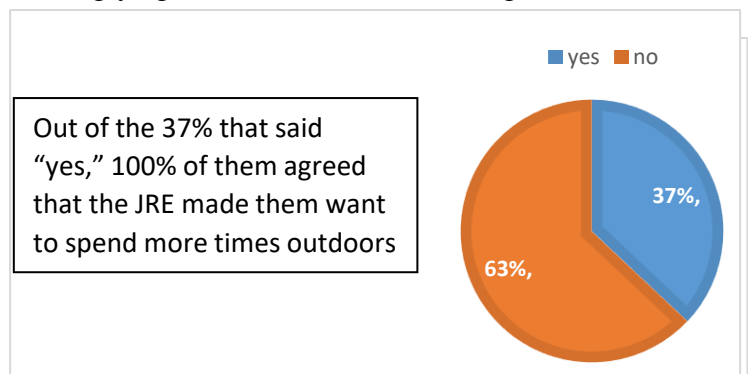
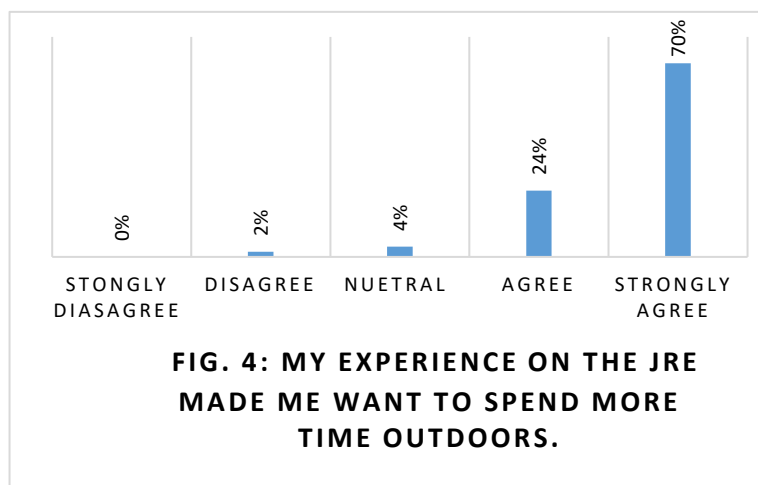


FIG. 5: WAS THE JRE YOUR FIRST TIME DOING EXTENSIVE OUTDOOR ACTIVITY?

them how to work on a team and gave them the opportunity to demonstrate leadership (Fig. 2 and Fig. 3).



The majority of respondents also said that their experience with the JRE made them want to spend more time outdoors (Fig. 4).

Thirty-seven percent of respondents reported that the JRE was their first time doing extensive outdoor activity and 100% of that 37%

reported the JRE made them want to spend more time outdoors (Fig. 5). Therefore, not only did the program encourage most of the participants with previous outdoor experience to spend time outdoors, it encouraged all of the participants with no previous experience as well. This supports Stevenson et al.'s (2014) assertion that youth who experience the outdoors with adult facilitation tend to be more environmentally active.

C. Memorable Experiences

One hundred percent of respondents agreed that they would remember the JRE forever; 87 % strongly agreed and the other 13% agreed. The qualitative data also supports the statistic with many responses relating to the theme of an overall memorable experience. Jacob from 2011 describes his experience below:

"We did the whole James. I absolutely loved it and it definitely influenced myself and the others on the trip. I'm still in contact with some of them and some of us still paddle and everyone is still mindful of river conservation. I really feel that seeing the entire river

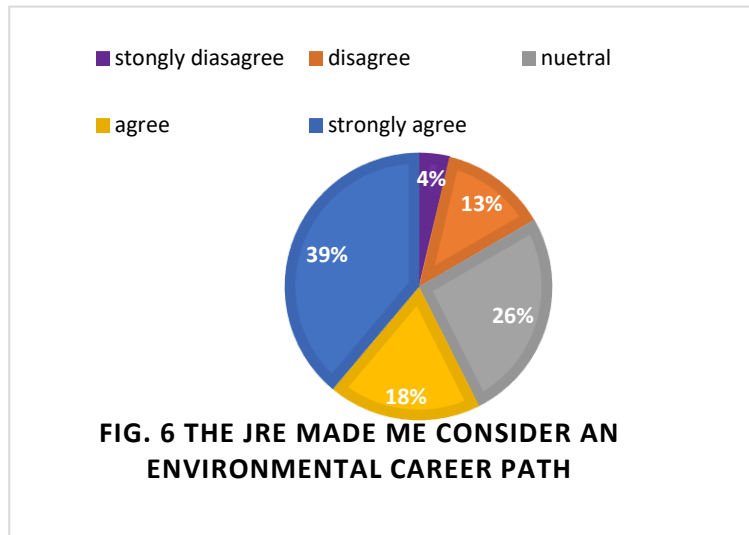
from its birth at its confluence nestled in the Blue Ridge to a 5 mile wide tide controlled giant was a huge part of the trip.”

This quote reveals that the JRE was memorable, enjoyable, educational, and motivational. It also promoted consciousness and stewardship. Five years later this participant remembers the JRE. The past participant also recommends that the JRA take one group on the entire river like they did in his year, as opposed to their current practice of taking three separate groups of students on different sections of the James (upper, middle and lower).

One hundred percent of respondents also reported that they would recommend the JRE to a friend. Some respondents mentioned that the JRE inspired them to pursue an environmental career and helped them get opportunities with other environmental programs and jobs. A few examples include:

- Rachel, 2014: “I had the time of my life on the expedition and it was the first of several outdoor oriented programs that have helped me become the person I am now and has given me an inkling as to what I want to do in the future.”
- Kevin, 2014: “The expedition helped me learn so much about controversial issues and the environment in general, and it also gave me a huge advantage when I applied to and got an internship working for a field station in Chincoteague.”
- Aaron, 2011: “The expedition was really life changing. They had a profound impact on me and it still does. In college I am majoring in environmental studies and sustainability. I have worked for a nature camp and riverside outfitters after and I'm definitely going to pursue an environmental career (possibly in teaching). I can trace that all back to the James River Expedition.”

A little over half of respondents agreed that the JRE made them consider an environmental career (Fig. 6).



Qualitative data also reveals the JRE contributes to students' growth. One Bryanna from 2014 stated: "the expedition was really life changing for me. It helped me to come out of my shell and into my own as a person. Honestly, the biggest impact that trip had on me was not environmental but emotional." Joe 2011 said, "this was the experience of a lifetime and I would recommend it to everyone. I had to step out of my comfort zone in order to succeed with the team and to truly reap the benefits of this experience. There's family and then there's your river family..."

Students also saw the JRE as important. Jordan from 2014 said "the James River Expedition was one of the best learning and life experiences I have ever had. If more students and adults were taught the lessons and importance of the James River, we would see a drastic change in how the river is perceived by many." This quote shows the participant saw the JRE as valuable, a trend seen throughout the responses. For instance, a respondent from 2015 said, "I really hope these expeditions will continue. I learned so much and had an amazing experience that I hope others will be able to have." Another respondent from 2011 wrote, "the expedition

was such a great experience, I think that it should be offered not only to high school students but to college students as well.” The fact that many participants suggest that more people experience the JRE indicates that the JRE was an experience so memorable that participants see value in expanding the program to reach even more people.

Lastly, the survey asked participants to describe their experience in one word. The words “amazing,” “life-changing,” “educational,” “beautiful,” “eye-opening” and “unforgettable” were mentioned most frequently (Fig. 7). This final piece of data solidifies all of the aforementioned results in Subsection C and suggests that the JRE achieved its goal of being a memorable experience.



Fig. 7 DESCRIBE THE EXPERIENCE IN ONE WORD

Conclusions and Recommendations

The data suggest that the JRE has been successful at meeting its goals and the goals of environmental education. The key themes identified in subsection titles of the major findings directly address the study’s research questions. The Environmental Education, Stewardship and

Benefits of the James (Subsection A), provides support for research question one as well as the part of research question two that regards the social and environmental benefits of the river. All program participants reported that the JRE taught them the James River's ecological benefits and the majority reported feeling more connected socially to the river. This led many participants to practice environmental stewardship. The subsections titled Leadership, Teamwork, and Outdoor Skills (Subsection B) and Memorable Experiences (Subsection C) provides support for research question two. Participants reported gaining leadership and teamwork skills from the JRE as well as encouragement to spend time outdoors. All of the participants reported the JRE as a memorable experience.

Not only did the experience make a difference in students' lives educationally, it made a difference emotionally and developmentally as well. Furthermore, the data reveals that the JRE helps to meet the goals of sustainable development. Respondents had clear knowledge of the river's benefits and why it is important to protect the James for the present and future.

After analysis of qualitative data, future recommendations for the JRA are that they offer the JRE to college students, travel the entire James with one group instead of dividing the James into upper, middle, and lower sections with three separate groups, and spend more time teaching specific flora and fauna of the James. In addition, it would be helpful to conduct pre- and post-JRE assessments for future participants in order to compare and contrast knowledge and attitudes about the James River before and after the JRE.

In total, though the JRE does not reach hundreds of students every year, it has a great impact on a smaller group of students. The participants describe the experience as fun, eye-opening, and life changing. The JRE inspired some to learn even more about protecting our rivers, some to change their actions, some to tell their friends what they learned, and some to pursue

environmental careers. Many respondents reported that they participated in other conservation programs after their experience with the expedition. Therefore, when the JRE reaches one person, it really reaches many. James River Expedition can serve as model for the education programs necessary to create environmentally literate citizens and make a difference locally and globally. If similar programs are equally as impactful on participants, then non-formal environmental education can fill the voids where formal environmental education may be lacking or nonexistent.

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