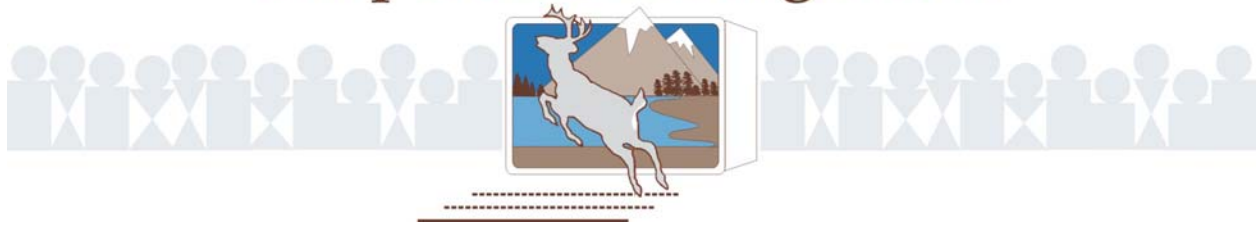


Responsive Management



MAJOR FINDINGS OF THE NATIONAL ARCHERY IN THE SCHOOLS PROGRAM STUDENT SURVEY

by Responsive Management

2005

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INTRODUCTION

This study was conducted for the Archery Trade Association to help assess the National Archery in the Schools Program (hereinafter referred to as the archery program or archery course) and the effect the program has on students' attitudes toward archery and bowhunting and their participation in archery and bowhunting. The study focused on the program in Kentucky.

Printed questionnaires were mailed to physical education teachers certified to teach the archery program in Kentucky schools. The teachers distributed the questionnaires to students who had participated in the archery program, collected them after the students had completed the questionnaires, and returned them to Responsive Management for data entry and analysis. The survey was administered in November 2004. Responsive Management obtained 1,494 completed questionnaires. The analysis of data was performed using the Statistical Package for the Social Sciences software as well as proprietary software developed by Responsive Management.

Please note that this document was produced for ease of readability as a summation of the research performed regarding the Archery in the Schools Program. For this reason, this document does not include the full citations of other research discussed herein; those full citations can be found in one of the documents from which this summation was derived: *National Archery in the Schools Program Student Survey Report with Additional Analyses*. Likewise, this document does not contain the actual percentages who responded with specific answers to the survey but, rather, discusses in broad, general terms the findings of the student survey. For full results, including the specific percentages of students giving any answer, please see *National Archery in the Schools Program Student Survey Report*.

MAJOR FINDINGS

Students like the course and consider the course to be exciting. They often say that the course makes physical education class and school better. The course has a positive effect on students' self-esteem—a majority say that they feel very good about themselves while taking the course, and a majority say that they feel better about themselves upon finishing the course. The course

also gives students a sense of accomplishment, as a majority report that they get a lot better at shooting a bow and arrow while taking the course.

The students most like the kinesthetic, or experiential, aspects of the course—the physical act of shooting the bow and arrow and seeing the results (e.g., hitting the target). In a motor-learning context, they like the process and outcome aspects. The students, in general, are less interested in the academic aspects of archery: they do not like as much learning about the history of archery, learning archery safety, and learning about the equipment (although many students reported liking even these aspects of the program).

The archery course appears to have an effect on constraints to archery and bowhunting participation. While the course increased slightly the percentage saying that they did not want to go (and, for bowhunting, those saying that the activity is boring), this increase is to be expected and is a consequence of having more people try archery and bowhunting. Simply put, as more people try an activity, more people will discover that the activity is not for them (although conversely, more people also will discover that they like the activity). This increase in those saying that they do not want to go is most likely among those who were previously *unsure* whether they liked archery or bowhunting but subsequently discovered that they do not like it.

The archery course appears to facilitate students' participation in archery and bowhunting by helping them find companions who also want to participate; by providing information in general about archery and specifically about where to participate; and by alleviating concerns about safety among the students and their parents. Subsequent to the course, lower percentages said that they did not participate because they did not have a companion with which to go, they did not know where to go, and they did not have information about archery and bowhunting. Also, for bowhunting, after the course fewer students said that they did not participate because they think bowhunting is too dangerous and because their parents won't let them go.

The archery course also appears to increase students' desire to participate, based on the fact that subsequent to the course a lower percentage said that they did not have time to participate. Because it is unlikely that students have fewer demands on their time and, therefore, more time

available to them, it is likely that the course increased the priority they place on archery, which results in their attempting to find the time to participate. Simply put, the more attempts at finding time to participate, the more often that “time” will become a constraint.

One constraint to participation is the lack of after-school archery clubs or teams. Only a little over a third of students said that their school has an archery club or team, meaning that most students either attend schools that do not have after-school archery programs or clubs, or they are unaware that their school has an after-school archery program or club. It is worth noting that about half of the students in the survey who said that their school does not have an archery club or team expressed interest in joining a club or team if their school had one.

Inability to find information about archery is not a pressing problem. A majority of students who looked for information found all or most of the information that they sought; only about 1 in 15 could *not* obtain the information that they sought. The survey results indicate that the Internet, in general, is the most important information source. However, the archerysearch.com Website could be better publicized, as 13% of students had heard of the site, leaving plenty of room for greater exposure. (Nonetheless, 13% of students having heard of the site is fairly good considering the limited publicity about the Website that has been disseminated.) Other important sources of information include sporting goods stores and magazines.

Regarding purchases of archery equipment, it does not appear that difficulty finding a store selling archery equipment is a particular problem, as the overwhelming majority of students who looked for a store selling archery equipment found one. About a fifth of students had actually purchased archery equipment since taking the course, and this proportion goes up to a fourth of those who took the archery course 1 year or more previously. This finding suggests that the stimulation in interest and participation remains for some time after the course and does not quickly drop off after the student has taken the course.

Finally, the survey discussed initiation and family members’ participation in archery and bowhunting. Students who had been exposed to archery prior to their exposure through the course most commonly were taught by their father or uncle. Furthermore, the results of this

question show a gender split, with answers that are exclusively male (father, uncle, brother, grandfather, and stepfather) being given more than answers that are exclusively female (mother, aunt, sister, grandmother, and stepmother) regarding who taught the student about archery. This finding concurs with the family members who participate in archery and bowhunting, which is, again, split along gender lines, with the top participating family members being male and the bottom members being female.

Nonparametric analyses in the form of z-scores showed some interesting trends that help describe the nature of the students involved in the archery program and their levels of interest and participation in archery and bowhunting. These issues are divided into four subcategories that have been presented in apparent order of importance: family issues, grades, motivating factors, and gender.

Family Issues

Family closeness was ubiquitously related to virtually all of the factors one would associate with confident, well-adjusted social beings. The findings show that as the strength of family ties is weakened, the positive attributes most people would want to see in a child also weaken.

Children below the median age were significantly more likely to have indicated that their families were close. The reason for this finding is not certain, but one hypothesis might be that divorces most commonly occur around the 11th year of marriage (statistically speaking), and so younger children might be less likely to have been exposed to divorce or related family fractures. Another hypothesis (not mutually exclusive of the first hypothesis discussed) is that older children who show more independence likely do more things on their own, leaving less time to do things together as a family. Other issues may involve the familial conflicts associated with teen years and the onset of puberty.

Children who were more confident in attempting new things were significantly more likely to have indicated that their families were close, as were those who indicated that they had higher ratings of esteem during the class, better self-ratings of performance in the class, more confidence that they were going to college, better grades, and higher appreciation of archery as a positive influence on P.E. class.

As the degree of family closeness declined, the self-esteem declined as well. Children who indicated that they were only “okay” at the sport, that they felt only “okay” about themselves while taking the class, and that they felt a “little nervous” trying new things were all the more likely to have indicated that their family enjoyed doing some things together, below the top level of familial closeness in which the student says we enjoy doing lots of things together as a family.

Stepping down another rung in family closeness shows that children who indicated that they felt worse about themselves after the course, that they do not think that they will go to college, and that they received lower grades like B’s and C’s or C’s and D’s were significantly more likely to have indicated that their family does not enjoy doing things together.

Another step down in the measures of family closeness shows that those who indicated that they were unlikely to go to college, that they got D’s and F’s, that the course made school and P.E. worse, and that they were not good at archery during the course were significantly more likely to have indicated that their family almost never does things together.

These are not an exhaustive list of the findings regarding family closeness, but they do paint a clear picture about the influence of family on self-esteem, willingness to try new things, performance in school, and interest in archery.

In many ways the relationships between family closeness and archery are only small islands of information among many continents of other issues all relating to the family. Even if there are larger issues in play, research shows that confidence and performance are reciprocally related, so teaching children archery skills can improve a child’s confidence, regardless of these other factors.

Grades

Children who earned A’s and B’s were significantly more likely to have never participated in archery or bowhunting prior to taking the course. Children with lower grades tended to have more participation in both sports. Interestingly, the levels of interest expressed by children before and after the course were less related to grades, although they were still statistically

related. The archery course introduced children to archery from all across the grade spectrum, including those not highly correlated with previous archery experience. Grades were, as discussed previously, significantly related to family closeness, but also were related to gender, college plans, and a variety of other factors including timidity in approaching new things and feelings of esteem.

Motivation Factors

Studies have suggested the existence of a cyclic relationship between performance and esteem in sports. It appears that children may have predispositions toward sports, school, and life that have been generated through a variety of experiences, not the least of which includes family closeness. Participatory experiences during the archery class that were satisfactory led to higher interest and participation rates. For instance, feeling good and having improved during the course were related to having interest in joining an archery program. Exposure to similar types of sports, such as paintball and target shooting with a BB gun or any other type of gun, had a positive relationship to participation and interest in both archery and bowhunting before and after the course.

Gender

In general, there were many findings about girls in the study that show that they have different constraints to archery participation that may be related to confidence. Girls were significantly more likely than boys to have looked up information about how to improve their skills in archery, and they were also significantly more likely to have given the reason that they didn't have anyone to go with as a reason for not participating in archery. Girls were significantly more likely to have said that the reason they did not participate in archery after the course was that they did not know where to go to participate, that they had no way to get to a facility for archery, and that they didn't have time.

Interestingly, finding the course not at all exciting had no correlation to gender; however, girls were significantly more likely to have indicated that the course was hard or a little hard. Girls may have not had the same levels of familiarity with "target-type" activities and may have felt ill-at-ease in the environment. They also may have been less likely to have participated and/or

known someone who participated in archery, thereby predisposing them to know less about the sport and not have similar skill sets as boys.

Those who thought that they were good at the sport also indicated that they felt good about themselves before and even better after the archery class, and they also were more likely to be boys. Those who thought they were okay at shooting with a bow and arrow (not the top self-rating) were more likely to be girls, were more likely to have indicated that the course was a little hard, and were more likely to have looked for more information about archery skills. Those who were not good were significantly more likely to have indicated that the course was very hard and that they were female.

The additional analyses seem to show that family, gender, and sport backgrounds all play a major role in archery participation. Research in confidence in sports shows that mastery experiences increase confidence, and some of the results showed that having mastered (improved in) archery was tied to confidence. The fact that some of the results seemed to show that the timing (i.e., how recent the class had been taken) of the class had an impact on participation in archery suggests that repeated contacts (a method successfully used in all kinds of marketing) will keep archery fresh in people's minds. Repeated mastery opportunities will build confidence.

Many of these findings have a reciprocal "chicken-and-egg" quality to them, yet "priming the pump" of mastery experiences and confidence growth may best be performed by doing what schools do best: teaching. Through learning, participants had increases in interest. However, girls, for instance, were far more likely than were boys to seek skill information. This might have been an attempt to learn in a less public forum. The archery environment might be a sport akin to weight lifting or golfing wherein girls and women were not always comfortable and/or welcome; however, through the use of women's-only classes, participation in both of those sports has benefited from the addition of women. Girls may have sought more skill information to prepare themselves for the archery class and to reduce possible public failure.

The same methods that are already used for adapting academic classes of varying skill levels in the school setting should also be used in archery to allow all students to gain some improvements

without concerns about peer evaluation. One method is the use of peer models who are both expert and beginning archers within the class. Another method would be to separate the classes into skill levels. Regardless of the techniques used to adapt to gender and/or skill, the feeling that the class was “exciting” or “liked” was a powerful barometer of future participation. Having indicated that skills improved during the course was also strongly related to future participation. All of these are issues of motivation. Because the class increased interest and participation, it worked as a motivator, but it worked less well for some.

A combination of initial skills and personal outlook may divide those who take to the sport and those who do not. The schools are a perfect setting to improve skills, and research on confidence shows that personal outlook, at least for learning the skill, will improve as learning occurs. The goal of the instructors should be one of teaching and modeling skills in archery in such a way that takes into account potentially interested children who may be quite sensitive about the way they compare to others.

SURVEY RESULTS IN THE CONTEXT OF YOUTH SPORT MOTIVATION

Motivational Theory

Motivational research about children in sports comes primarily from two approaches. One, Cognitive Evaluation Theory, hypothesizes that childhood motivation is driven by a child’s desire to feel in control and feel that he or she has high ability. Influences that minimize or undermine those motives lead to reduced intrinsic motivation. Negative information about ability and controlling elements in the environment are examples of intrinsic motivation detractors. It is, perhaps, not surprising that as children become more aware of ability between the ages of 10 and 12 they may, at least according to some research, leave specific sports. According to Cognitive Evaluation Theory, individuals tend to concentrate on the dimension most important (salient) to them in any given situation. The other approach, Competence Motivation Theory, suggests that children are motivated to master skills. Skilled performance leads to feelings of competence and mastery. Those experiences influence the development of intrinsically or extrinsically oriented sport participants. An individual who is motivated

intrinsically has an internal reference for self-evaluation, a high sense of control, and a high sense of ability.

Goal Orientations

Below are several theories on ways that the types of internal goals held by children have been hypothesized as influencing motivation to participate.

Some researchers have suggested that the three orientations that children have that motivates their behavior are task, ability, and social approval. Those who are task-oriented are focused on learning and improving and judge themselves on personal and task improvement. Ability-oriented children are focused on ability demonstrations and judge themselves based on how they compare to others, while social-approval-oriented children seek external acceptance by demonstrating effort.

Other research suggests that childhood motivations are based on undifferentiated versus differentiated conceptions of ability. In this theory, an ego-orientation motivates individuals to maximize external demonstrations of ability and minimize external demonstrations of effort by choosing tasks that will require little effort or will display high ability. In the task-involved orientation, effort and ability are the same to the child, so the child attempts to master the task.

Research on learned-helplessness hypothesizes that individuals who perceive ability as a non-controllable, stable trait will adopt performance goals aimed at demonstrating ability, and they will respond to failures with learned-helpless, low-ability attributes. Those attributes will result in subsequent decrements in affect, effort, persistence, and performance. This orientation is known as the performance orientation. Conversely, those who view ability as malleable will focus on constructive changes in strategy and effort and maintain self-concept. This is known as the incremental or learning goals.

Motivational Findings

The summary data on why children participate in sports, as opposed to the theories on childhood sports participation, give strong insight into the childhood mindset about sports. Some research

has shown that the number one reason that males and females participate in school sports is to have fun. For girls, staying in shape is the second most important reason to participate in school and non-school sports. Getting exercise and improving skills are the third and fourth, respectively, most important reasons girls participate in school and non-school sports. For males, the number two reason for non-school sports participation is “to do something I’m good at.” For school sports, the second most important reason for participating is to improve skills. Improving skills is also the third most important reason that males participate in non-school sports. The third most important reason that males participate in school sports is for the excitement of competition.

Attrition

According to some of the same research cited earlier, there is a significant decline in the percentage of children involved in organized sports starting from between the ages of 10 and 13 and continuing to the age of 18. Also, according to other research, there is a 35% dropout rate in organized youth sports each year. The top reasons for dropping out of sports are that children do not feel that they are as good at the sport as they want to be, that the sport is not fun enough, that they want to play another sport, that the pressure is too much, that they are bored, that they do not like the coach, that the training is too difficult, and that the sport is not exciting enough.

Some have hypothesized that the underlying reasons for sport and exercise participation and attrition have to do with children’s sense of competence, the types of goal orientations they have, and their levels of anxiety.

For instance, Competence Motivation Theory suggests that children have three domains in which they desire to express competence. These are the social, cognitive, and physical domains of achievement. The basic tenets of this theory are that individuals participate in domains in which they can express their high ability. The implication would be that children who have low ability would be more inclined to leave the sport. Therefore, teaching sport skills should lead to both higher skill levels as well as increased participation. Below is a schematic (taken from a study by R.S. Weinberg and D. Gould) that summarizes a model thought to explain the motives for

sport participation and attrition. It shows desired and undesired elements of sport, and the possible theory behind those motives.



Achievement and goal orientation theories (as discussed earlier) have to do with the way children interpret their levels of achievement in sport. One dichotomy of achievement beliefs is the conception of the task- and the ego-involved goal perspectives as discussed above. A person who is task-involved judges success as being when performances show personal improvement and task mastery. In contrast, ego-involved individuals define success as being when they outperform others.

This theory predicts that children will participate in domains and sports where they can demonstrate the highest level of ability. Conversely, children are unlikely to continue participation when participation shows them to have lower abilities. These ideas support the classic work of Piaget and Erickson that show that, between the ages of 10 and 12, children have a certain level of “awakening” regarding who they are relative to society. This awakening includes a burgeoning ability to differentiate personal effort from personal ability and to compare personal attributes to those of their peers.

A third, and less researched, conception of sport attrition is a model of sport withdrawal. This theory considers attrition a product of a cost/benefit analysis. One can see how this theory,

despite differences in details from the previous two theories (perceived competence motivation, achievement orientation), shares the view that the child is an assessor of the drawbacks and benefits of continued participation (i.e., the child is performing his/her own “cost/benefit” assessment).

Finally, anxiety or stress is a potential cause for childhood sports attrition. One researcher found that children’s anxiety increases with age in the school environment and reaches its highest level in early adolescence. Again, it is perhaps not surprising that at the approximate age at which children become more self-aware and more conscious of their fit with their environment, stress and attrition increase.

Methods of instruction that allow students to maximize skill development while minimizing anxiety associated with a negative self-appraisal and negative peer appraisals seem to offer the greatest opportunity for building confidence in the student. Perceptions of ability will lead to greater levels of interest and participation in archery and hold promise of improvement in other aspects of children’s lives, including school itself.

BENEFITS PROVIDED BY THE ARCHERY COURSE

Perhaps the most important finding of this study is that the program provides many benefits to youth, to participating school systems, and to the Archery Trade Association. We will start by examining the benefits to youth.

Benefits to Youth Taking the Course

Students like the course and consider the course to be exciting. They often say that the course makes physical education class and school better. The course has a positive effect on students’ self-esteem—a majority say that they feel very good about themselves while taking the course, and a majority say that they feel better about themselves upon finishing the course. The course also gives students a sense of accomplishment, as a majority report that they get a lot better at shooting a bow and arrow while taking the course.

The students most like the kinesthetic, or experiential, aspects of the course—the physical act of shooting the bow and arrow and seeing the results (e.g., hitting the target). In a motor-learning context, they like the process and outcome aspects. The students, in general, are less interested in the academic aspects of archery: they do not like as much learning about the history of archery, learning archery safety, and learning about the equipment (although many students reported liking even these aspects of the program).

The archery program also appears to be successful in encouraging participation in archery. Subsequent to taking the course, students are more likely to show interest in and participate in archery. Comparisons of rates of participation and interest prior to and after taking the archery course show gains for archery. For instance, prior to the course, 50% of students participated in archery more than once; after the course, 61% participated more than once. Such outdoor recreation is highly valuable in today's world where many children are not as active as they should be.

Benefits to the Kentucky School System

Students who had experience in archery, target sports, or sports in general found that the program made school and/or P.E. better. One way of looking at this finding is that those who participate in sports have an interest in physical activity that is met by a physical activity-oriented program. Schools can benefit by providing yet another means of keeping children interested and engaged while they are in school.

Additionally, children benefit from opportunities to acquire and/or demonstrate competence. In short, improvement of skills builds confidence. Good teaching leads to those improvements, so the schools are the perfect place to help children gain confidence through good teaching. But the relationship is symbiotic in that greater confidence makes for better students, and better students benefit the school system.

The finding that mastering a new skill improved students' perception of themselves has been replicated in many other studies. One study found that children who were poor performers in math became confident and skilled in math by being taught strategies for solving increasingly

more difficult math problems. In that study, the impact of this effective method of instruction had a tremendous impact on children's feelings of confidence. Schools can harness this same beneficial impact using archery. Even children with little exposure to or few skills in archery can improve and feel competent. Opportunities for learning and enjoying the feelings of competence in school help make school more enjoyable and rewarding.

The more varied the venues available for children to learn and demonstrate competence, the more opportunities for school to stimulate children's interest in learning and keep them learning. Programs and clubs like band, foreign languages, history, and sports all have potential for improving education for students by allowing them to see progress in their skills (process) and performance (outcome). Archery is another tool that can be used to improve education.

Benefits to the Archery Trade Association, ATA Members, and the Outdoor Recreation Community

Subsequent to taking the course, students are more likely to show interest in and participate in archery and bowhunting. Comparisons of rates of participation and interest prior to and after taking the archery course show large gains for archery and substantial gains for bowhunting. The empirical data show that the course breaks down barriers to participation in archery by helping students find companions who also want to participate, by providing information in general about archery and specifically about where to participate, and by alleviating concerns about safety among the students and their parents.

The course appears to not only stimulate interest in archery in the short-term, but also the long-term. Additional benefits, as noted earlier, are the opportunity to provide another venue for children to learn and demonstrate competence, and stimulate and keep children learning and in school.

SPECIFIC RECOMMENDATIONS FOR IMPROVING THE COURSE

The primary goal of the course should be to implement a moderately difficult training regimen that allows the greatest number of students to experience some level of skill improvement.

Improvement in skill is associated with many of the strongest benefits of the course. The focus that benefits all stakeholders (the students, the schools, and the ATA) is skill improvement.

Although the primary goal of the course should be to implement a “moderately difficult” training regimen, this is not to say that every student should be approached exactly the same. A course that includes stratification by skill level and/or perhaps gender (if possible) at the beginning of the course to allow a less evaluative peer environment will be particularly effective.

Stratification will benefit those with less-developed skills and/or more concern about negative evaluation. It may be effective to match male instructors with male students and female instructors with female students to allow the positive impact of gender-specific models.

An effective strategy to promote archery would be to foster more after-school archery clubs or teams. This would provide the conduit for those most interested in archery to continue participating. Belonging to a school’s after-school archery program was positively correlated to increases in archery participation.

Students depend heavily on the Internet for obtaining information; education and outreach efforts should include a strong Internet component. The archerysearch.com Website is the obvious place to provide this information; however, the site should be better promoted to students as the source for their archery information needs.

Outreach to the children promoting archery participation should be included during and after the course along two lines: 1) provision of information on how students can pursue their interest in archery with their families, and 2) provision of information on how students can pursue their interest in archery with their peers.