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Effect of Integrating a Sportfishing Curriculum into a Camp Program on the Knowledge, Awareness, and Attitudes of Participating Youth

Abstract
We evaluated the effect of incorporating a sportfishing and environmental curriculum into a short-term summer camp program on participating youths' knowledge of fishing and biology/ecology, awareness of ethical behavior, and attitudes concerning fishing and saving the environment. Using a pre-/post-survey of camp participants, we determined that the program was successful in developing youth knowledge related to fishing skills and biology/ecology, but did not affect ethical behavior awareness or attitudes of participants. Although longer-term programs may be needed to affect youth attitudes, camp programs offer the opportunity to increase knowledge among a large number of youth with a minimal investment in staff time.

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Introduction

Traditionally, 4-H is based on a model of long-term club programs. However, with fewer adults available to serve as club leaders and competing demands on children's time, it is important to consider alternative delivery modes.

Long-term programs focusing on environmental and outdoor education have resulted in increased environmental knowledge, more positive stewardship attitudes, and greater intent to continue outdoor recreation activities (Siemer & Knuth, 1998). In some instances, mid-term programs (multiple exposures to program materials within the same month) also resulted in increased environmental knowledge (Higginbotham, 1998) and more positive environmental attitudes (Burrus-Bammel & Bammel, 1986) and promoted personal growth (Dresner & Gill, 1994). However, Shepard and Spieelman (1985) found that week-long camp programs had no effect on environmental attitudes and suggested that effective camp experiences must be longer than a week.

The goal of the research described here was to determine the effect of integrating a sportfishing and environmental curriculum within a 1-week camp program on participating youths' knowledge, awareness, and attitudes. We focused on the New York State Sportfishing and Aquatic Resources Education Program (SAREP), a collaborative effort between Cornell University and the NYS Department of Environmental Conservation that seeks to create a new generation of anglers who:

- Practice ethical angling,
- Feel a sense of stewardship toward aquatic resources, and
- Understand aquatic ecology and fisheries management.

The specific objective of the study was to determine the effect of a SAREP curriculum being incorporated into a week-long camp program on youth knowledge of:

- Fishing skills and biological/ecological concepts,
- Awareness of ethical behavior, and
- Attitudes towards fishing and environmental stewardship.

Methodology

Cornell SAREP staff identified four summer camps that agreed to incorporate sportfishing in their programming, including three run by the New York State Department of Environmental Conservation (Camp Colby, Camp DeBruce, and Camp Rushford) and one by the Boy Scouts of America (10-Mile River Scout Camp). SAREP then conducted a 1-2 hour training session with participating camp staff, which covered educational strategies and activities appropriate for teaching fishing skills, aquatic biology/ecology, and ethical awareness.

Site visits by SAREP staff during the initial weeks of camp assisted trained camp staff in adapting and implementing the program to meet their specific needs. Additionally, SAREP provided camp staff with sportfishing equipment and educational materials. The end result was youth campers ranging from 9-14 years in age being exposed to multiple (2-4) 50-minute sessions focusing on fishing and aquatic resources skills and knowledge during a one-week camp.

We used a written pre-/post-survey administered to camp youth by counselors to assess knowledge gain and attitudes of participants in the camp fishing programs. The survey included matching and multiple choice questions focusing on youth knowledge of sportfishing (10 questions) and fish biology/ecology (8 questions), and awareness of ethical behavior (15 questions). In addition, four questions designed to determine any change in attitude or intended behavior toward fishing and environmental conservation were presented using a five-point Likert scale (1 being strong agreement with the statement and 5 being strong disagreement).

Counselors collected completed surveys and returned them to SAREP staff. Each survey was scored by hand, and the results were put into an Excel spreadsheet. The information was treated as paired data and examined with a one-sample t-test on the mean of the differences using MINITAB.

Survey results were examined for total score and separately for the sections that focused on:

- Fishing knowledge,
- Biology/ecology knowledge, and
- Ethical behavior awareness.

The percent of correct answers provided for questions related to these three sections are referred to as "survey score." Significance was determined for the one-sided change in pre-/post-test survey scores (alpha < 0.05). The four queries linked to attitude and intended behavior are referred to as "attitude questions" and were examined in a similar manner as the survey score.

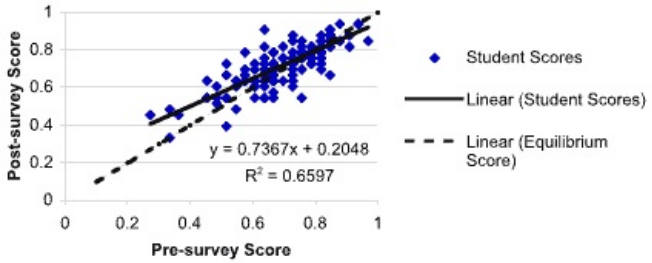
Results

Camp assistants returned 127 completed pre-/post-surveys to SAREP staff. The overall mean survey score improved significantly for youth participating in these summer camp programs (Table 1). Participating youth displayed the most gain in fishing and biology/ecology knowledge, and no significant change was observed in ethical behavior awareness scores. A plot comparing a youth's overall pre-survey versus overall post-survey score demonstrated that youth entering camp with limited knowledge improved their scores the most (Figure 1).

Table 1.
Youth Pre-and Post-Survey Scores (%) Related to Knowledge of Fishing, Biology and Ecology, and Ethical Behavior Awareness
(Values presented as mean +/- s.e.)

	Pre-Survey	Post-Survey	% Change	p-value
Overall	69.8+/-1.2	71.9+/-1.0	+ 2.1	0.002
Fishing	67.8+/-2.2	72.0+/-2.0	+ 4.2	0.001
Biology/Ecology	59.5+/-1.8	64.7+/-1.8	+ 5.2	0.001
Ethical Behavior Awareness	75.6+/-1.3	75.0+/-1.2	- 0.6	0.703

Figure 1.
A Comparison of Pre-Survey Scores and Post-Survey Scores for Participants of Mid-Term SAREP Programming



Attitudes towards fishing and "saving the environment" displayed no significant change except for a diminished belief that fishing was fun (Table 2). However, the mean responses at the end of the camp programs on individual questions indicated the youth intended to continue to fish in the future (1.81+/-0.11), felt fishing was an enjoyable past-time (1.98+/-0.11), and felt saving the environment was important (1.98+/-0.10). The belief that they would be active in saving the environment had a mean score registering between agree and neutral/not sure (2.15+/-0.11).

Table 2.
Youth Attitudes Toward Fishing and Saving the Environment (Scale ranged from 1-5 with 1 representing strong agreement and 5 showing strong disagreement. Values presented as mean +/- s.e.)

	Pre-Survey	Post-Survey	% Change	p-value
I will continue to fish	1.76+/-0.09	1.81+/-0.11	- 2.8	0.237
Fishing is enjoyable	1.85+/-0.10	1.98+/-0.11	- 7.0	0.039
Saving environment is important	1.89+/-0.10	1.98+/-0.10	- 4.8	0.200
I will be active in saving the environment	2.13+/-0.10	2.15+/-0.11	- 0.9	0.395

Although the majority (approximately 67%) of youth participant responses to attitude questions were similar for the pre-survey and post-survey, an examination of youth who did change their attitude provided useful information about possible mechanisms involved in attitude change. This examination indicated a relationship between youth who developed a stronger desire to continue fishing in the future and an increase of their fishing knowledge during camp.

Youth who increased their desire to continue fishing were three times as likely to have increased their knowledge at camp, whereas youth who displayed a decreased desire to continue fishing were just as likely to have gained knowledge as remained static or decreased in their scores (Table 3). There appeared to be no differences between youth who demonstrated increased knowledge and who remained static or decreased in knowledge on questions relating to a belief that fishing was enjoyable, support for saving the environment, or belief they will be active in saving the environment.

Table 3.
Frequency of Youth Who Demonstrated a Change in Their Attitude During Camp and Their Related Change in Survey Score

Attitude Change	Number of Youth Whose Survey Score Increased	Number of Youth Whose Survey Score Decreased	Ratio of Youth Whose Score Increased vs. Decreased
Increased desire to continue fishing	15	5	3.0:1

Decreased desire to continue fishing	8	8	1.0:1
Increased belief that fishing is enjoyable	10	5	2.0:1
Decreased belief that fishing is enjoyable	14	8	1.8:1
Stronger support of efforts to save the environment	10	8	1.3:1
Less support of efforts to save the environment	14	11	1.3:1
Stronger belief that they would be active in saving the environment	11	11	1.0:1
Less belief that they would be active in saving the environment	13	12	1.1:1

Discussion

Youth Knowledge, Awareness, and Attitudes

The significant increase in fishing and biology/ecology knowledge indicates the potential effectiveness of integrating curriculum within a week-long camp program. In particular, SAREP was able to meet program goals of youth developing knowledge that will allow them to participate in angling and understand the science associated with aquatic resources. Such an increase in knowledge is particularly important in angling and other outdoor activities, which require youth to learn the basic information surrounding the activity and then apply that knowledge in different situations.

Survey scores associated with ethical behavior awareness did not improve during the 1-week camp. However, this category did display the highest percentages of correct responses in both the pre- and post-survey. In general, youth demonstrated a high level of ethical awareness surrounding angling rules and littering (>90% correct answers) and lower awareness concerning specific angling dilemmas related to unused baitfish (31% correct answers) and party fishing (51% correct answers).

Thus, it appears that situations specific to fishing that required moral reasoning were not successfully shared with campers. Effective ethics education requires a long-term commitment involving introducing youth to critical moral reasoning development, which then allows them to improve their future ethical fitness (Matthews & Riley, 1995). Only minimal progress can be expected in ethical behavior awareness during a short-term camp program, especially without a concentrated focus on this subject.

Youth attitudes towards continuing to fish and protect the environment in the future did not improve (Table 2); over 60% of the youth responded at a similar attitude level in their pre- and post-surveys for all questions related to attitudes. Although only a few youths' attitudes worsened, the extreme nature of these shifts produced a negative trend in results.

Obvious concerns arise when programming efforts appear to be counterproductive, but it is possible that factors other than camp programming (e.g., quality of fishing experience, knowledge level, weather conditions) were responsible for the negative attitude changes. Schwartz (1997) found that catching fish was an important part of youth satisfaction. Catch rates were not calculated for the camps in this study, but reports indicate that most youth did not catch a fish and many probably did not see a fish caught during camp. A poor fishing experience could explain a decrease in the belief that fishing was an enjoyable past-time and could affect youths' desire to continue fishing in the future.

Relation Between Increased Knowledge and Change in Attitudes

Summer camps place a heavy emphasis on providing an enjoyable experience, and sometimes fun may be put ahead of the educational message. Our results indicate that increased knowledge may be related to future behavior. Despite an overall decrease in the desire to continue fishing (Table 2), an increase in knowledge was prevalent among youth who demonstrated a stronger desire to fish in the future (Table 3). Agreement with the statement that fishing is enjoyable did not appear to be associated with an increase in knowledge; rather it can more likely be linked to the immediate satisfaction of the previous fishing trip as suggested by Schwartz (1997).

The finding that increased knowledge was not associated with changes in attitude towards saving the environment is consistent with recent literature (Holsman, 2001), which recognizes that an increase in environmental knowledge is one component of developing environmental stewardship but that developing knowledge of and practice in citizen action skills is more essential. Consequently, different strategies and curricula would be needed in order to accomplish SAREP's goal of creating future environmental stewards.

Expanding the Educational Model

An additional factor that may have influenced our results was the inability of the curriculum to challenge youth who entered camp with higher knowledge levels. The plot of pre- and post-survey scores for each participant showed that youth entering camp with limited knowledge were more likely to improve their survey scores (Figure 1). This information emphasizes the need for a more flexible educational curriculum, especially at summer camps where participants enter with highly variable knowledge levels. Future efforts involving camps might draw on Extension's experience with multi-aged groups and peer teaching for developing multi-tiered curricula.

Conclusions and Implications

Our evaluation of the inclusion of a SAREP curriculum into a week-long camp program can offer some useful insight for Extension educators considering alternatives to the long-term 4-H club delivery mode. A total of 20 hours was spent training staff at four different camps and in follow-up visits. With this minimal time investment, SAREP was able to reach over 1,000 youth and to increase their knowledge pertaining to fishing and biology/ecology. However, we were not able to positively affect ethical behavior awareness or youths' attitudes and behavioral intentions towards fishing and saving the environment.

Extension educators may find similar or greater success when training camp staff to share other skills and activities. One of the challenges in fishing or other wildlife programs is a limited assurance that fish will be caught or animals viewed. Thus, programs that offer immediate and reliable successes for youth may be better able to meet their goals of increasing knowledge and enhancing positive attitudes. On the other hand, whereas it was easy to recruit camps to participate in a fishing program, it may be more difficult to find camps willing to participate in other programs with fewer hands-on activities.

An additional concern for educators utilizing camps as a delivery method is low institutional memory. Summer camps traditionally have a high turnover of employees, and annual training sessions would be needed to continue these programs. However, the investment of 20 hours each year to reach over 1,000 youth may be a cost-effective use of Extension staff time.

References

Burrus-Bammel, L.J., & Bammel, G. (1986). Gender test differences during an environmental camp. *The Journal of Environmental Education,* 17 (3) 8-11.

Dresner, M., & Gill, M. (1994). Environmental education at summer camp. *The Journal of Environmental Education,* 25 (3) 35-41.

Higginbotham, B. (1998). *Something fishy. A 4-H school enrichment program*. Texas A& M Extension Publication.

Holsman, R.H. (2001). *What works . . . documenting standard practices for aquatic resource education*. Report to the U.S. Fish and Wildlife Service - Region 5. 86pp.

Matthews, B.E., & Riley, C.K. (1995). *Teaching and evaluating outdoor ethics education programs*. National Wildlife Federation publication. 110pp.

Schwartz, J.D. (1997). *An experiment to assess the various aspects of catching fish on youths' satisfaction with the fishing experience*. Unpublished doctoral dissertation, University of Maryland at College Park.

Shepard, C.L., & Spieelman, L. (1985). Affecting environmental attitudes through outdoor recreation. *The Journal of Environmental Education,* 17(2) 20-23.

Siemer, W.F., & Knuth, B.A. (1998). *Youth participant outcomes associated with local "Hooked on Fishing--Not on Drugs" programs*. HDRU Publication No. 9-5. Ithaca, NY: Cornell University,

Department of Natural Resources. 94pp.