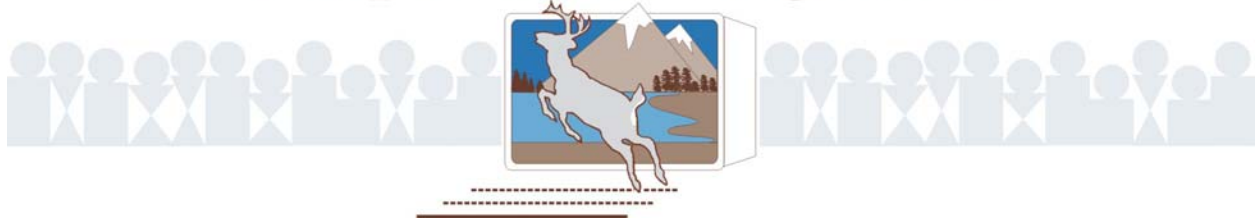


Responsive Management



AN ASSESSMENT AND EVALUATION OF THE NATIONAL ARCHERY IN THE SCHOOLS PROGRAM

PHASE II: STUDENT SURVEY RESULTS

**Conducted for the National Archery in the Schools
Program Foundation**

**by Responsive Management
in cooperation with Hilarie Davis, Ed.D.**

2009

**AN ASSESSMENT AND EVALUATION OF THE NATIONAL
ARCHERY IN THE SCHOOLS PROGRAM**

PHASE II: STUDENT SURVEY RESULTS

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EXECUTIVE SUMMARY OF FINDINGS

Based on a questionnaire administered to a representative sample of 3,355 students who participated in the National Archery in the Schools Program (NASP) from 10 of the 46 states involved in the NASP, four hypotheses were examined: 1) learning archery is engaging to students; 2) through archery, students improve learning skills and attitudes; 3) archery positively affects students' interest in archery and other sports, and student participation in the archery program positively affects family interest in archery; and 4) archery positively affects students' attendance and performance in school. The study included an additional survey administered to non-NASP students. This comprehensive report presents the findings of these student surveys.

Hypothesis 1: Learning Archery Is Engaging To Students

Students Respond Positively To the NASP. A large majority of NASP students (76%) think that the archery program is exciting. A greater percentage of NASP students say that they look forward to going to school *more* (33%) on days that they have archery than say they look forward to going to school *less* (10%).

Students Improve Their Archery Skills. Over three-quarters (78%) of NASP students rate their archery skills as either good or very good after taking the course—a marked improvement over their ratings of their skills before the course.

Students Are Satisfied with the NASP. Most NASP students (83%) like the archery program in their schools. When students are asked to rate how much they like various components of the program; for all components except the history of archery, a large majority indicate that they “like it a lot” or “like it okay.” At the top of the ranking is shooting the arrow (88% like it a lot or okay), hitting the target (88%), doing something new or different in P.E. class (80%), and learning/improving archery skills (79%). A large majority (86%) of NASP students say that their instructors do a good job teaching archery.

Hypothesis 2: Through Archery, Students Improve Learning Skills and Attitudes

Archery Improves Student Concentration and Focus. More than a quarter (26%) of NASP students believe that they pay more attention in archery class than they do in other classes, a percentage that is more than triple the percentage of students who indicate that they pay *less* attention in archery than in other classes (8%). Students are also more likely to say that they learned how to pay attention better in archery (50%) than to say that they did not (32%). Further, among those students who indicated that they learned how to pay attention and focus better in archery, a large majority (64%) indicated that their experience in NASP helped them pay attention or focus better in learning *other things*.

Archery Improves Student Motivation. When NASP students are asked about whether the archery program gives them more, the same, or less motivation in several aspects of school and life, NASP students more often say that the NASP gives them more motivation than say it gives

them less motivation. For most aspects, about a third of NASP students indicate that the NASP has a positive effect on their motivation; typically, less than 5% give a negative answer. Substantial percentages of NASP students say the program gives them more motivation to participate in archery (37%), to learn other sports (34%), to get good grades (34%), to participate in other sports and activities (32%), to stay out of trouble (31%), to be respectful of adults and friends (30%), and to attend school (23%).

Archery Improves Student Self-Confidence. The survey also asked students if the NASP affects their confidence in several different areas. Again, the percentage of NASP students who indicate that the NASP gives them more self-confidence in each area far exceeds the percentage of students who indicate that the NASP gives them less self-confidence. More a quarter (26%) of NASP students report that they feel better about participating in other sports and physical activities after taking archery in school. Many students also say that they feel better about friendships with other students (24%), about their relationships with teachers (19%), and about their ability to do their school work (17%).

Hypothesis 3: Archery Affects Student Interest in Archery and Other Sports, and Student Participation in the Archery Program Positively Affects Family Interest in Archery

The NASP Increases Student Involvement in Archery. Just over half (53%) of NASP students indicate participating in archery since taking it in school. Nearly half of NASP students (48%) report that they plan to participate in archery in the future, compared to 31% who do not plan to participate in archery. Also, NASP students participate in archery at a greater rate than do control students.

The NASP Increases Student Interest in Archery, Hunting, and Other Shooting Sports. The data suggest that the NASP has a positive impact on student interest in hunting and other shooting sports, with 32% of NASP students expressing more interest in hunting and other shooting sports since taking the archery program in school.

The NASP Increases Family Interest in Archery. Fairly high percentages of NASP students who think that they will participate in archery in the future say they will likely go with their father (51%) and/or their brother (35%)—an indication of robust family participation. While these results are not necessarily indicative of a *change* in participation, they offer further evidence of the student's and his/her family's continued participation in the sport. Other results suggest that the NASP appears to have a slight effect on family participation in archery: a small, but not insubstantial, percentage of NASP students (11%) indicate that the NASP increases their family's interest in archery.

Hypothesis 4: Archery Positively Affects Student Attendance and Performance in School

Current Data Show That the NASP Affects Attitudes Toward School, but the Data Do Not Show That the NASP Affects Student Attendance in School. While many students indicate that archery class makes school better (and that they look forward to school *more* on days that

they have archery), this does not appear to translate into better school attendance. As is shown in the data, 33% of NASP students say that archery makes school better, a much higher percentage than who say that archery makes school worse (4%). However, self-reported attendance is about the same: 32% of NASP students say that they were never absent from school prior to taking the NASP, compared to 34% who are never absent from school after the NASP, and this difference is not statistically significant. The results of other answers show the same similarity: 39% say that they did not miss very many days of school prior to the NASP, compared to 38% who say this same thing after taking the NASP.

Current Data Do Not Show That the NASP Appears to Impact Student Attendance in P.E. Class. In a question that asks students to rate their attendance in P.E. class before and after the archery program, no marked differences are found. Like the results above regarding attendance at school, attendance in P.E. is not markedly different: 47% of NASP students say that they were never absent from P.E. prior to taking the NASP, compared to 49% who are never absent from P.E. after the NASP. In the next answer down, 29% of NASP students say that they did not miss very many days of P.E. prior to the NASP, compared to 26% who say this after taking the NASP. These differences are not statistically significant.

Data Do Not Show at This Time That the NASP Affects Student Performance in Other Classes. When asked how to rate their performance in school before and after the archery program, a majority of NASP students rate their performance as excellent or good both before (65%) and after (66%). Similarly, control students also give high ratings of their performance in other classes, with 64% rating their performance as excellent or good. These differences are not statistically significant.

It is worth noting that in informal discussion with many of the teachers involved with this project, the researchers learned of fairly stringent existing rules regarding how much school students can miss prior to disciplinary and/or counseling measures being taken. Because of the vigorous effort currently being made to ensure adequate attendance at school, many of these teachers indicated that they did not anticipate that there would be *improvement* in attendance. In other words, the teachers indicated that for many students a “ceiling” has been reached in attendance above which there is little room for improvement.

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I. INTRODUCTION AND PURPOSE OF THE STUDY

Purpose

This evaluation is being conducted for the National Archery in the Schools Program Foundation by Responsive Management to measure the effect of the National Archery in the Schools Program (NASP) on:

- 1) Attendance in physical education (P.E.) and school in general
- 2) Student performance in P.E. and other subject areas
- 3) Student self-confidence and performance
- 4) Student, guardian, and family member interest and involvement in archery and other sports

The evaluation will be completed in three phases:

Phase I: Instructor observations and perceptions of the effects of the NASP

Phase II: A comparison of students who have participated in the NASP and students who have not taken archery

Phase III: An analysis of student records to assess student performance as it relates to NASP participation

This report discusses the results of Phase II of the study, a survey administered to students enrolled in the NASP (hereinafter referred to as NASP students) and a control group of students who were not exposed to the NASP curriculum (hereinafter referred to as control students). Responsive Management collected survey data from September 2008 to May 2009 and obtained a total of 3,355 completed student surveys and 1,145 completed control surveys.

The NASP is conducted in 46 states, and 10 states volunteered to work with schools to participate in the study. The participating states are Alabama, Arizona, Arkansas, Florida, Georgia, Indiana, Kentucky, Michigan, Minnesota, and Ohio. The purpose of this study is to produce a baseline understanding of program outcomes by determining the NASP's effect on improving student attendance in physical education or school in general; its effect on student performance in physical education and other subject areas; its influence on student self-esteem and achievements; and its effectiveness in increasing student, guardian, and family member interest and involvement in archery.

This study examines four hypotheses:

- 1) Learning archery is engaging to students.
- 2) Through archery, students improve learning skills (focus and concentration, ability to work with teacher and others) and attitudes (motivation, behavior, confidence).
- 3) Archery positively affects students' interest in archery and other sports, and student participation in the archery program positively affects family interest in archery.
- 4) Archery positively affects students' attendance and performance in school.

Background

National Archery in the Schools Program

The NASP is a joint venture of state departments of education, state fish and wildlife agencies, and several archery equipment manufacturers and organizations with a dual mission of promoting student education and lifelong interest/participation in the sport of archery. The program was developed to provide international-style target archery training through a standardized education package that can be directly incorporated into a school's physical education (P.E.) curriculum. Since its inception, the NASP has been implemented in over 4,700 schools and has generated interest in 29 other countries, including Spain, the UK, Ireland, Morocco, Iraq, Japan, Finland, Australia, South Africa, New Zealand, Switzerland, France, and others. Closer to home, the NASP has helped educators in Mexico and the Canadian provinces of Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, and Saskatchewan.

Effect of Physical Activity on Measures of Academic Performance

The impact of sports participation, physical activity, and P.E. in a student's overall academic experience has been fiercely debated during the past several years as limited funding and increased demand to meet scholastic standards strain education budgets. As a result, it is important to assess a program's impact on overall student performance and achievements to determine whether it is meeting its intended objectives. As Masurier and Corbin (2006) explain, "Quality physical education provides students with many real-world skills in addition to providing regular physical activity in the school day. Among the most important of these skills are self-management skills that help youths adopt healthy living practices and manage their day-to-day activities" (p. 47).

Numerous studies offer extensive evidence of a correlation between physical activities and overall academic performance, including higher scores on standardized tests (Ahamed et al., 2007; Shephard et al., 1984), higher grades (Coe, Pivarnik, Womack, Reeves, & Malina, 2006; California Department of Education, 2003; Field, Diego, & Sanders, 2001; Williams, 1988), and better ratings of performance (as rated by principals) in school (Dwyer, Sallis, Blizzard, Lazarus, & Dean, 2001). While many of these studies note that a causal relationship is indeterminable, the studies suggest that a correlation between physical activity and academic performance exists—that participation in physical activities is part of a well-rounded set of positive behaviors linked to good academic performance.

In addition to studies exploring the effect of physical activity on pedagogical measurements, many studies consider the influence of physical activity on more subjective determinants of academic performance (learning skills), including attitudes and behavior, self-esteem/self-efficacy, concentration and cognition, and personal relationships. In a study of student participation in school sports and its relationship with student behavior, Harrison and Narayan (2003) suggest that students involved in sports or other extracurricular activities are more likely to practice healthy behaviors, to have a positive self-image, and to have a decreased tendency toward emotional distress. They also have lower incidence of substance abuse and participation

in illegal activities. There have also been several studies that indicated that there are beneficial effects of exercise on individuals with mental, emotional, and behavioral problems (Allison, Faith, & Franklin, 1995; Bosscher, 1993; Evans, Evans, Schmid, & Penneyacker, 1985). In addition to the effect that physical activity has on grade point average (GPA), Field, Diego, and Sanders (2001) also suggest that students with better exercise habits demonstrate higher levels of intimacy with their parents.

Research also suggests that participation in physical activities is positively associated with a student's self-esteem and emotional well-being (Yu, Chan, Cheng, Sung, & Hau, 2006; Nelson & Gordon-Larsen, 2006; Frost & McKelvie, 2005; Tremblay, Inman, & Willms, 2000), self-concept and/or body image (Kirkcaldy, Shephard, & Siefen, 2002; Hausenblas & Symons Downs, 2001; Alfermann & Stoll, 2000), and sense of belonging and school connectedness (Brown & Evans, 2002). There also appears to be a significant link between physical activity and improved concentration and cognition (Sibley & Etnier, 2003; Tomporowski, 2003; Caterino & Polak, 1999; McNaughten & Gabbard, 1993).

Further research evinces the importance of physical activities to self-regulation and self-efficacy. Self-regulation in P.E. has long been the subject of research and has been touted as an important component in successful athletic sports and physical education curricula. According to Davis and Davey (2006), effective self-regulation requires, throughout the learning process, that students have clear goals; that they observe themselves; that they judge their progress as they go; and that they hold positive beliefs about their capabilities, the value of learning, the factors influencing learning, and the anticipated outcomes. Due to the use of a strategy in sport activities and the directed aim to reach a particular goal, the practice of self-regulation is particularly advantageous in sport participation and physical activities.

Studies have shown that self-regulation and self-monitoring appear to impact sport confidence (Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998); perception of mastery and success (Kim, 1999; Kim & Cho, 1996); and increased skill performance in a number of sports, including golf (Beauchamp, Halliwell, Fournier, & Koestner, 1996; Kirshenbaum & Bale, 1984), soccer (Brunelle, Janelle, & Tennant, 1999), and swimming (Anshel & Porter, 1996; Bell & Patterson, 1978). Prapavessis, Grove, McNair, and Cable (1992) completed a case study of the effects of self-regulation on a small-bore rifle shooter to explore whether self-regulation techniques would result in a reduction in anxiety. In addition to finding a positive effect on anxiety reduction, the study also suggests that these techniques increased self-confidence and performance. Although these are subjective determinants of performance as a whole, the findings suggest that these factors have an impact on skill levels, perceived abilities, and information processing, all of which impact student achievement. The question remains: Do these results translate to the specific sport of archery or archery as a curriculum in P.E. class? And, even more importantly, are the skills learned in archery transferable to other subjects and areas of learning?

Effect of Target Sports on Measures of Academic Performance

Although the research on physical activity and participation in sports is abundant, in general, studies related to target sports are somewhat limited. In a study of outdoor activities, including archery, Dismore and Bailey (2005) suggest that adventurous outdoor activities impact

academics through intellectual and social development. Similar to the current study, that project involved an in-depth study of nine schools and over 600 students to measure the impact of the “I Can!” program on student learning. Another particularly relevant study of students participating in dart throwing suggests that students who engage in self-regulation and strategic goal setting are more apt to attribute failure to inadequate strategies rather than to an intrinsic lack of ability or effort (Kitsantas, 1997). Further, the students in that study appeared to exhibit higher levels of self-efficacy, motor skills, and satisfaction with their performance.

Responsive Management (2005) conducted a study commissioned by the Archery Trade Association to help assess the NASP in Kentucky and the effect the program has on student attitudes toward and participation in archery and bowhunting. Specifically, that study examined student participation in archery and bowhunting prior to implementation of the NASP and after completion of the NASP program to determine if there was an increase in interest and participation in archery and bowhunting. The results of the study were based on self-reported reactions to the program and its effect on student behavior. Responsive Management obtained 1,494 completed questionnaires. The results of that program assessment in Kentucky schools indicate that, in general, students enjoy the course, that the course has a positive impact on student self-esteem and sense of accomplishment, and that the course produces better archery shooting skills and a subsequent increase in interest and participation in archery. The survey showed that students liked the course and considered it to be exciting. In a choice whether the course made physical education class better or worse (or the same), they chose better over worse by about 11:1. Regarding whether the course made school better or worse, they chose better over worse by about 16:1. The course had a positive effect on students’ self-esteem—a majority said that they felt very good about themselves while taking the course, and a majority said that they felt better about themselves upon finishing the course. The course also gave students a sense of accomplishment, as a majority reported that they got a lot better at shooting a bow and arrow while taking the course. Although that study did not assess effects on specific academic measurements (e.g., GPA and standardized test scores), results suggest that the program had a positive effect on student self-esteem and confidence.

Building on a review of past research, this study seeks to explore how the NASP fits into the larger context of sports activities and to how it affects academic performance. Based on the cited research regarding sports participation and academic performance, researchers hypothesize that the NASP has a positive effect on overall scholastic performance and achievement of students. Specifically, researchers hypothesize that learning archery is engaging to students; that archery participation improves learning skills and attitudes; that the archery program positively affects students’ and their families’ interest in archery and other sports; and that archery positively affects students’ attendance and performance in school. This study will examine those four hypotheses.

II. DESIGN AND METHODS

To examine the hypotheses, surveys were administered to two student groups: students who had taken NASP and students who had not (the latter being the control students). NASP students were asked questions that pertained to the degree to which archery is engaging, the extent to which learning archery affects students' learning skills, and whether success in archery affects students' behavior, motivation, self-confidence, attitudes, attendance, and performance in school. These data were analyzed to draw conclusions about the effects of archery and the NASP under different conditions of implementation. On similar questions, these results were compared to results of the survey administered to the control students.

Design of Survey Questionnaires

Based on focus groups and a prior review of the NASP, a logic model (Figure 1) was developed to show the intended inputs, outputs, and outcomes of the NASP, the hypotheses, and the evaluation methods used to examine the relationships.

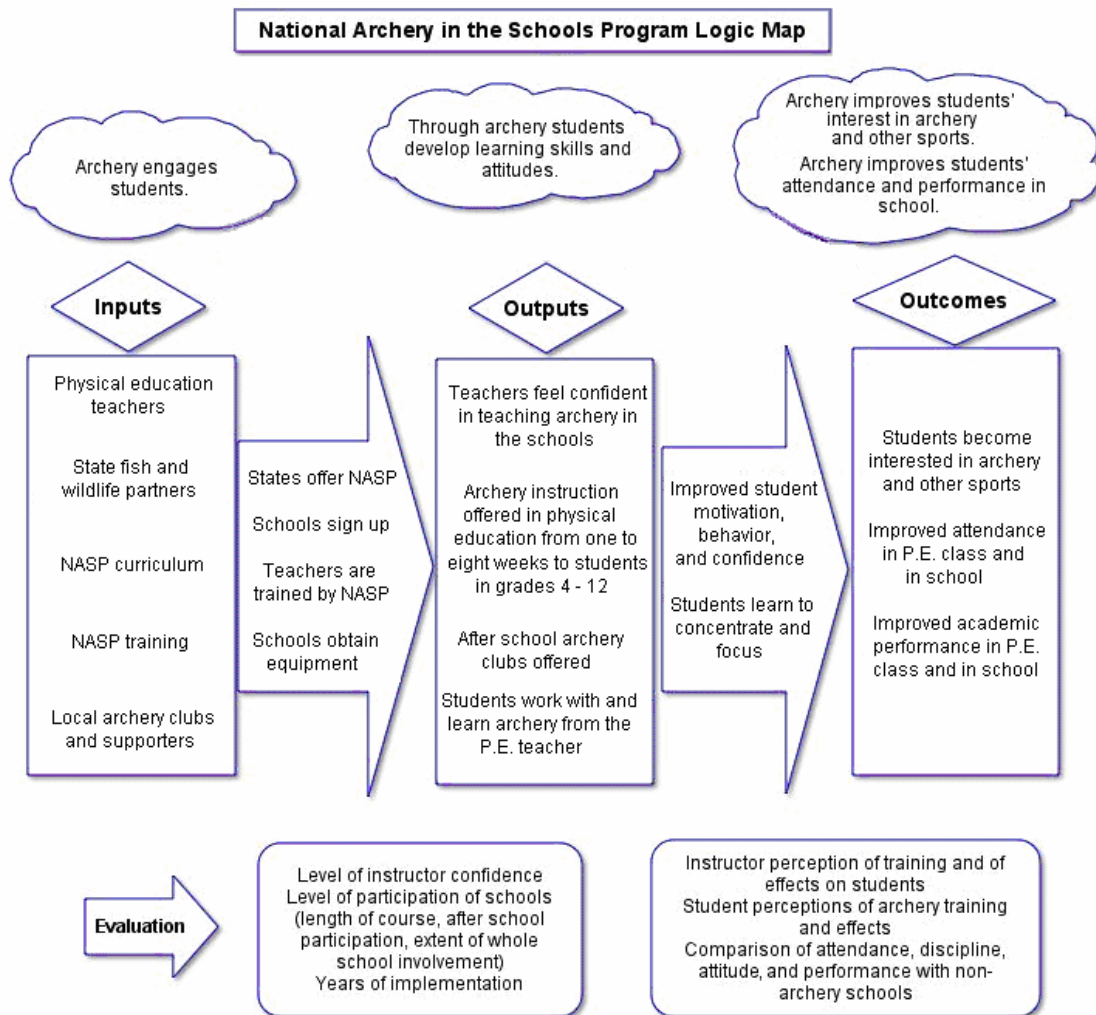


Figure 1. National Archery in the Schools Program Logic Model.

The logic model contains the four hypotheses. The student survey was designed to examine the variables in the hypotheses, as discussed below.

Inputs: The relationship of the conditions of implementation (e.g., classroom size) to the perceived effects

- Student participation in NASP
- Student engagement with archery
- Student satisfaction with program and instructor
- Student interest in and opportunity to experience NASP
- Student demographics

Outputs: The learning skills and attitudes students practice during archery

- Development of learning skills (focus, concentration)
- Improved student attitudes (motivation, behavior, self-confidence, and interpersonal relationships)

Outcomes: The effects of learning archery on students

- Increased student interest/involvement in archery and other sports
- Increased student interest in hunting and shooting sports
- Increased family interest and participation in archery
- Improved attendance at school
- Improved attendance in P.E.
- Improved student performance in school

The survey design and development process included a review of qualitative data from two focus groups of students and instructors conducted by Responsive Management in Minnesota and Georgia, respectively. Content validity of the surveys was established through a review of the literature on self-regulation and motivation. Construct validity of the surveys was established through a review of the surveys by education experts.

Tables 1, 2, and 3 show the questions designed for each set of variables pertaining to inputs, outputs, and outcomes, as shown in the logic model (see Figure 1 above). The questionnaire consisted of open-ended and closed questions. An open-ended question has no list from which to choose a response and requires respondents to answer the question in their own words. A closed question has a list from which to choose answers. Additionally, some questions stipulate that only one answer be given, and other questions ask that respondents check all answers that apply.

Table 1. Questions Pertaining to Variables—Inputs.

| Inputs: The Relationship of the Conditions of Implementation to the Perceived Effects | |
|--|--|
| Variable | Applicable Items |
| Student engagement with archery | <p>Did you look forward to going to school more, about the same, or less on the days you had archery? (more, same, less)</p> <p>How exciting was the archery program? (very, a little, not at all)</p> <p>How hard was the archery program? (very, a little, about average, easy)</p> <p>Overall, how would you rate your archery skills before taking archery? (very good, good, not very good)</p> <p>Overall, how would you rate your archery skills after taking archery? (very good, good, not very good)</p> <p>Please explain why you would or would not be interested in joining your school’s archery team or club. (open-ended)</p> |
| Student satisfaction with program and instructors | <p>Overall, how much did you like the archery program in your school? (a lot, a little, not at all)</p> <p>Please rate how much you liked each part of the archery program (a lot, okay, didn’t like it at all):</p> <ul style="list-style-type: none"> • Learning about archery history • Learning about archery safety • Learning about shooting techniques • Learning about archery equipment • Learning how to focus on or pay attention to the target • Learning/improving archery skills • Shooting the arrow • Hitting the target • Being responsible for the equipment • Doing something new or different in P.E. class • Working with/learning from the P.E. or archery teacher <p>Did your archery instructor do a good job teaching archery? (yes, no)</p> <p>Please explain why your archery instructor did or did not do a good job teaching archery. (open-ended)</p> <p>What are some of the strengths of the archery program in your school? (open-ended)</p> <p>What changes need to be made to improve the archery program in your school? (open-ended)</p> |

| Inputs: The Relationship of the Conditions of Implementation to the Perceived Effects (continued) | |
|--|---|
| Variable | Applicable Items |
| Student interest in and opportunity to experience the NASP | <p>Is an archery course offered in your P.E. class at school? (Control students) (yes, no)</p> <p>Are you planning to take archery in your P.E. class at school? (Control students) (yes, no)</p> <p>Why aren't you planning to take archery in school? (Control students) (open-ended)</p> <p>Does your school have an after-school archery team or club? (open-ended)</p> <p>IF NO: If your school had an archery team or club, how interested would you be in joining? (very interested, a little interested, not at all interested)</p> |
| Student involvement and participation in the NASP | <p>How much archery experience did you have before participating in archery at your school? (a lot, a little, none)</p> <p>How many years have you participated in archery in school? (this is my first year, 2 years, 3 years, 4 years, 5 years, more than 5 years)</p> <p>How long ago did you take archery in school? (within the past 2 weeks, 2 weeks to 1 month ago, 1 to 6 months ago, 6 months to 1 year ago, over 1 year ago)</p> <p>Do you belong to the archery team or club? (yes, no)</p> <p>IF NO: Please explain why you do not belong to the archery team or club at your school. (open-ended)</p> |
| Student characteristics | <p>Describe how much you do with your family. (we do lots of things together as a family, we do some things together as a family, we do few things together as a family, we almost never do things together as a family)</p> <p>What is your favorite subject in school? (list provided)</p> <p>What types of grades do you get in school? (mostly As and Bs, mostly Bs and Cs, mostly Cs and Ds, mostly Ds and Fs)</p> <p>How many years have you attended this school? (students enter number)</p> <p>How likely do you think it is that you will go to college? (very likely, likely, not at all likely)</p> <p>What type of area do you live in? (large city, suburb or just outside of a large city, small city or town, farm, rural area but <i>not</i> a farm)</p> <p>How old are you? (students enter number)</p> <p>What is your gender? (girl, boy)</p> |

Table 2. Questions Pertaining to Variables—Outputs.

| Outputs: The Learning Skills and Attitudes Students Practice During Archery | |
|---|--|
| Variable | Applicable Questions |
| Development of learning skills (focus, concentration) | <p>Do you think you pay more, about the same, or less attention to what you are doing in archery than in other classes? (more, same, less)</p> <p>Why? (open-ended)</p> <p>Did you learn how to pay attention or focus better in archery? (yes, no)</p> <p>IF YES: Has that experience helped you to pay attention or focus better in learning other things? (yes, no)</p> |
| Improvement of student attitudes (motivation, behavior, self-confidence, relationships) | <p>After taking archery, how do you feel about the following? (better, same, worse)</p> <ul style="list-style-type: none"> • Your ability to do your school work • Participating in other sports and physical activities • Friendships with other students • Relationships with teachers <p>After taking archery, do you want to do the following things more, about the same, or less? (more, same, less)</p> <ul style="list-style-type: none"> • Attend school • Get good grades • Stay out of trouble • Participate in other sports and activities • Be respectful of adults and friends • Learn other sports • Do more archery |

Table 3. Questions Pertaining to Variables—Outcomes.

| Outcomes: The Effects of Learning Archery on Students | |
|---|--|
| Variable | Applicable Questions |
| Increased student interest/ involvement in archery and other sports | <p>How much archery experience did you have before participating in archery at your school? (a lot, a little, none)</p> <p>How often did you do each of the following activities before you took archery in school and how often do you do each of the following activities after you took archery in school? (a lot, sometimes, once in a while, never)</p> <ul style="list-style-type: none"> • Archery • Soccer • Basketball • Volleyball • Baseball or softball • Target shooting with a gun • Hunting with a bow and arrow • Hunting with firearms, such as a rifle or shotgun • Shooting BB, pellet, or air guns • Shooting paintball <p>Overall, how would you rate your archery skills before taking archery? (my archery skills were very good, my archery skills were good, my archery skills were not very good)</p> <p>Overall, how would you rate your archery skills after taking archery? (my archery skills are very good, my archery skills are good, my archery skills are not very good)</p> <p>What did you learn in the archery program that helped you to improve at archery? (open-ended)</p> <p>How much archery have you participated in since taking it in school? (a lot, a little, none at all)</p> <p>Do you think you will participate in archery in the future? (yes, no)</p> <p>With whom do you think you will participate in archery? (list provided)</p> <p>Have you tried to get information about archery since taking archery in school? IF YES: What type of information were you looking for? (list provided) IF YES: Where have you looked for information on archery? (list provided)</p> <p>Have you looked for a store or online source that sells archery equipment? (yes, no) IF YES: Did you find a store or online source that sells archery equipment? (yes, no) IF YES: Did the store or source have the archery equipment you were looking for? (yes, no)</p> <p>Have you purchased archery equipment since taking archery in school? (yes, no) IF YES: What equipment have you bought? (list provided) IF NO: What was your reason for not buying the equipment? (list provided)</p> |

| Outcomes: The Effects of Learning Archery on Students (continued) | |
|--|---|
| Variable | Applicable Questions |
| Increased student interest in hunting and shooting sports | <p><i>Please note that this question was previously asked, but it is shown here because it applies to both this variable and the one above:</i> How often did you do each of the following activities before you took archery in school and how often do you do each of the following activities after you took archery in school? (a lot, sometimes, once in a while, never)</p> <ul style="list-style-type: none"> • Archery • Target shooting with a gun • Hunting with a bow and arrow • Hunting with firearms, such as a rifle or shotgun • Shooting BB, pellet, or air guns • Shooting paintball <p>How has archery affected your interest in other shooting sports (hunting or target shooting, for example)? (I am more interested in other shooting sports, my interest in other shooting sports has not changed at all, I am less interested in other shooting sports)</p> |
| Increased family interest and participation in archery | <p>Who taught you to shoot with a bow and arrow? (list provided)</p> <p>How has your participation in the archery program affected your family's interest in archery? (more interested, about the same, less interested, no interest in archery before or after)</p> <p>Since you took archery in school, have any of your family members attended archery program events, clubs, competitions, or other archery events outside of school? (yes, no)</p> <p>After you took archery in school, would you say that your family members attended more, about the same, or fewer archery program events, clubs, competitions, or other outside archery school events? (more, same, fewer, my family did not attend archery events before or after the program)</p> <p>Is there anyone in your family who began participating in archery after you took archery in school? (yes, no) IF YES: How many family members began participating in archery after you took archery? (number entry)</p> <p>Of the people that you know, who was involved in archery before you took archery, and who became involved in archery after you took archery in school? (list provided)</p> |

| Outcomes: The Effects of Learning Archery on Students (continued) | |
|--|---|
| Variable | Applicable Questions |
| Improved student performance in school | <p>How were you doing in your other classes before taking archery? (my grades were excellent, I was getting good grades, my grades were just about average, my grades could have been a little better, my grades were not good at all)</p> <p>How are you doing in your other classes after taking archery? (my grades are excellent, I am getting good grades, my grades are just about average, my grades could be a little better, my grades are not good at all)</p> <p>If there was a change, was the change in how you did in other classes caused by the archery program? (yes, no)</p> <p>What about the archery program (if anything) has affected how you are doing in your other classes? (open-ended)</p> |
| Improved attendance in P.E. | <p>How was your attendance in P.E. class before taking archery? (I was never absent from P.E., I didn't miss very many days of P.E., my attendance was just about average, I was missing a lot of P.E.)</p> <p>How is your attendance in P.E. class after taking archery? (I am never absent from P.E., I don't miss very many days of P.E., my attendance is just about average, I am missing a lot of P.E.)</p> <p>If there was a change in attendance, was the change in attendance in your P.E. class caused by the archery program? (yes, no)</p> <p>Did the archery program make P.E. class better, about the same, or worse? (better, same, worse)</p> <p>What about the archery program (if anything) affected your attendance in P.E. class? (open-ended)</p> |
| Improved attendance in school | <p>Did the archery program make school better, about the same, or worse? (better, same, worse)</p> <p>Did you look forward to going to school more, about the same, or less on the days you had archery? (more, same, less)</p> <p>How was your attendance in school before taking archery? (I was never absent from school, I didn't miss very many days of school, my attendance was just about average, I was missing a lot of school)</p> <p>How is your attendance in school after taking archery? (I am never absent from school, I don't miss very many days of school, my attendance is just about average, I am missing a lot of school)</p> <p>If your attendance was changed, was the change in attendance in school caused by the archery program?</p> <p>What about the archery program (if anything) affected your attendance in school? (open-ended)</p> |

Administration of Surveys

Responsive Management worked closely with the NASP coordinators to contact more than 500 schools in 10 states to recruit instructors willing to assist with this study. Instructors received an initial email explaining the purpose of the project and requesting that they work with Responsive Management to administer surveys to their students (the instructors were also given the instructor survey, discussed in the Phase I report as part of this overall project). For each school, instructors were asked to give an estimate of how many students they could commit to taking the survey (note that the number of committed students was simply an estimate, which was subject to change). In all, 47 instructors worked closely with Responsive Management.

Responsive Management's research associates worked closely with these instructors to accommodate survey implementation within their schools, providing a packet of materials and instructions for implementing the survey both online and by paper and pencil, based on classroom flexibility, access to Internet services, and instructor preference. Throughout the administration of the surveys, Responsive Management carefully tracked and monitored the number of "committed" respondents and sent several reminders, when necessary, to participating instructors as the deadline for survey completion approached to ensure timely return of the surveys. In addition, additional schools were recruited, as needed.

Responsive Management carefully selected control student schools to minimize demographic differences between NASP-participating schools and the control schools. Control students were selected from two types of schools that were recommended by NASP coordinators in each state: NASP-participating schools that had students who were not yet enrolled in the NASP, and schools that had expressed an interest in starting the program but had not yet implemented the curriculum.

Responsive Management conducted the surveys from September 2008 through May 2009. Responsive Management used web-based data collection for all the surveys. Those surveys taken online were entered directly into the web-based database by the students as they completed the questionnaires. For those students not completing the survey online, paper questionnaires were provided to them by the instructors. The completed paper questionnaires were then mailed to Responsive Management's main office where interviewers familiar with administering surveys entered the data into the web-based database. A central data management site at the Responsive Management office allowed for rigorous quality control over the data collection. Responsive Management maintains its own in-house telephone interviewing and data entry facilities, staffed by professionals with experience conducting studies regarding outdoor recreation, including archery.

Analysis of Data

Responsive Management obtained 3,355 completed interviews with NASP students and 1,145 completed interviews with control students in the ten participating states. (Not all the graphs and data tables are based on this number of responses, because some respondents were purposefully skipped out of certain questions or did not answer all questions.)

All survey data were analyzed using SPSS for Windows software and proprietary software developed by Responsive Management. Data processing and analysis included coding of the

syntax to analyze the data, checking the data for logic and consistency, straight tabulations of data, crosstabulations of data, and chi-square testing. Responsive Management created data tables and graphs to correspond with each question for easy review and visual display of survey data results.

Survey results were analyzed to obtain descriptive statistics as well as to examine relationships among variables, such as number of years of instructor involvement in NASP and perceptions of the effects on student and teacher confidence. When crosstabulations of survey results were run, chi-square significance values (p) were used to determine whether differences in crosstabulated variables occurred by chance or because a correlation exists. If the p -value is 0.05 or less, there is a 95% chance that the observed differences in the data on that variable did not occur by chance. Results are shown in tables at three significance levels: $p \leq 0.001$, $p \leq 0.01$, and $p \leq 0.05$.

Note that some results may not sum to exactly 100% because of rounding. Additionally, rounding on the graphs may cause apparent discrepancies of 1 percentage point between the graphs and the reported results of combined responses (e.g., when “very good” and “good” are summed). In all cases, results reported in the text are calculated using unrounded numbers.

To test the hypotheses, descriptive statistics about each of the variables were created using the results to the questions discussed in Tables 1, 2, and 3 above. Student response data about the effects of the NASP were crosstabulated by data about the conditions of the implementation, the satisfaction of the students, and the demographic characteristics of the students to help understand the interplay of engagement/motivation with effects on various measures of student performance.

III. RESULTS AND DISCUSSION

Hypothesis 1: Learning Archery Is Engaging To Students

The first hypothesis is that learning archery is engaging to students. It is important to establish the veracity of this statement, because engagement is prerequisite to affecting students' learning skills and attitudes and, subsequently, their attendance and performance. This hypothesis was examined by considering student interest in the NASP; the responses of students on their perceptions of how engaging the NASP is, including their satisfaction with the program and their instructor; their involvement in the program; and their demographic characteristics.

For this hypothesis, control students were given a series of questions to assess their interest in, experience with, and exposure to archery. These results were used for comparisons to explore differences in exposure to archery for both groups of students. Where comparisons were possible, the following graphs illustrate the responses of both NASP students and control students.

Positive Student Response To Archery

As shown in Figure 2, most NASP students (76%) said that the archery program was exciting: 35% indicated that the program was very exciting, and 41% indicated that the program was a little exciting. NASP students more often considered the archery program to be easy (40%) than to be hard (21%) (Figure 3).

Q9. How exciting was the archery program? (NASP Students)

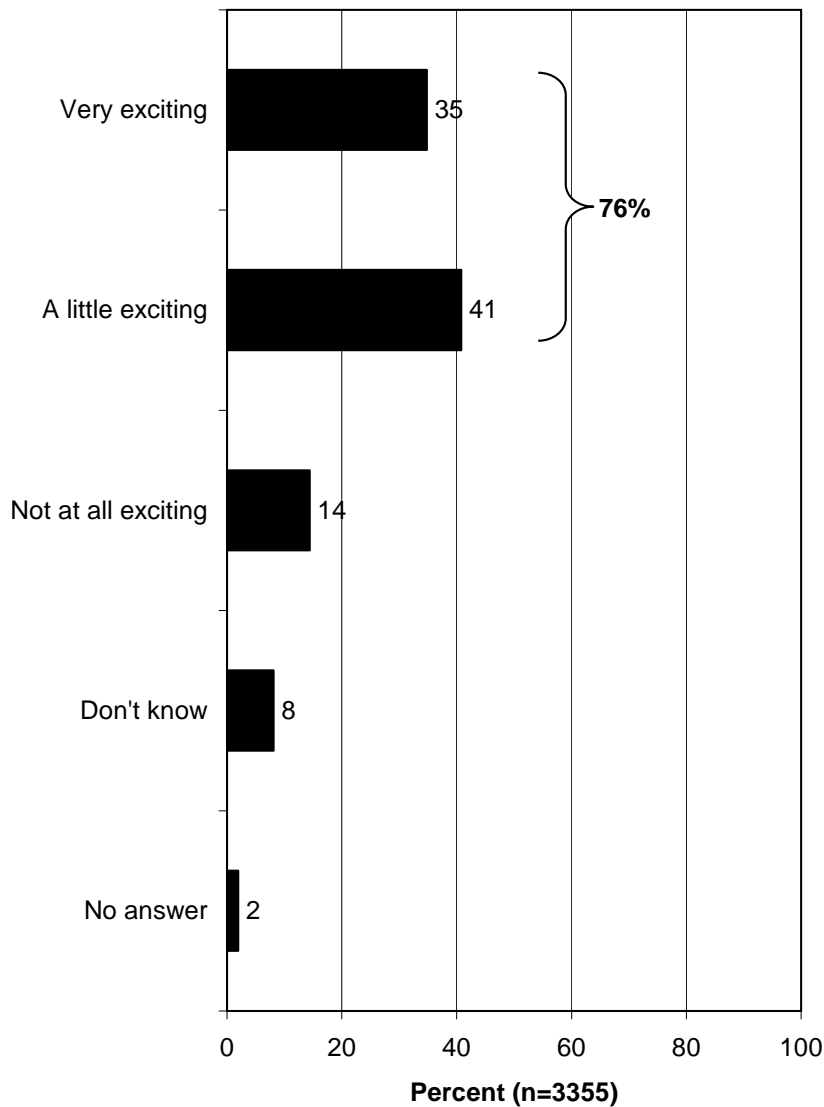


Figure 2. Excitement of NASP Students with the Archery Program.

**Q11. How hard was the archery program?
(NASP Students)**

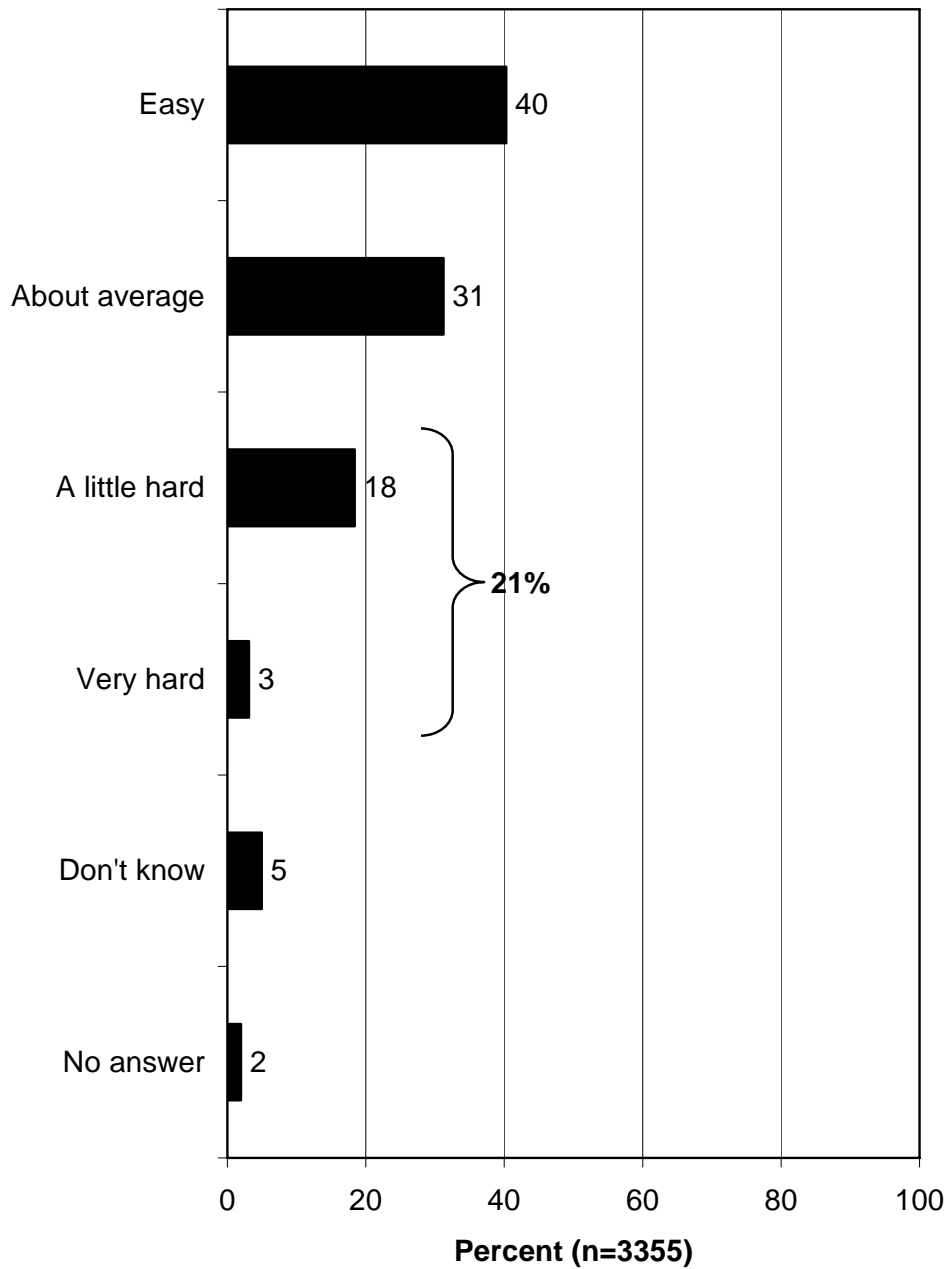


Figure 3. Difficulty or Ease of the Archery Program for NASP Students.

The percentage of NASP students who looked forward to going to school more (33%) on days they had archery exceeded the percentage of students who looked forward to going to school less (10%) by more than three times (Figure 4).

**Q15. Did you look forward to going to school more, about the same, or less on the days you had archery?
(NASP Students)**

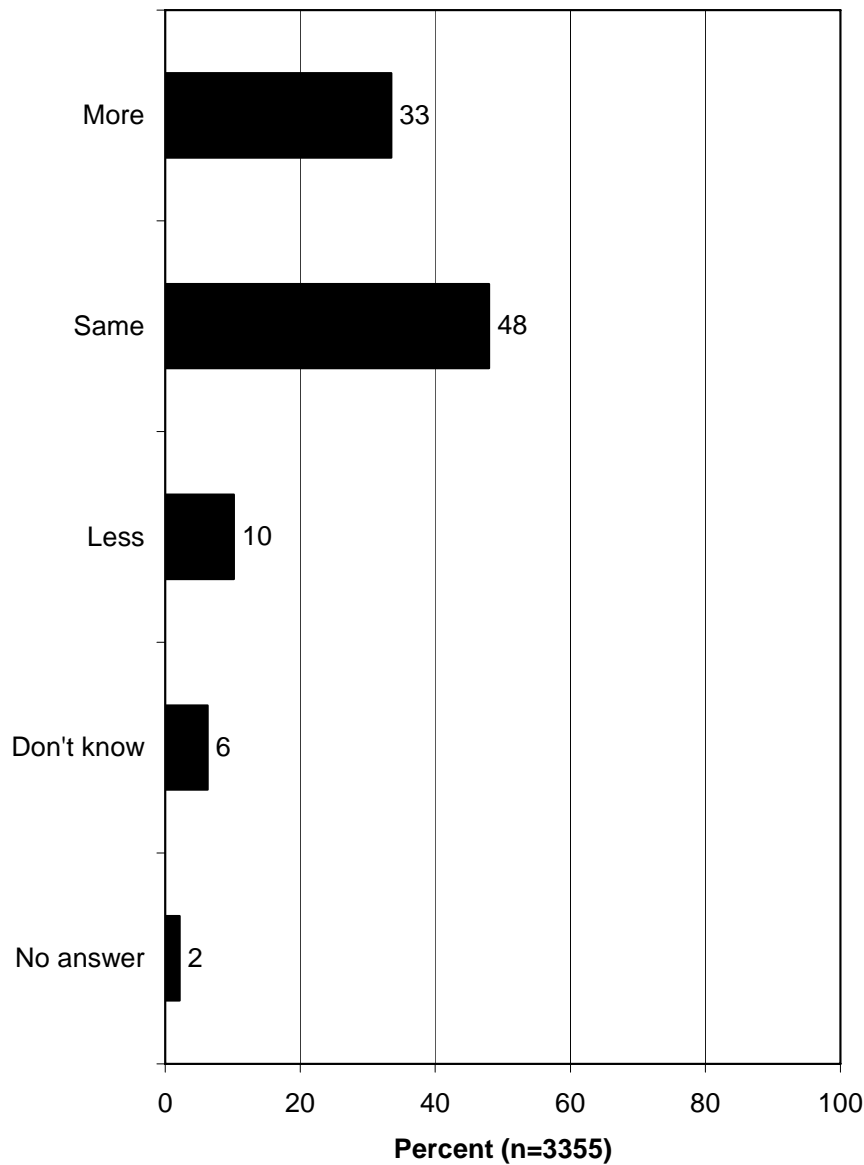


Figure 4. Degree To Which NASP Students Looked Forward To School During Days That They Had Archery.

Characteristics Associated with Student Engagement

The extent to which students reported that they looked forward to school *more* on days that they had archery was related to their enthusiasm for the program. Students who belong to an after-school archery team or club more often indicated that they looked forward to going to school *more* on days that they had archery, relative to those who did not belong to an after-school archery team or club (55% versus 28%), a statistically significant difference ($p \leq 0.001$) (Figure 5).

Q15. Did you look forward to going to school more, about the same, or less on the days you had archery? (NASP Students)

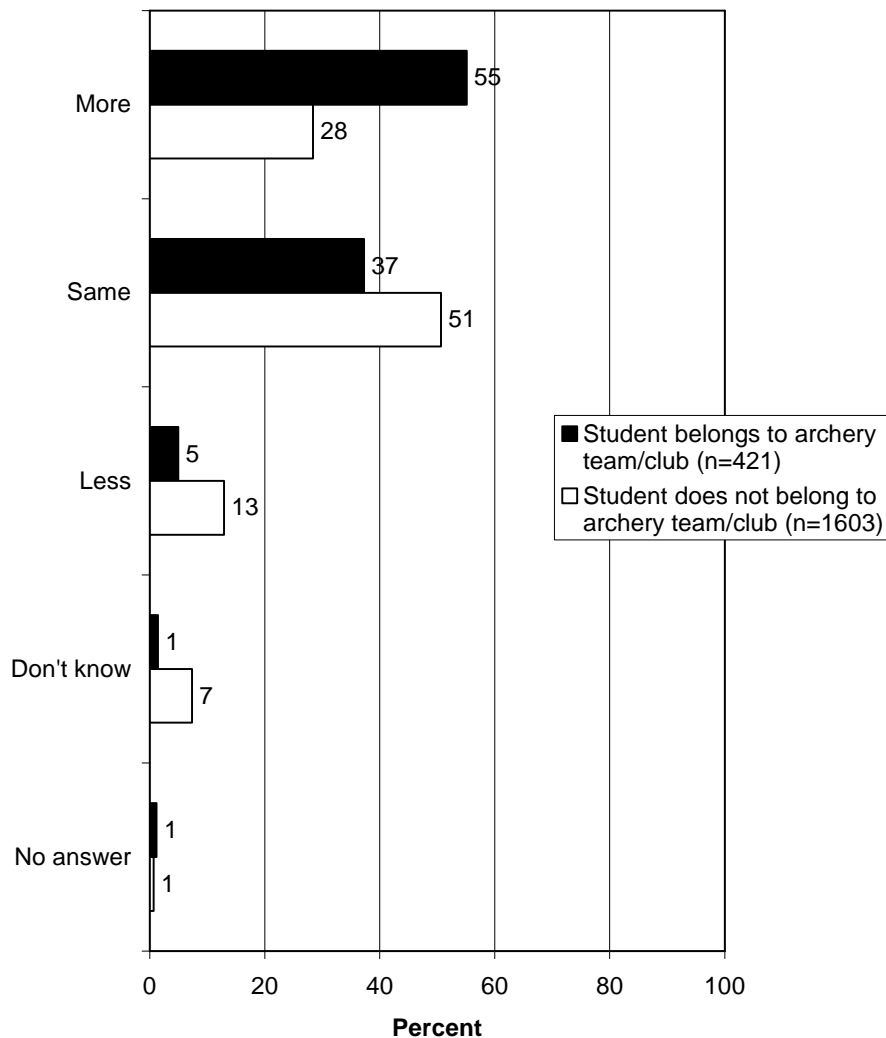


Figure 5. Degree To Which NASP Students Looked Forward To Going To School Crosstabulated by Students' Participation in an Archery Team or Club.

The extent to which students reported that they looked forward to school *more* on days that they had archery was significantly related to teacher instruction and experience. More than a third of the students who thought that their archery instructor did a good job (37%) reported that they looked forward to going to school *more* on days that they had archery, compared to only 10% among those who did not think that their instructor did a good job, and the difference is statistically significant ($p \leq 0.001$) (Figure 6). Likewise, students with teachers who had been involved in NASP for 3 or more years had a higher percentage, compared to students with teachers who had been involved in NASP for less than 3 years, saying that they looked forward to going to school *more* on days that they had archery ($p \leq 0.001$) (Figure 7).

**Q15. Did you look forward to going to school more, about the same, or less on the days you had archery?
(NASP Students)**

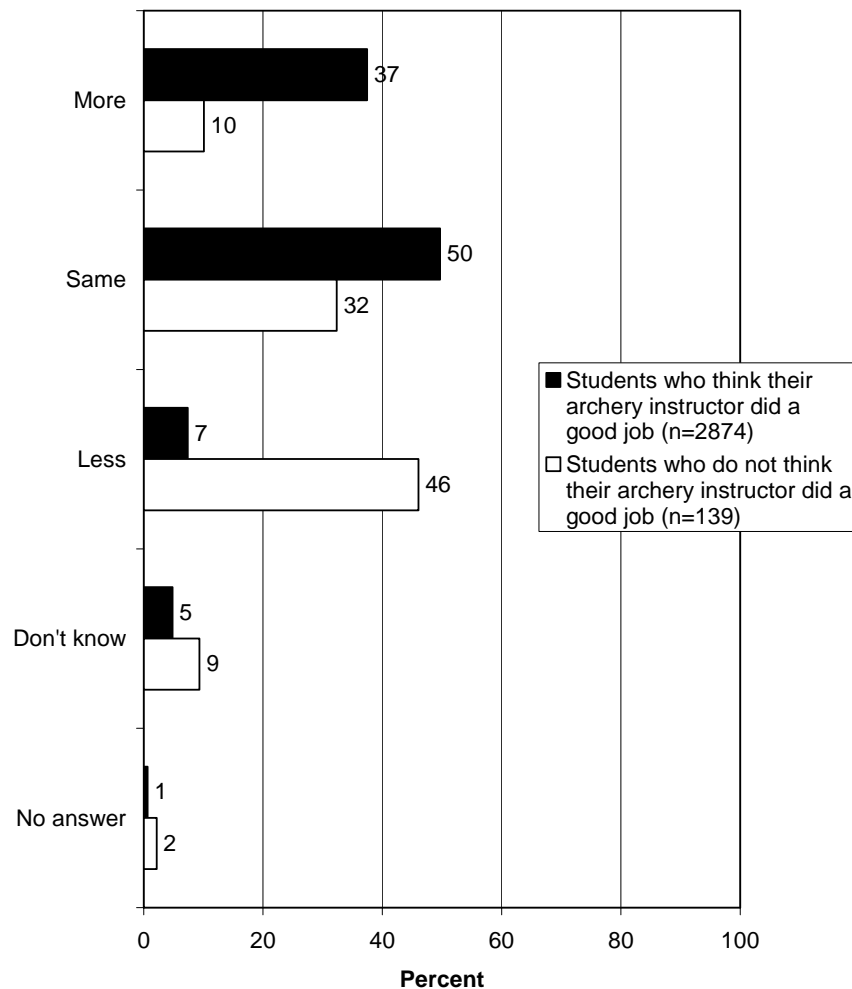


Figure 6. Degree To Which NASP Students Looked Forward To Going To School Crosstabulated by Students' Rating of Instructor Performance.

**Q15. Did you look forward to going to school more, about the same, or less on the days you had archery?
(NASP Students)**

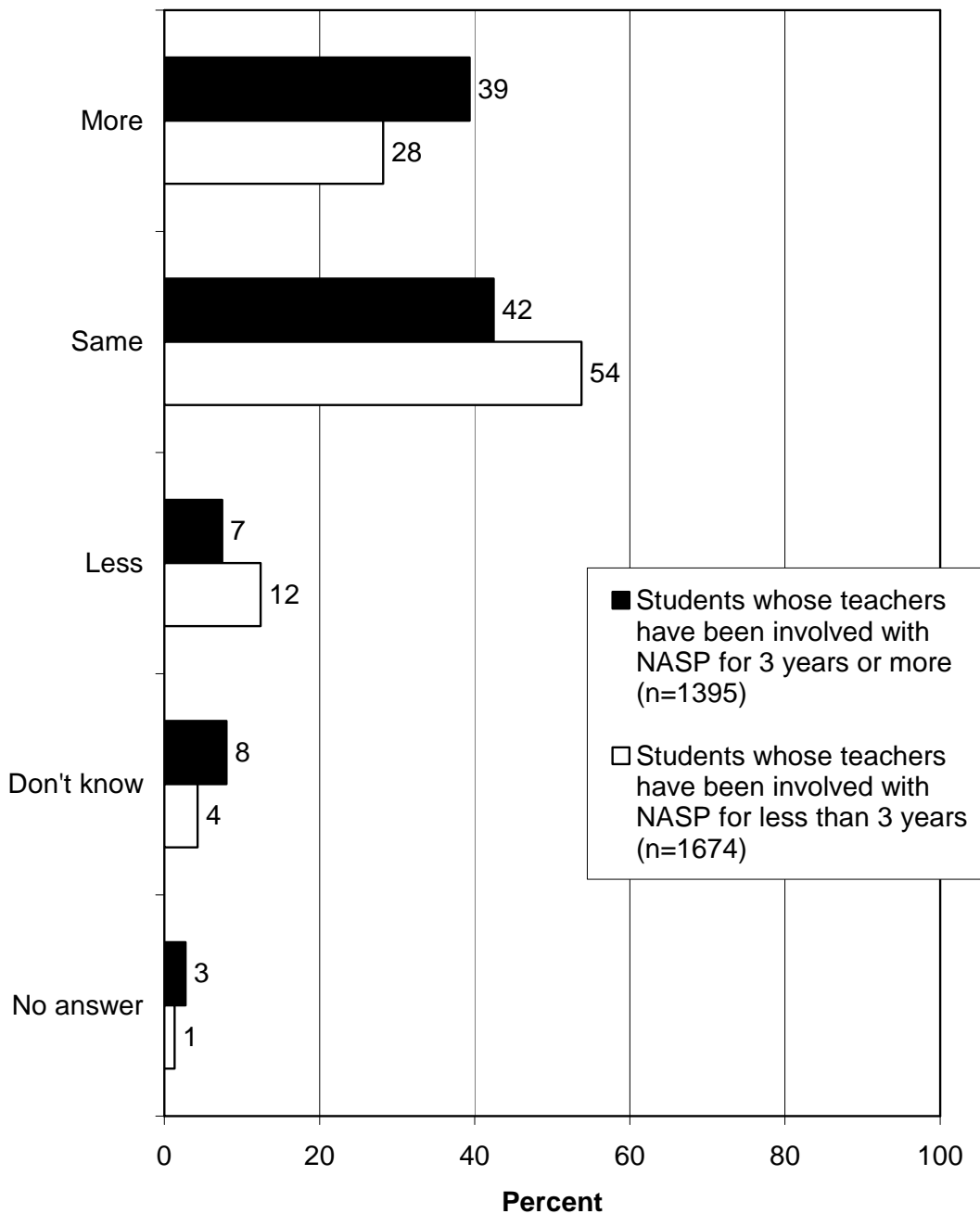


Figure 7. Degree To Which NASP Students Looked Forward To Going To School Crosstabulated by Instructor's Experience.

The extent to which students reported that they looked forward to school on days that they had archery was related to program characteristics. Students who had archery courses of 4 weeks or longer had a greater percentage, relative to those who had archery courses of less than 4 weeks, indicating that they looked forward to school *more* on days that they had archery (39% versus 26%), and the difference is statistically significant ($p \leq 0.001$) (Figure 8).

**Q15. Did you look forward to going to school more, about the same, or less on the days you had archery?
(NASP Students)**

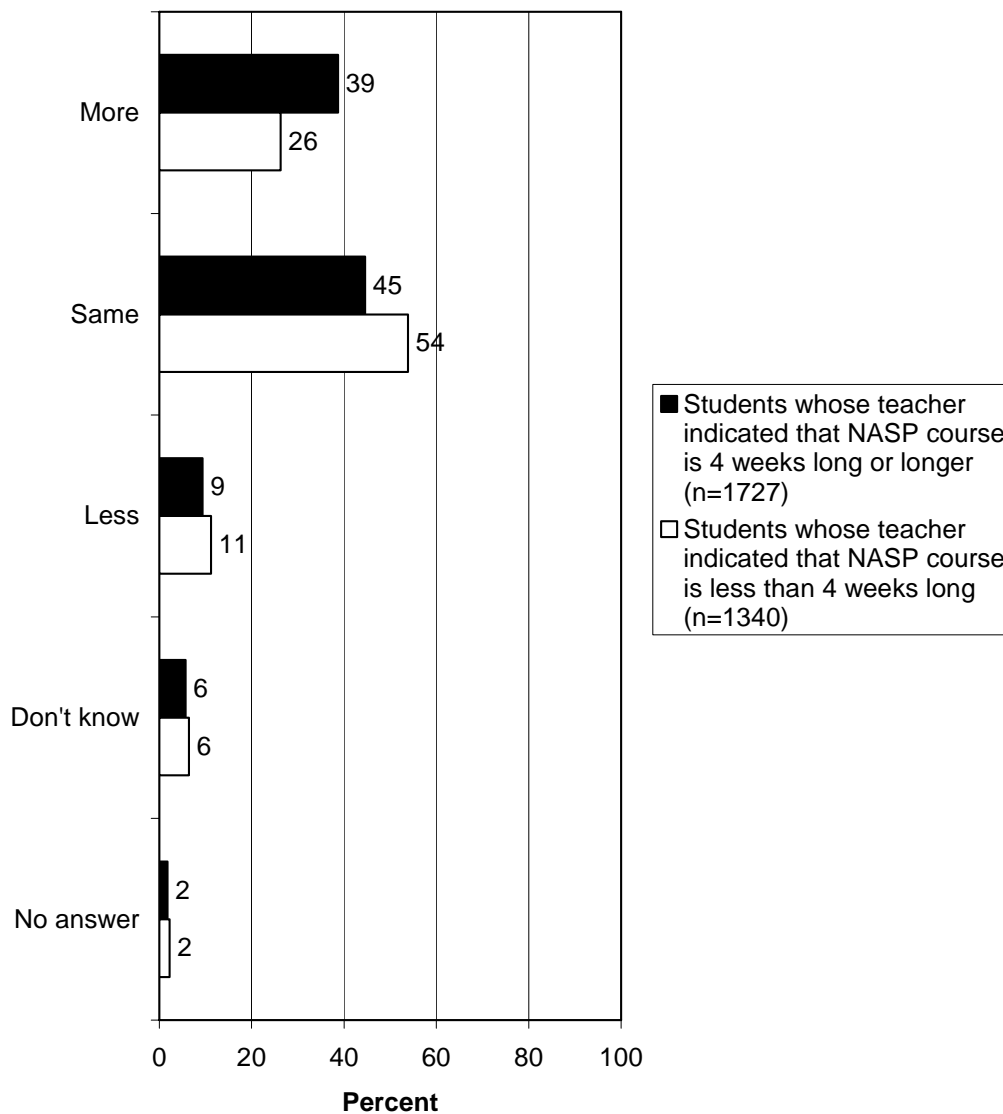


Figure 8. Degree To Which NASP Students Looked Forward To Going To School Crosstabulated by Length of Course.

Class size also affected the extent to which students reported that they looked forward to school *more* on days that they had archery. A little over a third of the students whose teacher indicated that there are 40 students or fewer enrolled in NASP at one time (36%) reported that they looked forward to going to school *more* on days they had archery, compared to less than a third (29%) among students with larger class sizes ($p \leq 0.001$) (Figure 9).

**Q15. Did you look forward to going to school more, about the same, or less on the days you had archery?
(NASP Students)**

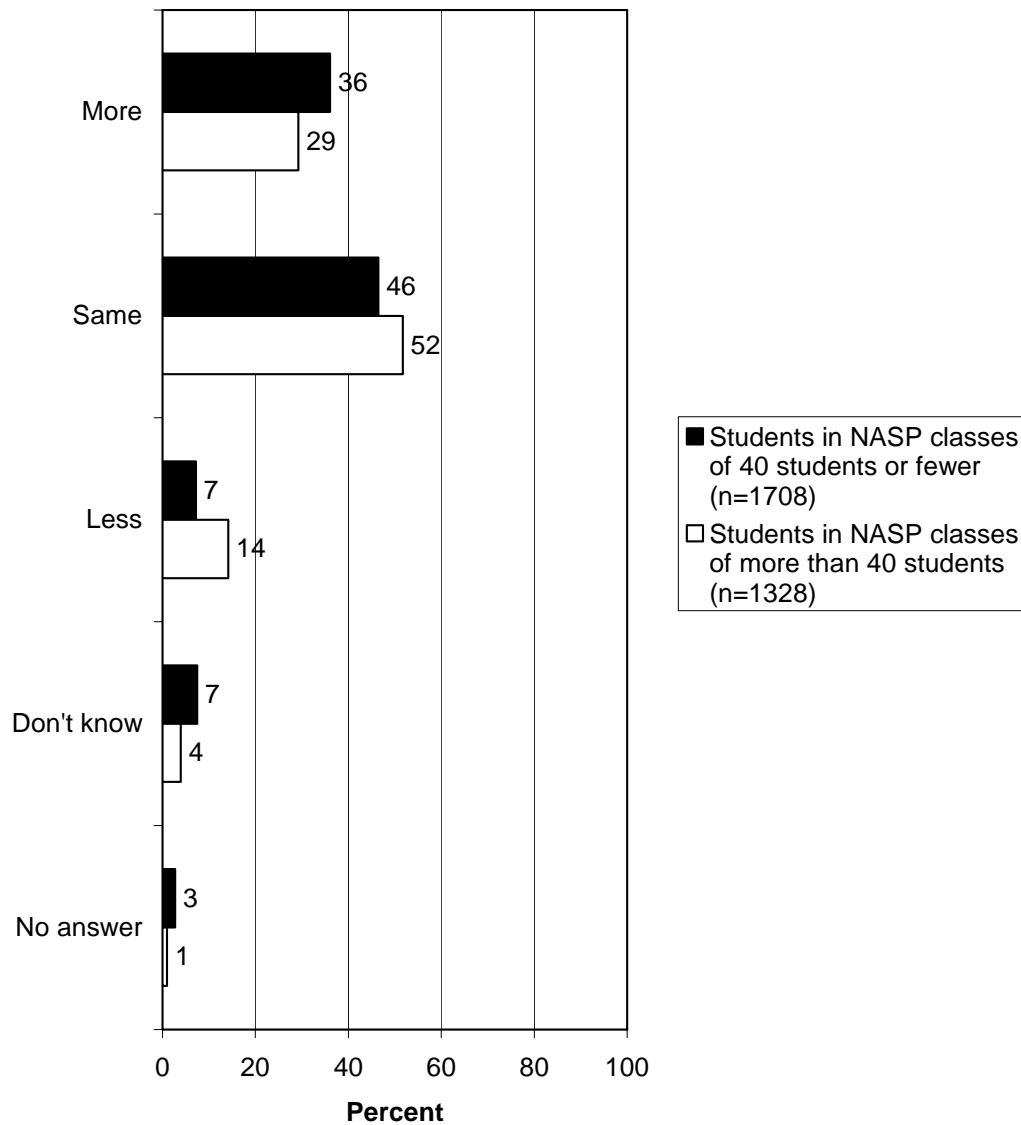


Figure 9. Degree To Which NASP Students Looked Forward To Going To School Crosstabulated by Class Size.

Student Improvement in Archery Skills

As shown in Figure 10, a large majority (78%) of NASP students rated their archery skills as either good (47%) or very good (31%) *after* taking the course, a statistically significant increase over the 47% of NASP students who rated their archery skills as good (34%) or very good (13%) *before* the course. The difference is particularly marked in the “very good” response, which more than doubled from *before* (13%) to *after* (31%).

Q26a/Q26b. Overall, how would you rate your archery skills before and after taking archery? (NASP Students)

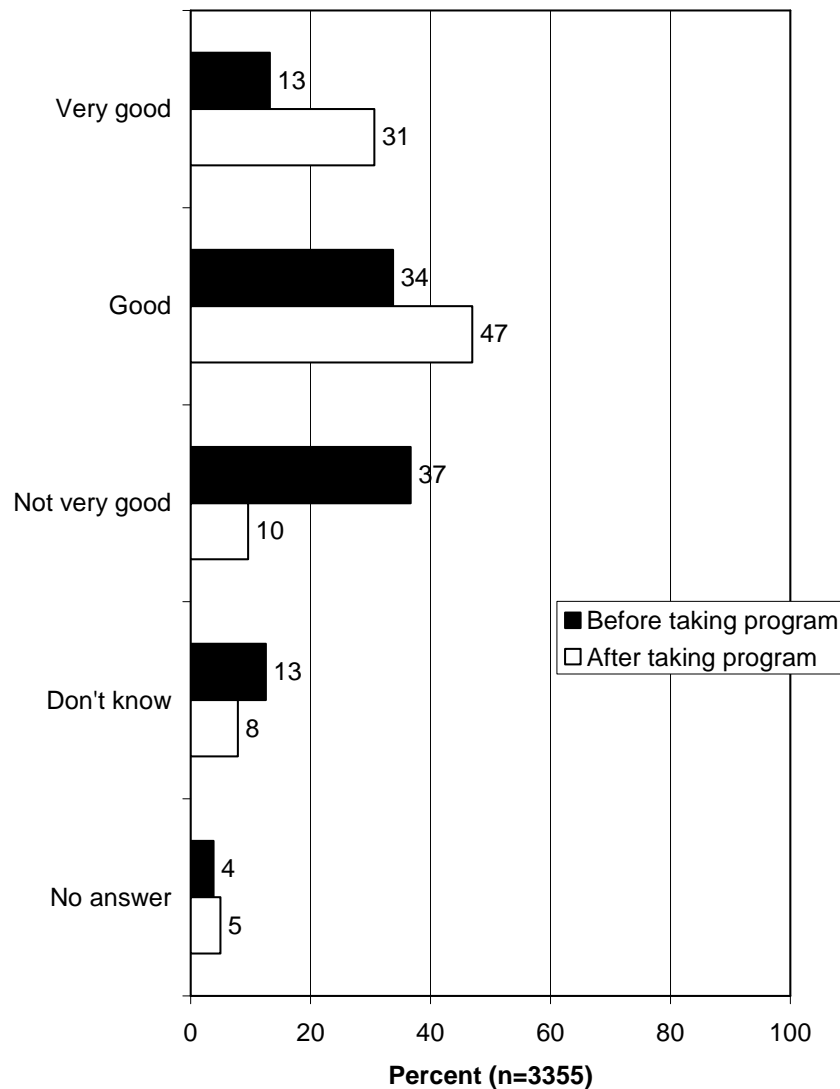


Figure 10. Students' Self-Rating of Their Archery Skills Before and After the Course.

When asked what they learned in the archery program that helped them to improve at archery, 23% of NASP students cited shooting methods, 21% said how to aim for and hit the target, and 19% indicated that they learned better techniques, in general—the top three responses (Figure 11).

**Q27. What did you learn in the archery program that helped you to improve at archery?
(NASP Students)**

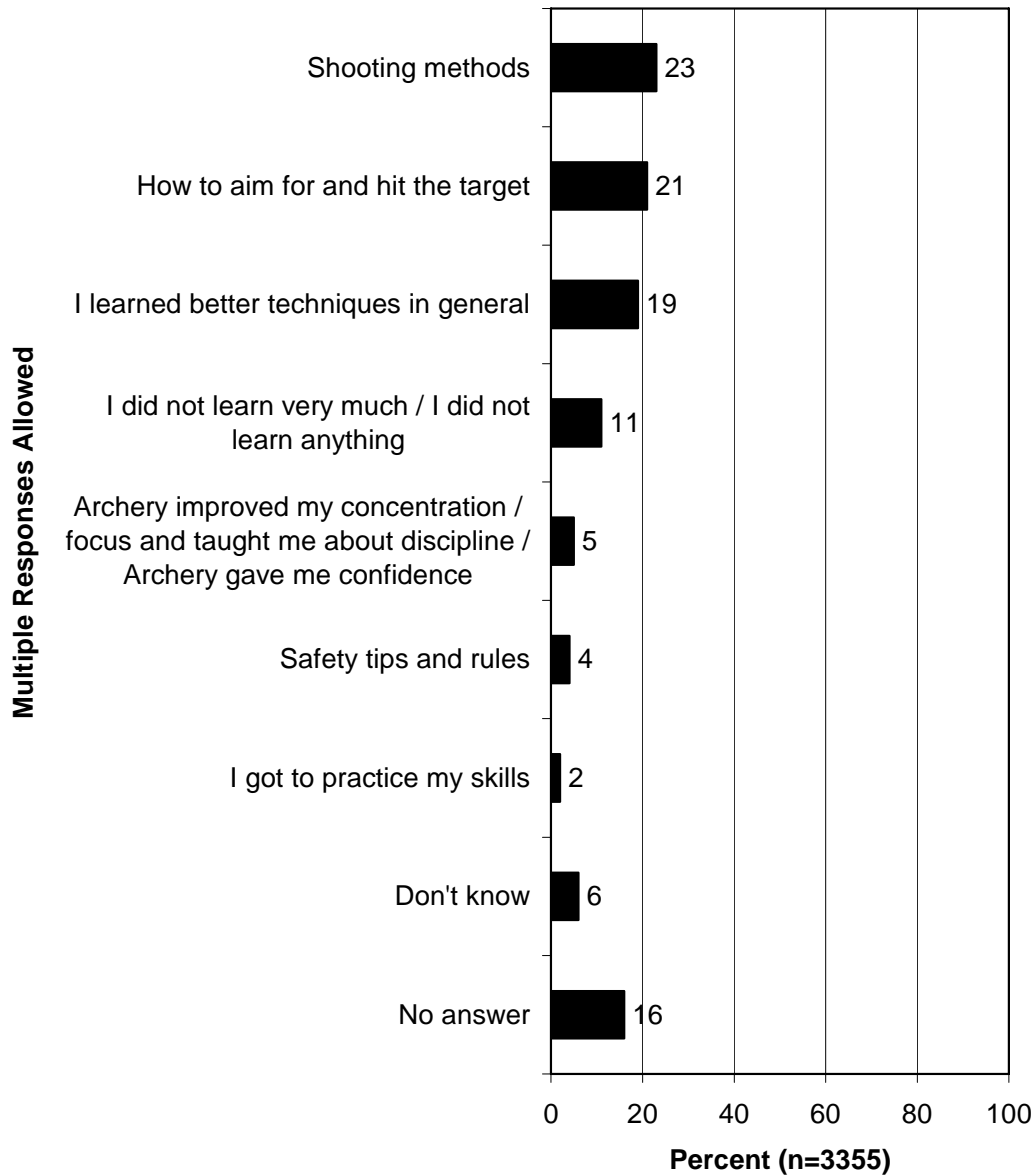


Figure 11. Elements Learned in the NASP That Helped Students Improve at Archery.

Student Satisfaction with Program and Instructor

A large majority (83%) of NASP students liked the archery program in their schools, with 47% reporting that they liked it a lot (Figure 12). Only 9% indicated that they did not like it at all.

Q8. Overall, how much did you like the archery program in your school? (NASP Students)

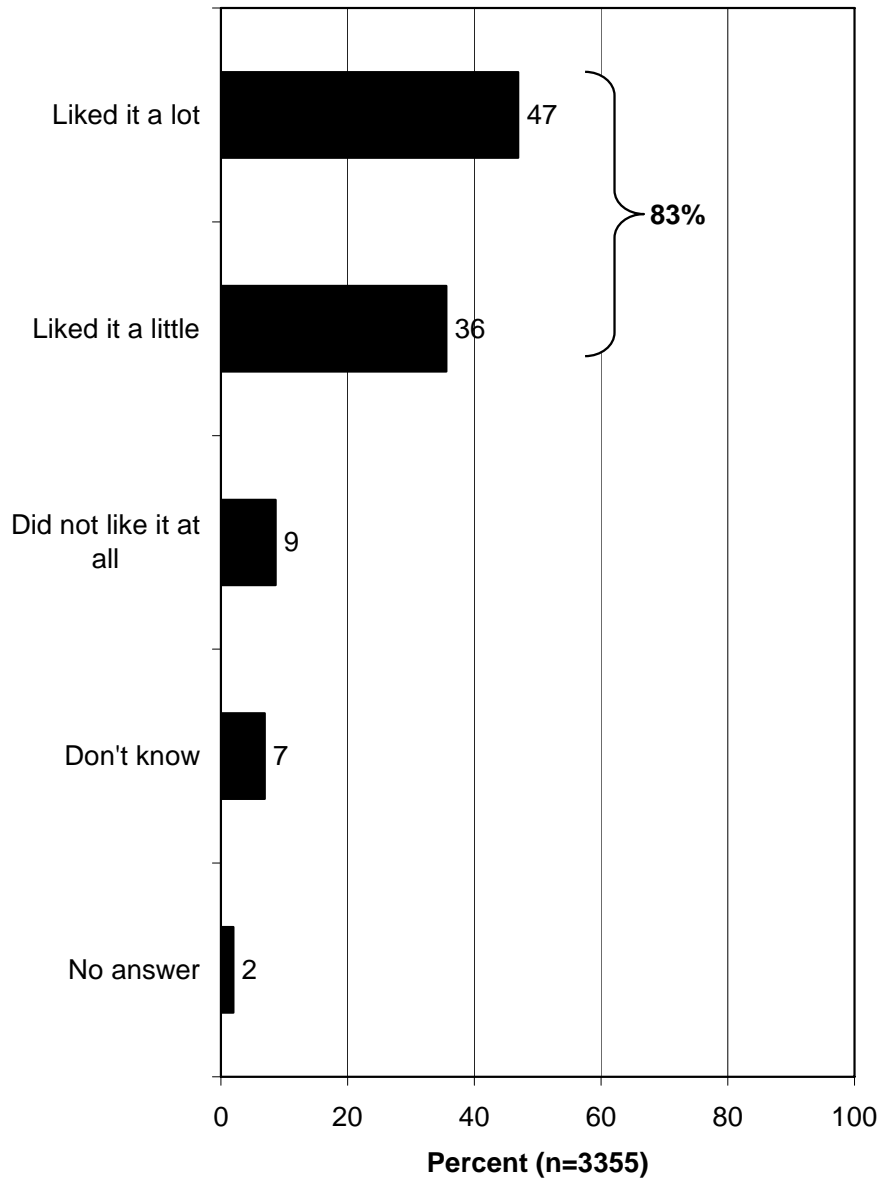


Figure 12. Overall Satisfaction Rating of the Program by NASP Students.

NASP students were asked to rate how much they liked various components of the archery program and curriculum. Nearly all components were liked by large majorities, with all but one component having a majority liking it “a lot” or liking it “okay.” At the top of the list in Figure 13 are shooting the arrow (88%) and hitting the target (88%).

Percent who rated how much they liked the following parts of the archery program as "I liked it a lot" or "I liked it okay." (NASP Students)

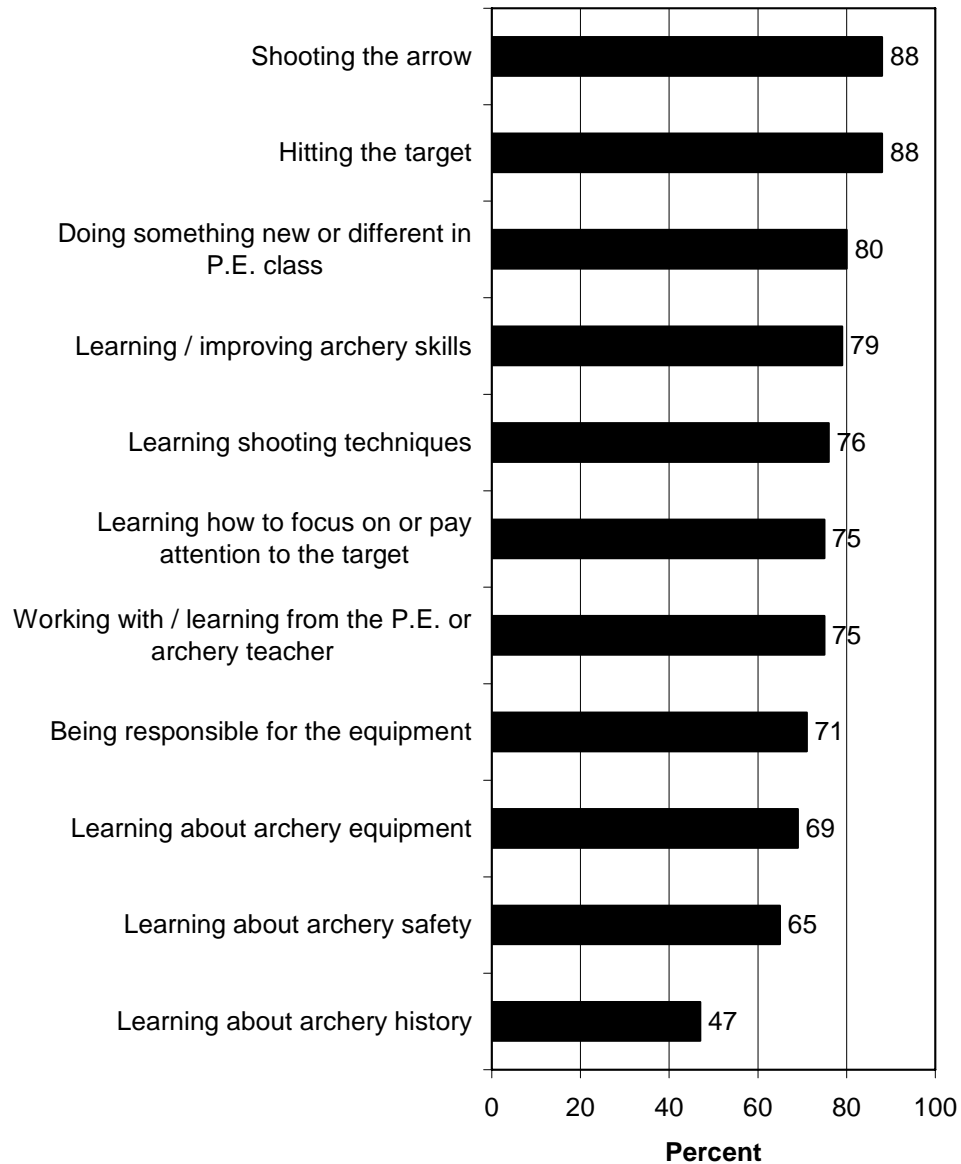


Figure 13. NASP Students’ Ratings of Program and Curriculum Components.

As shown in Figure 14, an overwhelming majority of NASP students (86%) reported that their instructor did a good job teaching archery, and only 4% answered in the negative (the rest gave neutral answers).

**Q12. Did your archery instructor do a good job teaching archery?
(NASP Students)**

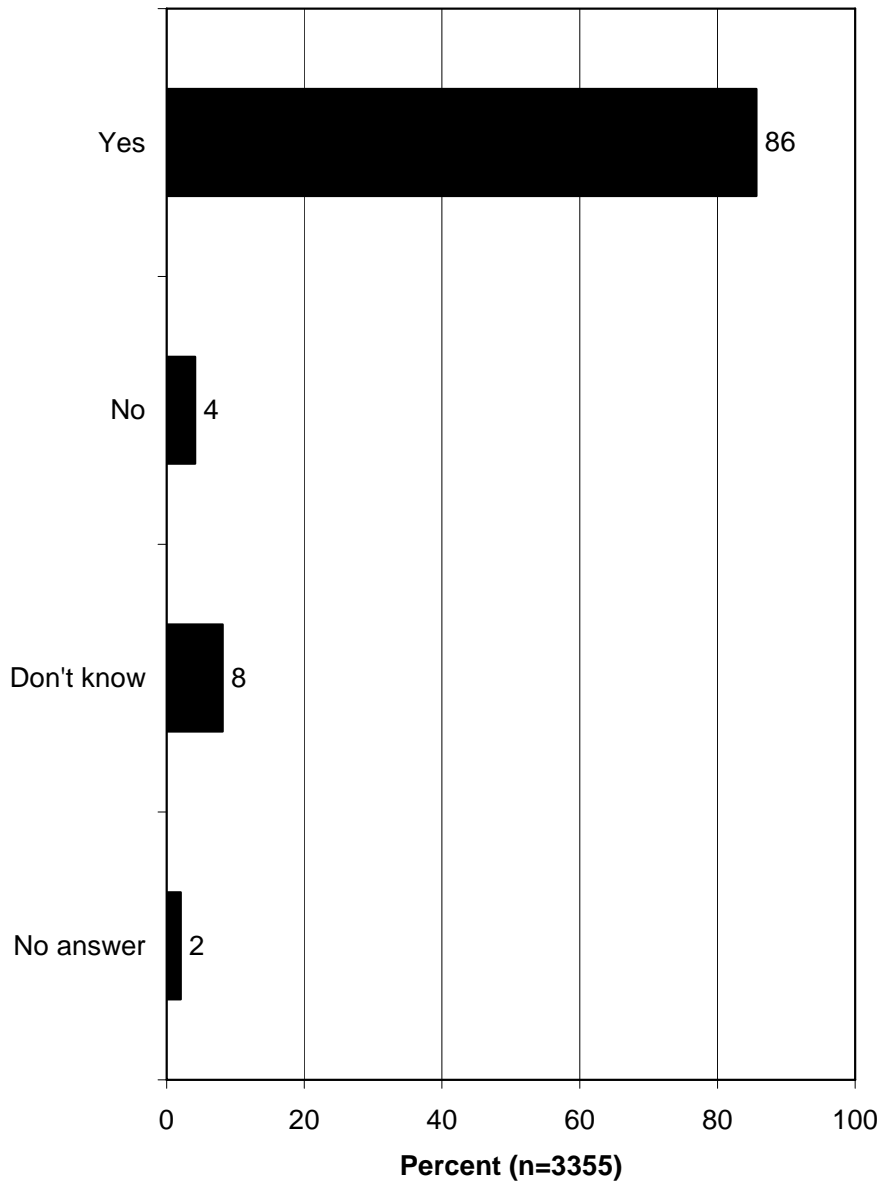


Figure 14. Evaluation of Instructors by NASP Students.

In an open-ended question, students were asked to identify the strengths of the NASP (Figure 15). The most common responses related to learning how to aim and shoot (18%), that archery is fun/that the student liked being with friends (9%), and that the student felt that NASP helps students practice self-discipline and build character (7%).

**Q48. What are some of the strengths of the archery program in your school?
(NASP Students)**

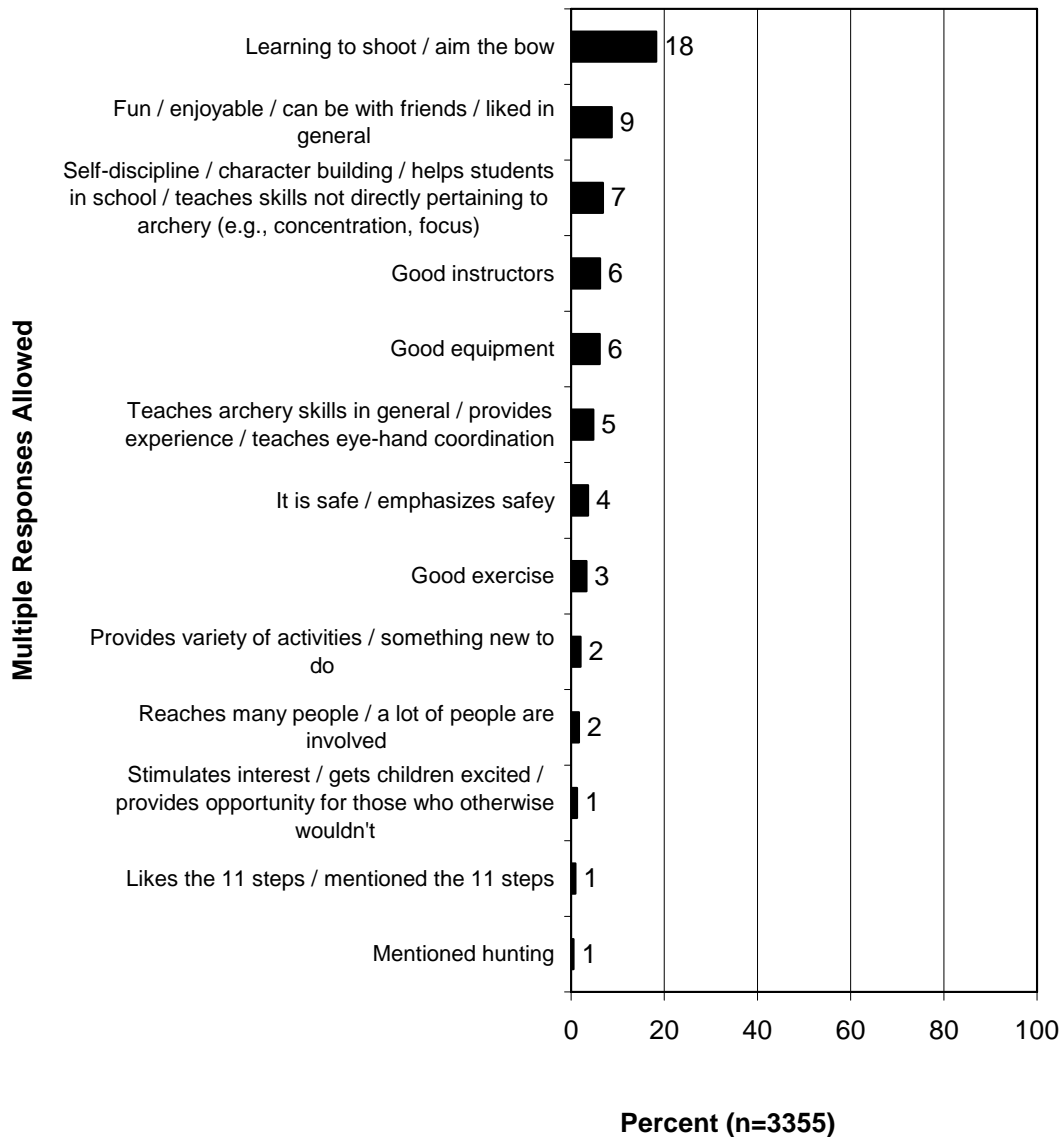


Figure 15. Strengths of the NASP.

Students were asked to identify any changes they thought would improve the NASP. Their most common answer was that nothing needs to be changed, and the third most common answer is that the course needed more time devoted to it—both answers reflecting positively on their response to the program (Figure 16). (The second most common answer was a need for more and/or better equipment.)

**Q49. What changes need to be made to improve the archery program in your school?
(NASP Students)**

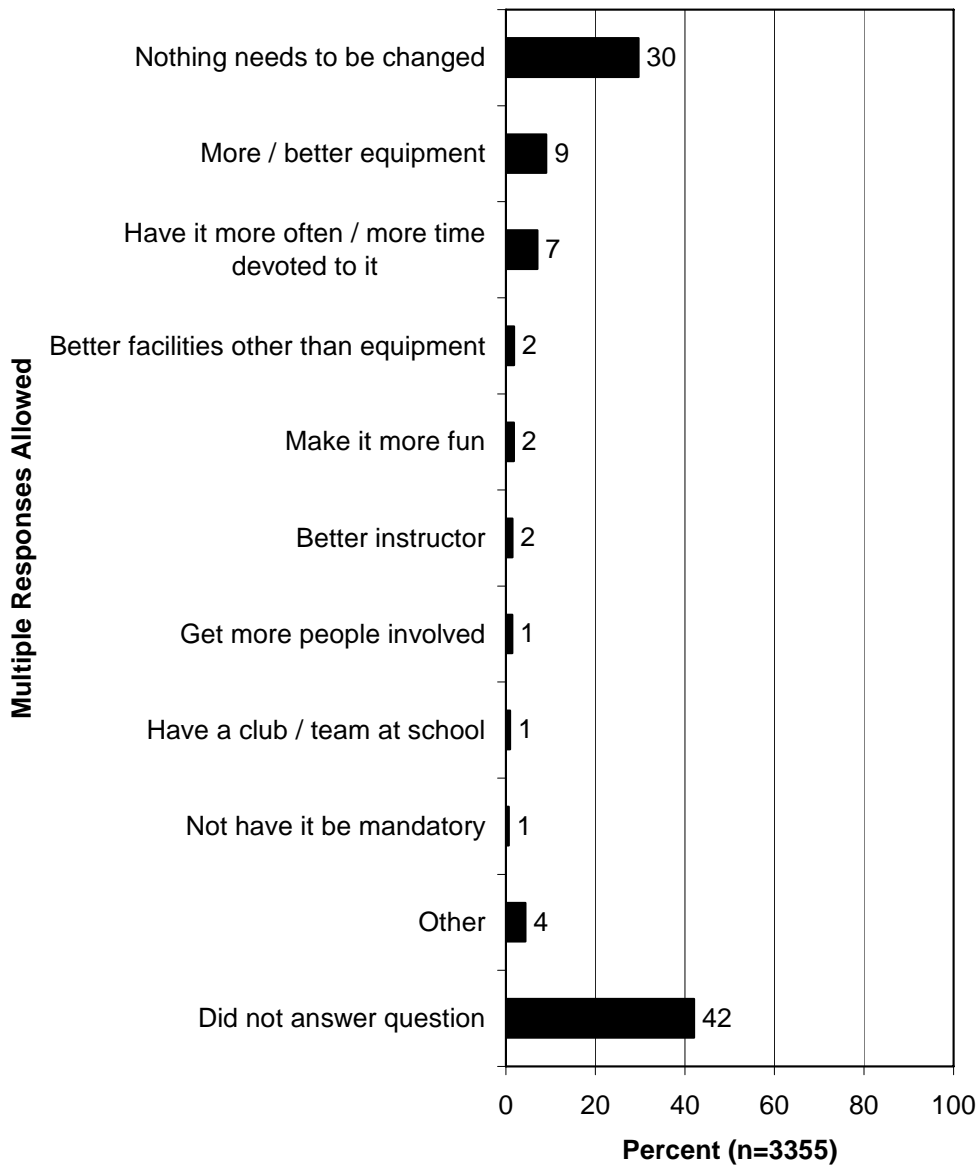


Figure 16. Students' Recommendations for Improving the NASP.

Characteristics Associated with Student Satisfaction with the Program

The extent to which students liked the program was related to their enthusiasm for archery. As shown in Figure 17, an overwhelming majority of students who belong to an after-school archery team or club (95%) indicated that they liked the program, which is a much higher percentage compared to students who do not belong to an archery team or club (78%), and this difference is statistically significant ($p \leq 0.001$). The difference is particularly marked in the “liked it a lot” response (84% to 36%). Also, an overwhelming majority of students who indicated that archery is very exciting (93%) liked the program “a lot,” compared to only 31% of those who indicated that archery is a little exciting, a statistically significant difference ($p \leq 0.001$) (Figure 18).

Q8. Overall, how much did you like the archery program in your school? (NASP Students)

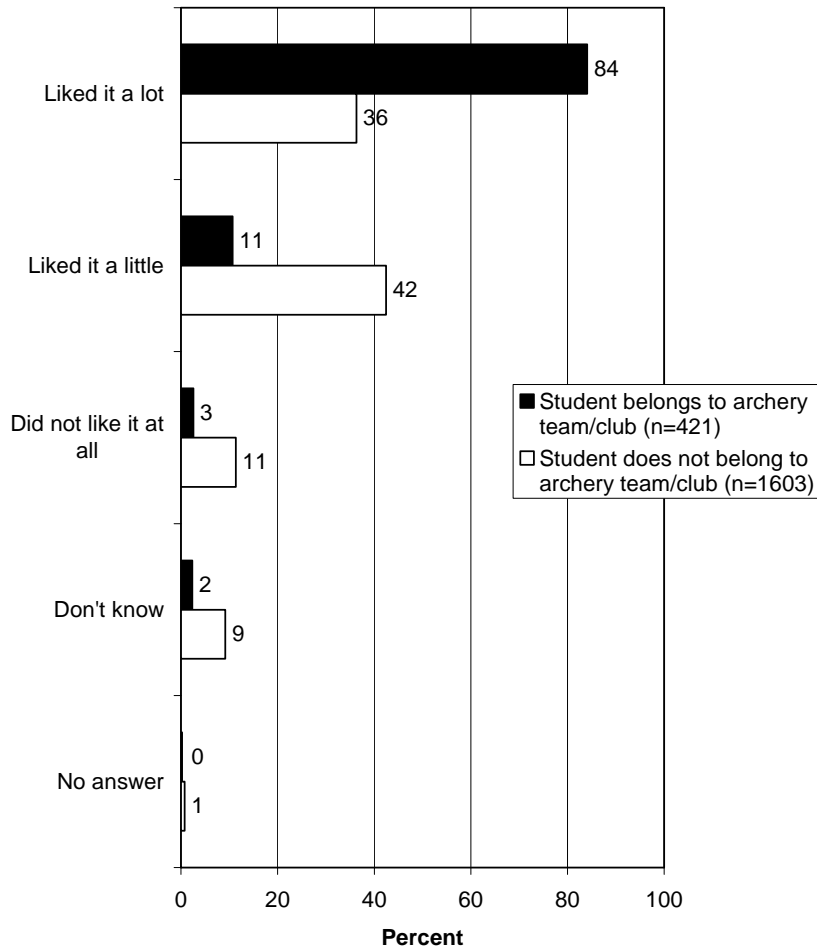


Figure 17. Degree to Which NASP Students Liked the Program Crosstabulated by Students’ Participation in an Archery Team or Club.

**Q8. Overall, how much did you like the archery program in your school?
(NASP Students)**

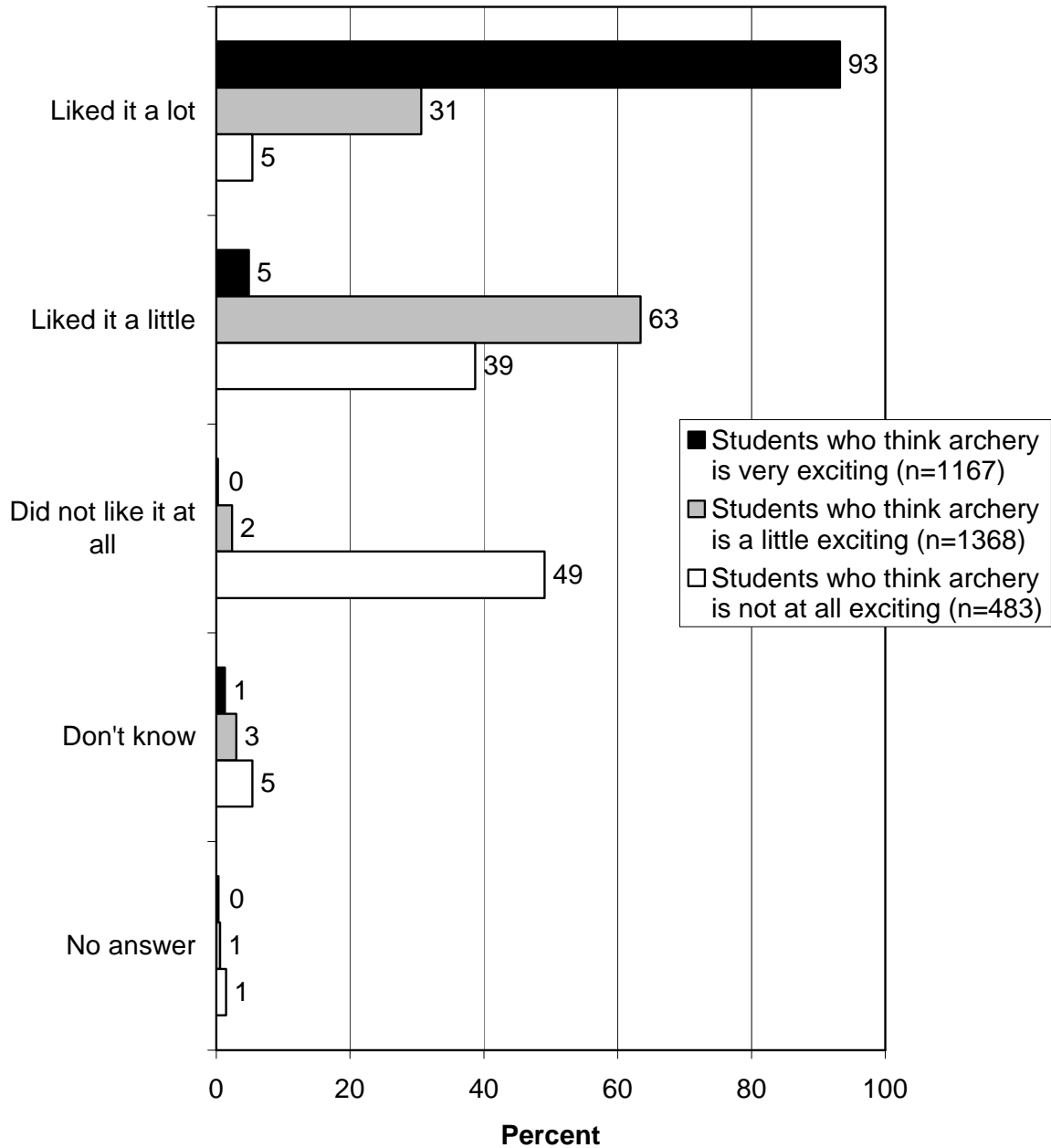


Figure 18. Degree to Which NASP Students Liked the Program Crosstabulated by Students' Excitement with Archery.

The extent to which students reported liking the archery program was significantly related to their assessment of their teacher's skills and to their teacher's experience. More than half of the students who thought that their archery instructor did a good job (52%) reported that they liked the archery program a lot, compared to only 13% among students who did not think that their archery teacher did a good job, a statistically significant difference ($p \leq 0.001$) (Figure 19). Likewise, students whose teachers had been teaching NASP for 3 years or more had a higher percentage saying that they liked the program a lot, compared to students whose teachers had less than 3 years of NASP experience (52% to 43%), and this difference is statistically significant ($p \leq 0.001$) (Figure 20).

**Q8. Overall, how much did you like the archery program in your school?
(NASP Students)**

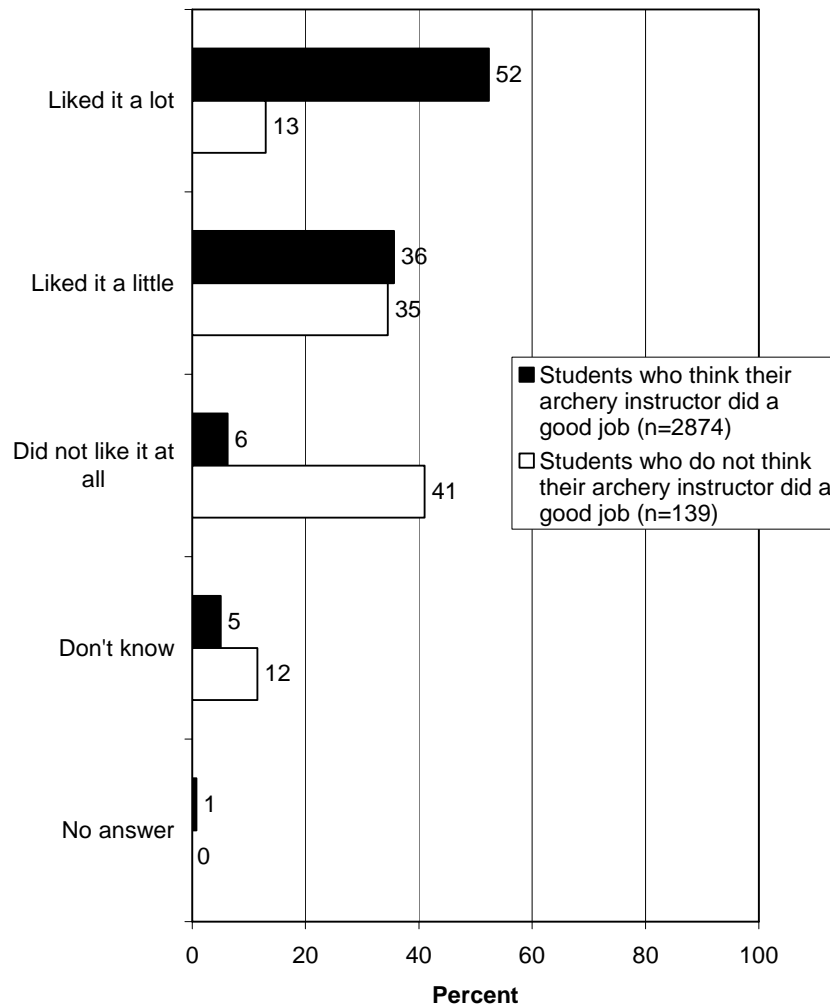


Figure 19. Degree to Which NASP Students Liked the Program Crosstabulated by Students' Rating of Instructor Performance.

**Q8. Overall, how much did you like the archery program in your school?
(NASP Students)**

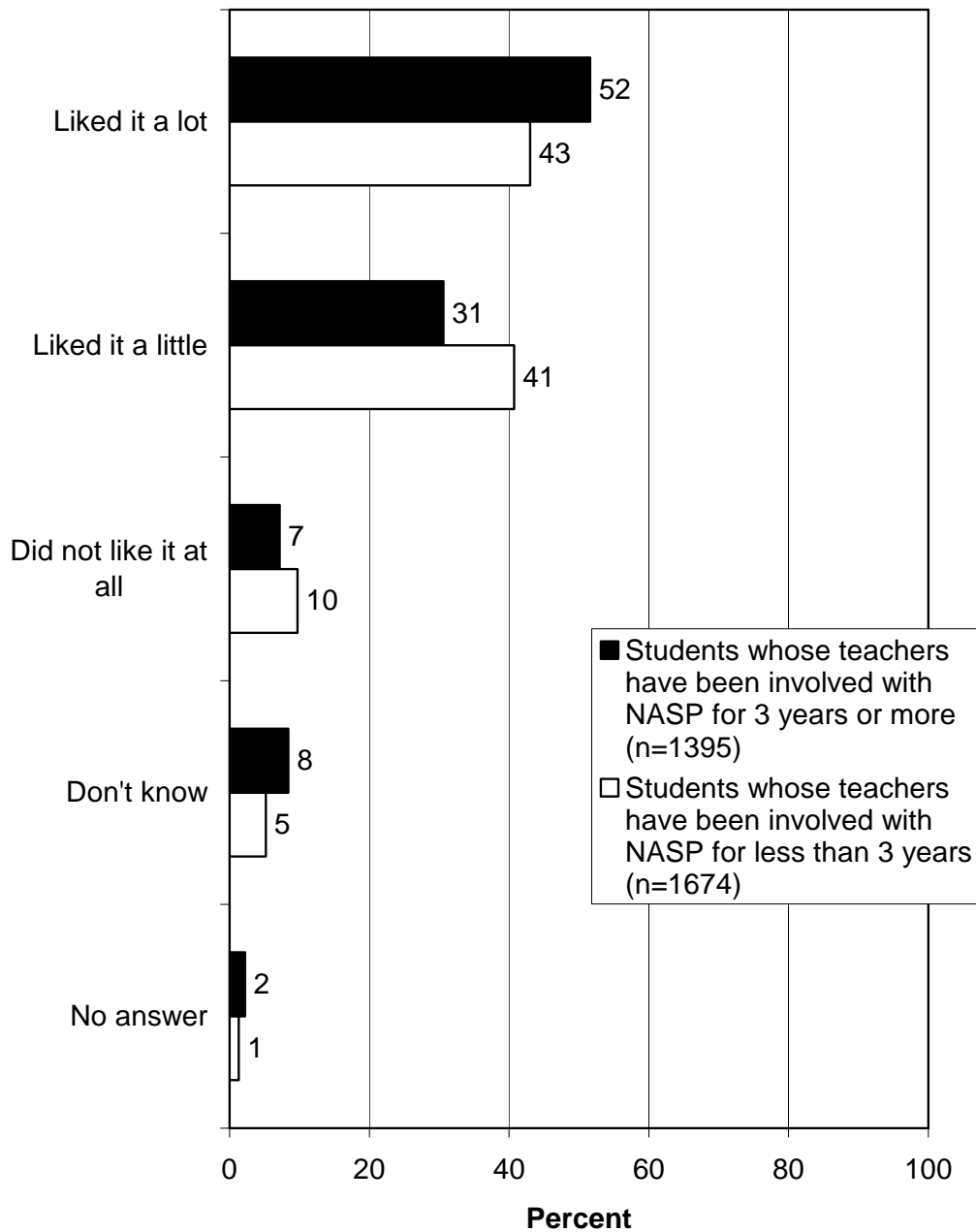


Figure 20. Degree to Which NASP Students Liked the Program Cross-tabulated by Instructor's Length of NASP Experience.

The extent to which students reported liking the archery program was related to program characteristics, including program length and class size. Figure 21 shows that longer courses are positively correlated with students' saying that they liked the program a lot: 52% of students taking programs of 4 weeks or more, compared to 40% of students taking a course of less than 4 weeks, reported that they liked the archery program a lot, a statistically significant difference ($p \leq 0.001$). Class size is also correlated, with smaller class sizes more often being rated as being liked a lot: 51% of students in NASP courses of 40 students or fewer, compared to 42% of students in NASP courses with more than 40 students, indicated that they liked the program a lot, a statistically significant difference ($p \leq 0.001$) (Figure 22).

**Q8. Overall, how much did you like the archery program in your school?
(NASP Students)**

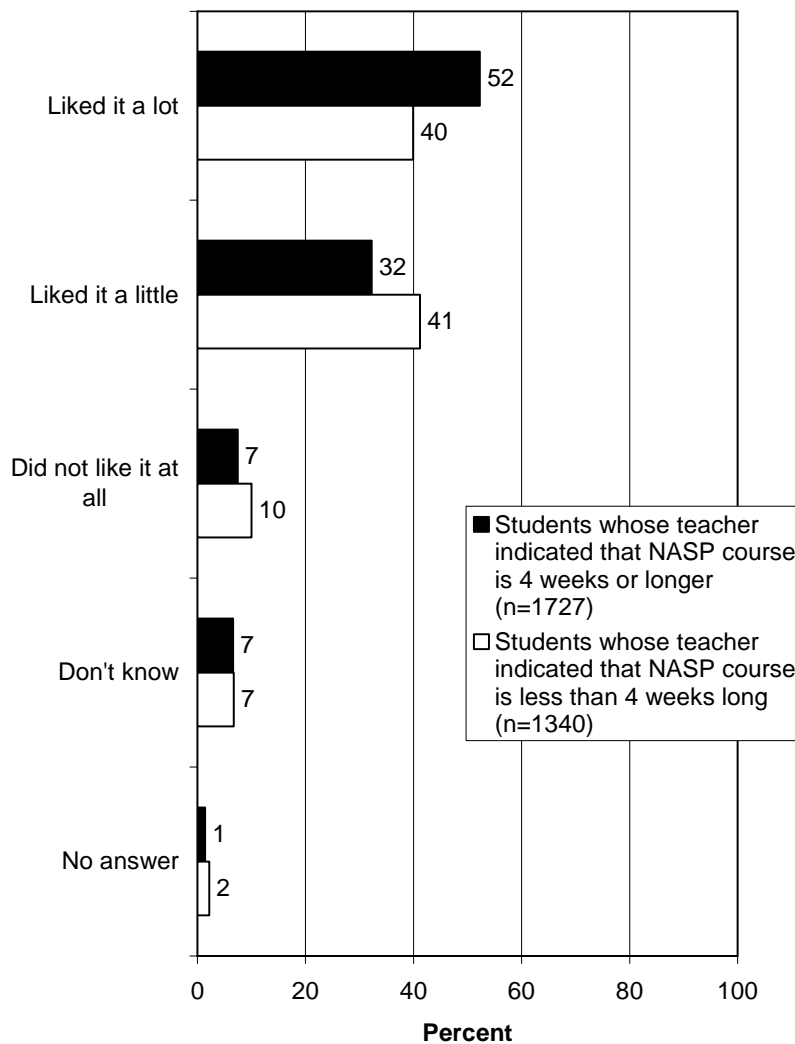


Figure 21. Degree to Which NASP Students Liked the Program Crosstabulated by Length of Course.

**Q8. Overall, how much did you like the archery program in your school?
(NASP Students)**

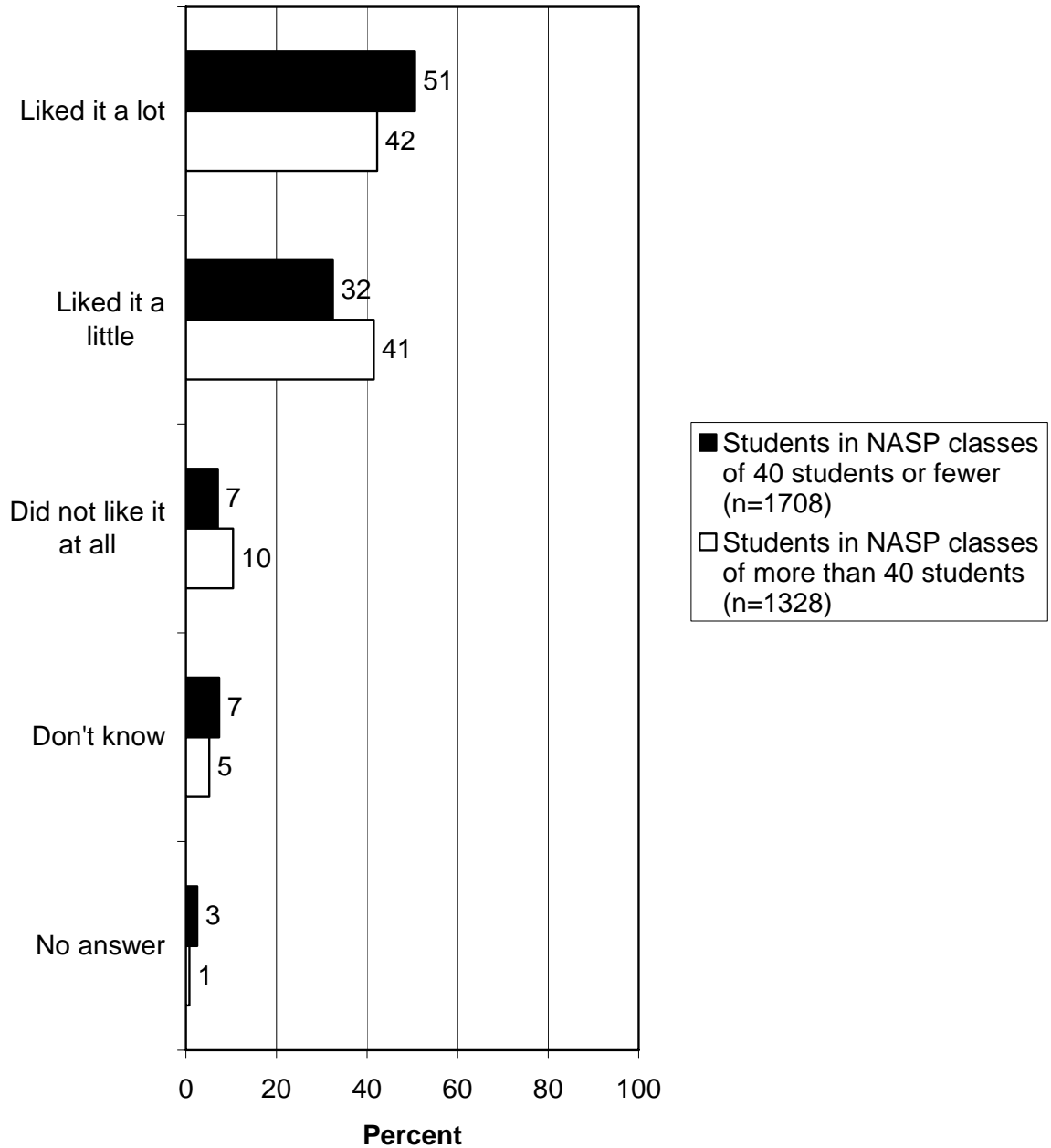


Figure 22. Degree to Which NASP Students Liked the Program Crosstabulated by Classroom Size.

Conclusions About Hypothesis 1: Learning Archery Is Engaging To Students

The above findings suggest that learning archery is engaging to students. The variables considered in examining this hypothesis were student excitement with the program, their rating of the ease or difficulty of the program, their level of eagerness to attend school on archery days, their self-ratings of archery skill, their liking or disliking of the program and various components of the program, and their ratings of their instructors.

Students Respond Positively To the NASP. A large majority of NASP students (76%) think that the archery program is exciting. A greater percentage of NASP students say that they look forward to going to school *more* (33%) on days that they have archery than say they look forward to going to school *less* (10%).

Students Improve Their Archery Skills. Over three-quarters (78%) of NASP students rate their archery skills as either good or very good after taking the course—a marked improvement over their ratings of their skills before the course.

Students Are Satisfied with the NASP. Most NASP students (83%) like the archery program in their schools. When students are asked to rate how much they like various components of the program; for all components except the history of archery, a large majority indicate that they “like it a lot” or “like it okay.” At the top of the ranking is shooting the arrow (88% like it a lot or okay), hitting the target (88%), doing something new or different in P.E. class (80%), and learning/improving archery skills (79%). A large majority (86%) of NASP students say that their instructors do a good job teaching archery.

Summary of Evidence for Student Engagement with the NASP. These findings suggest that students are engaged by the NASP. They respond positively to the NASP, finding it exciting and something to look forward to. They feel that their archery skills are improved by taking the program. They are satisfied with the program and their instructors: they say that they like the program and its components, and they rate their instructors positively.

Hypothesis 2: Through Archery, Students Improve Learning Skills and Attitudes

The results in the previous section strongly suggest that the NASP effectively engages students. How does this engagement affect student learning skills and attitudes? The second hypothesis is that, in the process of learning archery, students learn to focus and to concentrate and they improve with practice, and this experience affects their attitudes and motivations to achieve. Relevant questions are whether students pay better attention in archery than they do in other subjects. Are they more motivated to get good grades, attend school, stay out of trouble, be respectful to teachers and other students, and participate in sports or other activities as a result of their archery experience? Is their self-confidence affected in areas like schoolwork, relationships with teachers and other students, and sports? These are the questions that the findings in this section address.

Student Improvement in Concentration and Focus

The percentage of NASP students who reported that they paid attention *more* (26%) in archery class compared to other classes exceeded the percentage of students who indicated that they paid attention less (8%) in archery than in other classes (Figure 23). Students were also more likely to say that they learned how to pay attention or focus better in archery (50%) than to say that they did not (32%) (Figure 24). Further, among those students who indicated that they learned how to pay attention and focus better in archery, a large majority (64%) indicated that their experience in NASP helped them pay attention or focus better in learning *other things* (Figure 25).

**Q28. Do you think you pay more, about the same, or less attention to what you are doing in archery than in other classes?
(NASP Students)**

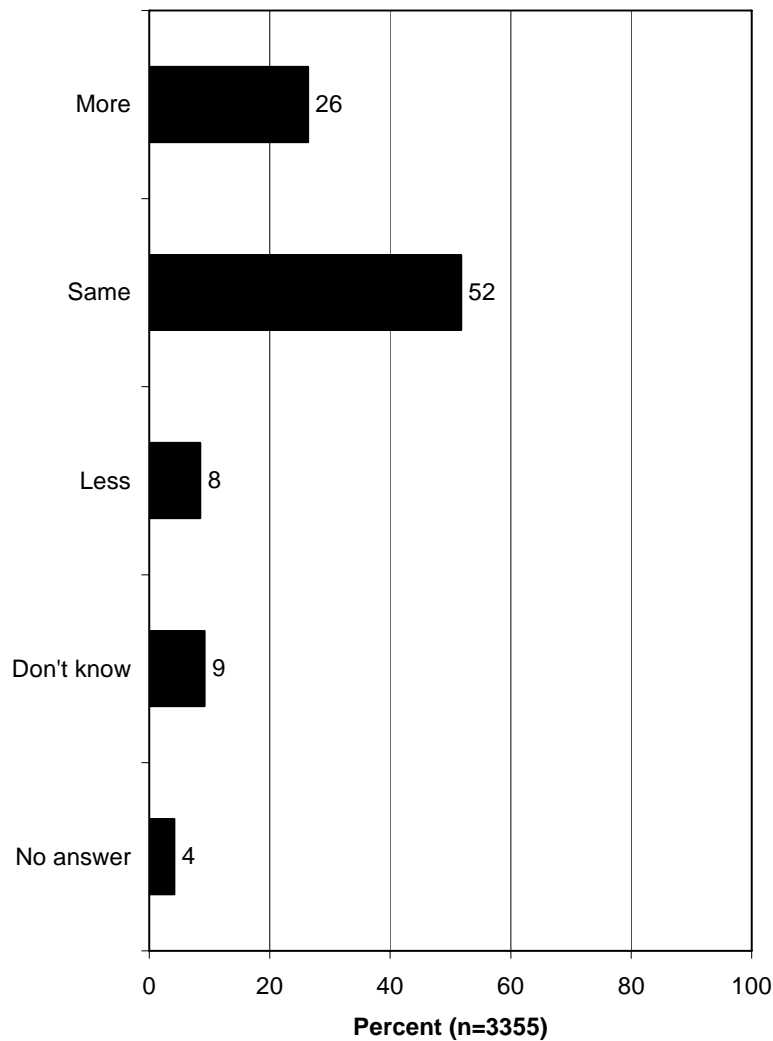


Figure 23. Attention Paid in Archery Compared To Other Classes.

**Q30. Did you learn how to pay attention or focus better in archery?
(NASP students)**

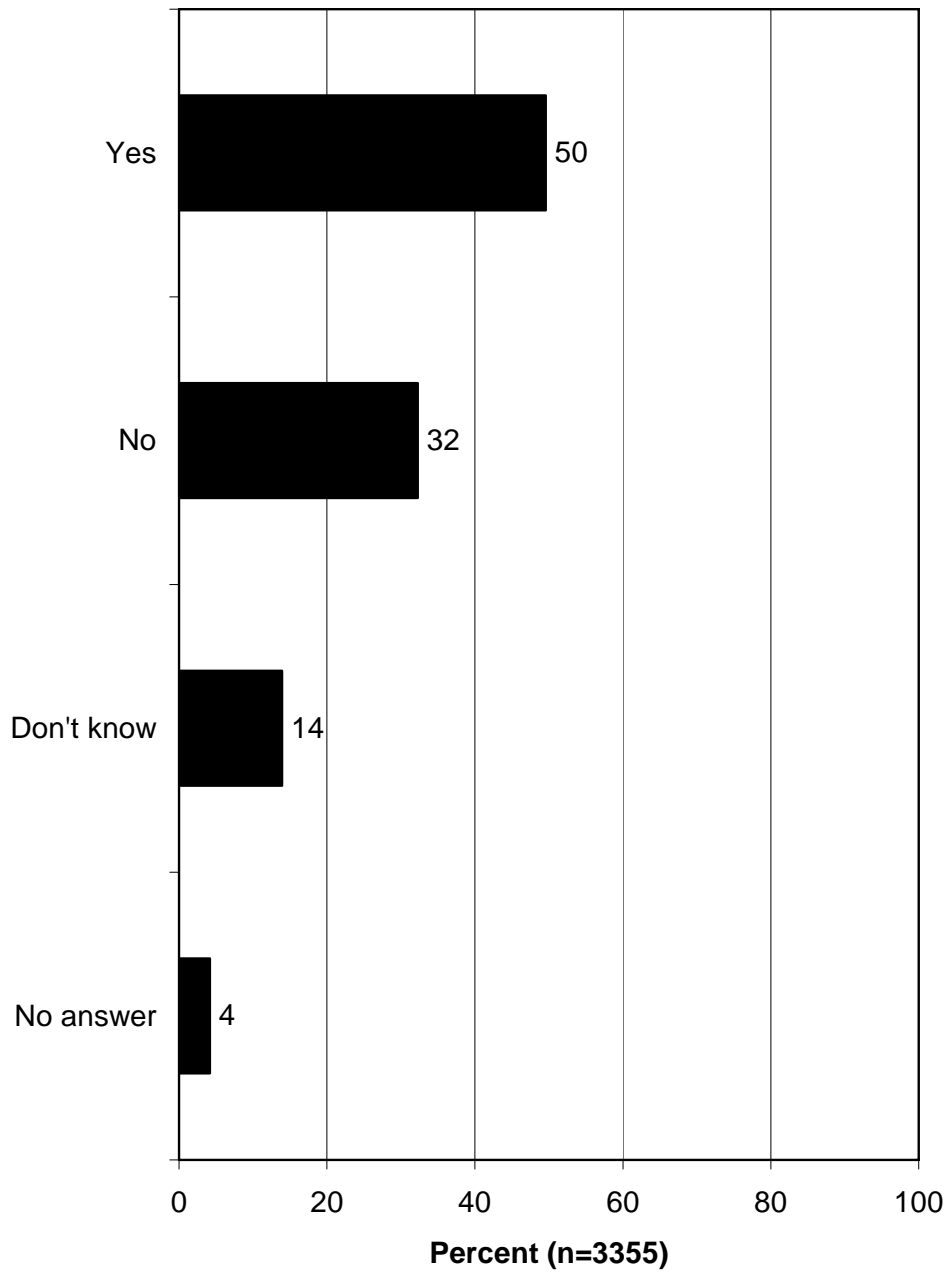


Figure 24. Effect of Archery on Student Attention and Focus.

**Q31. Has the NASP experience helped you to pay attention or focus better in learning other things?
(Asked of students who indicated that they learned how to pay attention or focus better in archery.)
(NASP Students)**

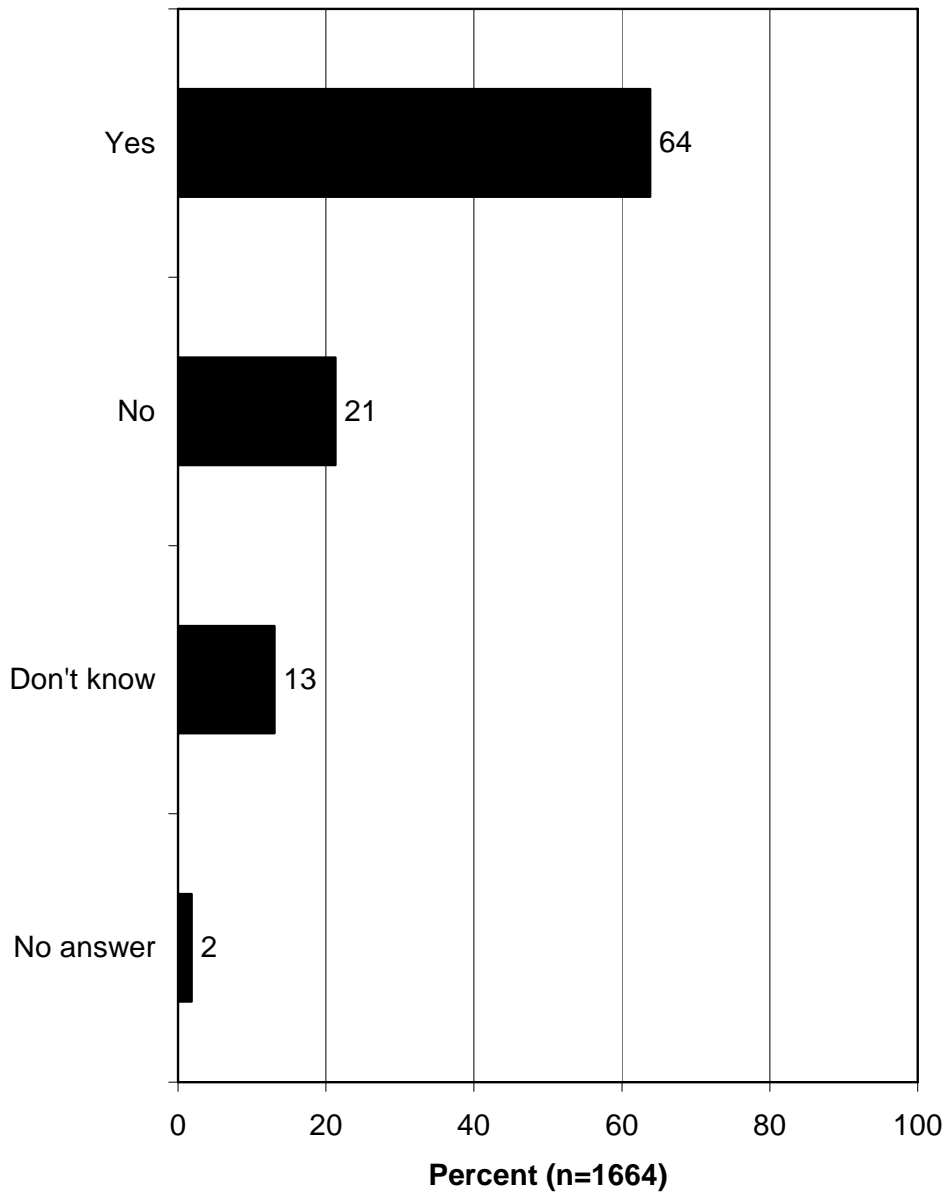


Figure 25. Degree of Student Attention and Focus in Learning Other Things.

Student Improvement in Motivation

NASP students were asked about whether the archery program gave them more, the same, or less motivation in several aspects of school and life. For each aspect, the percentage of NASP students who indicated that the NASP gave them more motivation far exceeded the percentage of students who indicated that the NASP gave them less motivation (Figure 26 and Table 4). For all aspects, approximately a quarter or more of NASP students indicated that the NASP had a positive effect on their motivation.

Table 4. Effect of the NASP on Student Motivation.

| Motivation to: | More | Same | Less |
|--|-------------|-------------|-------------|
| Participate in archery | 37% | 38% | 13% |
| Attend school | 23% | 63% | 4% |
| Be respectful of adults and friends | 30% | 59% | 2% |
| Get good grades | 34% | 55% | 2% |
| Learn other sports | 34% | 50% | 5% |
| Participate in other sports and activities | 32% | 53% | 4% |
| Stay out of trouble | 31% | 55% | 4% |

**Q33. Percent who want to do the following things more/less after taking archery:
(NASP Students)**

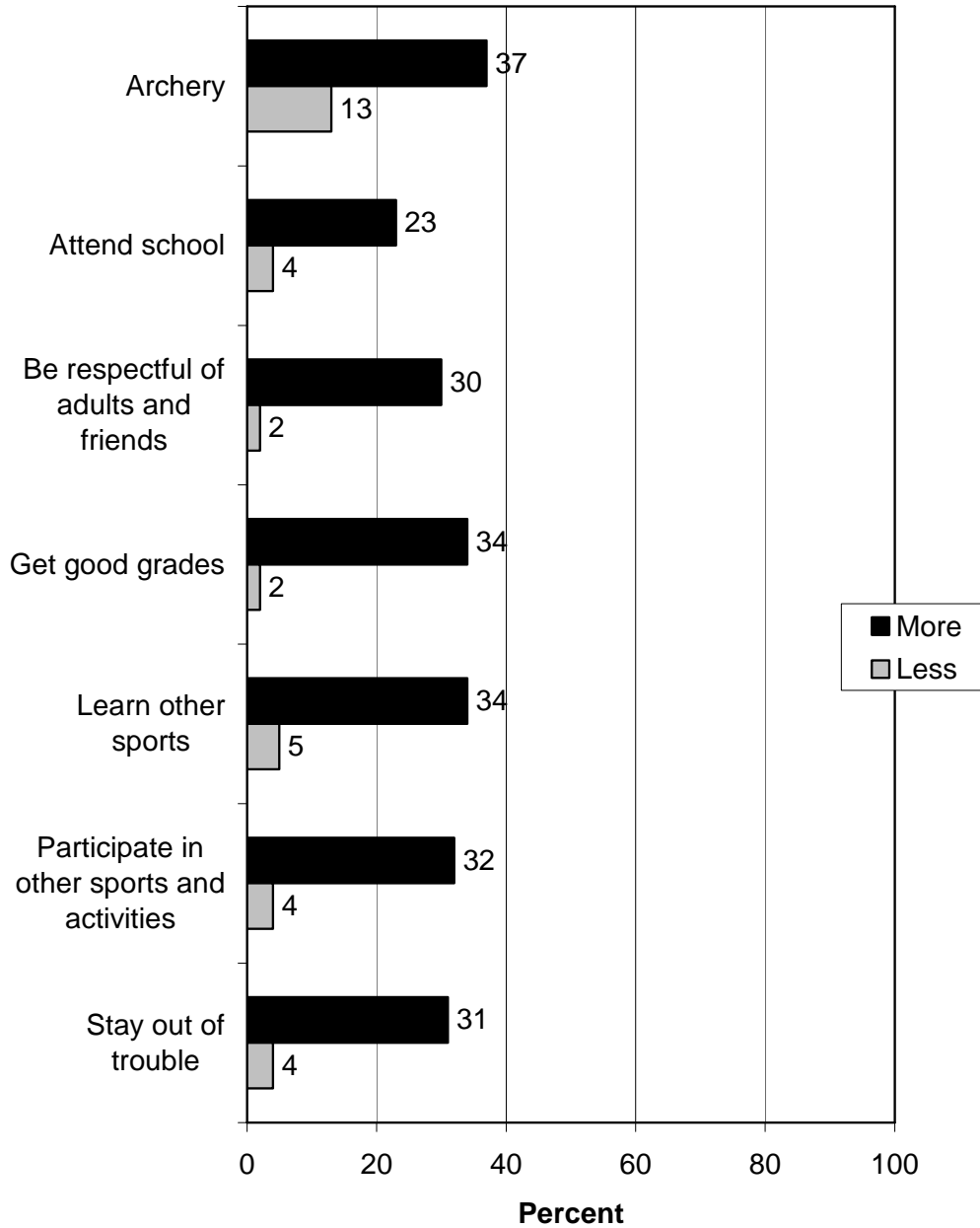


Figure 26. Effect of the NASP on Student Motivation and Attitudes.

Characteristics Associated with Student Motivations

Students' motivations in the several aspects of school and life about which the survey asked are correlated to factors in the delivery of NASP instruction. Students who thought that their instructor did a good job, relative to those who did not, show more motivation to do all of the things about which the survey asked (Figure 27). The differences are statistically significant (Table 5). Students whose teachers have been teaching NASP for 3 or more years, relative to students whose teachers have been teaching it for less than 3 years, show more motivation (Figure 28). Again, those differences are statistically significant (Table 6). Also, class size is correlated to subsequent motivation, with smaller classes correlated with higher motivation (Figure 29 and Table 7). Finally, the length of the course is correlated to subsequent motivation: students who took an archery course of 4 weeks long or longer show higher motivation than students who took shorter archery courses (Figure 30). These latter differences are statistically significant (Table 8). These graphs and tables start on the following page.

Percent who want to do the following things more after taking archery:

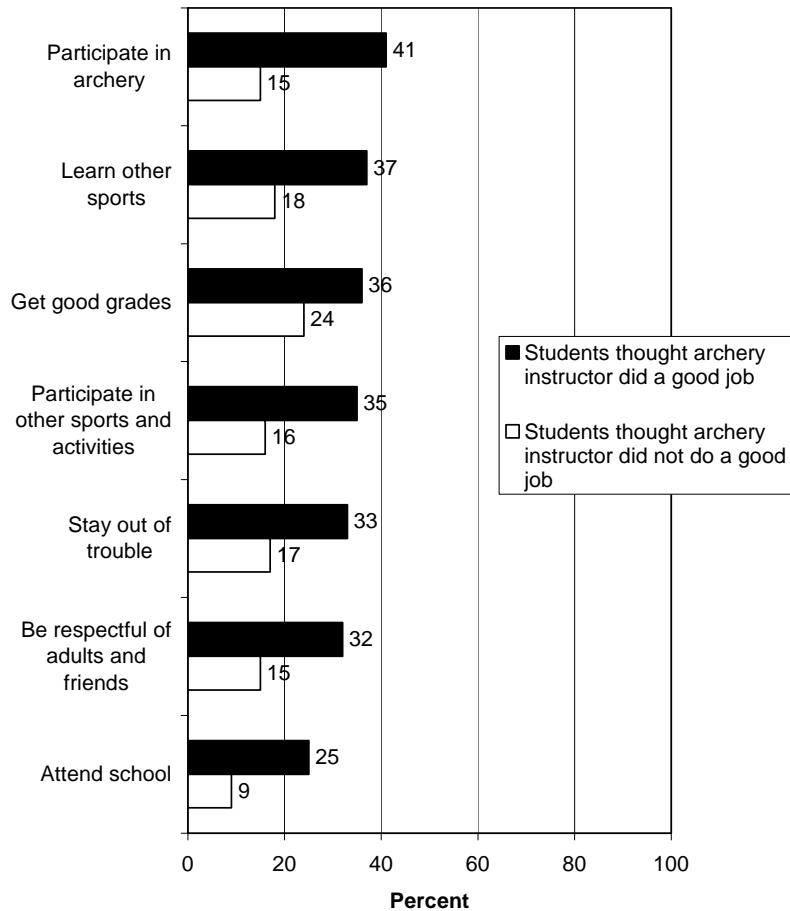


Figure 27. Student Motivation Correlated to Rating of Instructor.

Table 5. Student Motivation Correlated to Rating of Instructor.

| More motivation to: | Instructor Did Good Job | Instructor Did Not Do Good Job | Significance |
|--|--------------------------------|---------------------------------------|---------------------|
| Participate in archery | 41% | 15% | $p \leq 0.001$ |
| Learn other sports | 37% | 18% | $p \leq 0.001$ |
| Get good grades | 36% | 24% | $p \leq 0.001$ |
| Participate in other sports and activities | 35% | 16% | $p \leq 0.001$ |
| Stay out of trouble | 33% | 17% | $p \leq 0.001$ |
| Be respectful of adults and friends | 32% | 15% | $p \leq 0.001$ |
| Attend school | 25% | 9% | $p \leq 0.001$ |

Percent who want to do the following things more after taking archery:

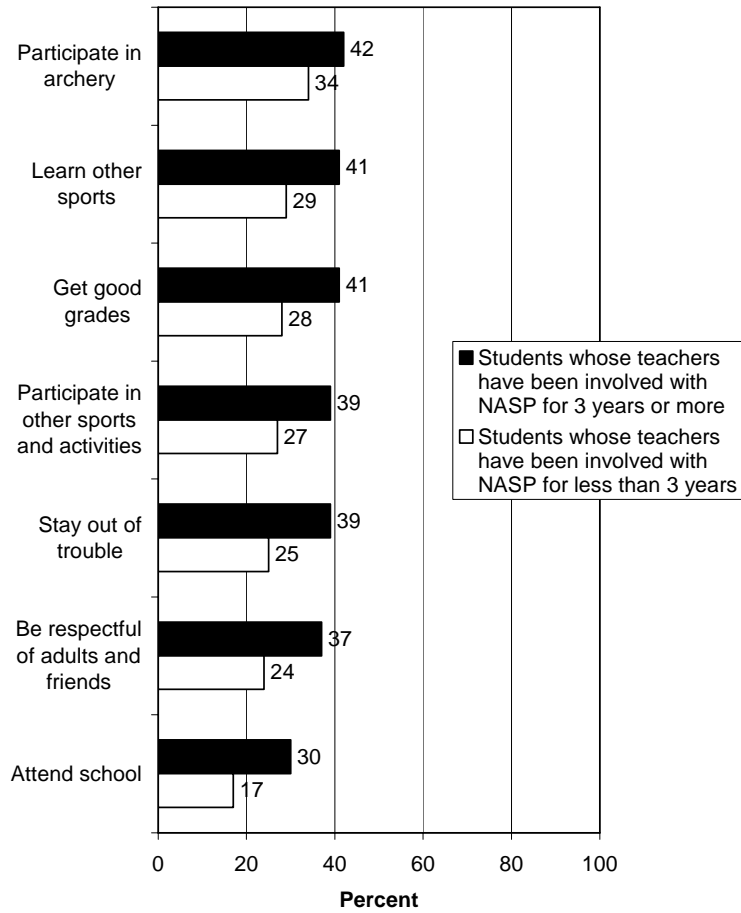


Figure 28. Student Motivation Correlated to Instructor Experience.

Table 6. Student Motivation Correlated to Instructor Experience.

| More motivation to: | 3 Years of Experience or More | Less Than 3 Years of Experience | Significance |
|--|--------------------------------------|--|---------------------|
| Participate in archery | 42% | 34% | $p \leq 0.001$ |
| Learn other sports | 41% | 29% | $p \leq 0.001$ |
| Get good grades | 41% | 28% | $p \leq 0.001$ |
| Participate in other sports and activities | 39% | 27% | $p \leq 0.001$ |
| Stay out of trouble | 39% | 25% | $p \leq 0.001$ |
| Be respectful of adults and friends | 37% | 24% | $p \leq 0.001$ |
| Attend school | 30% | 17% | $p \leq 0.001$ |

Percent who want to do the following things more after taking archery:

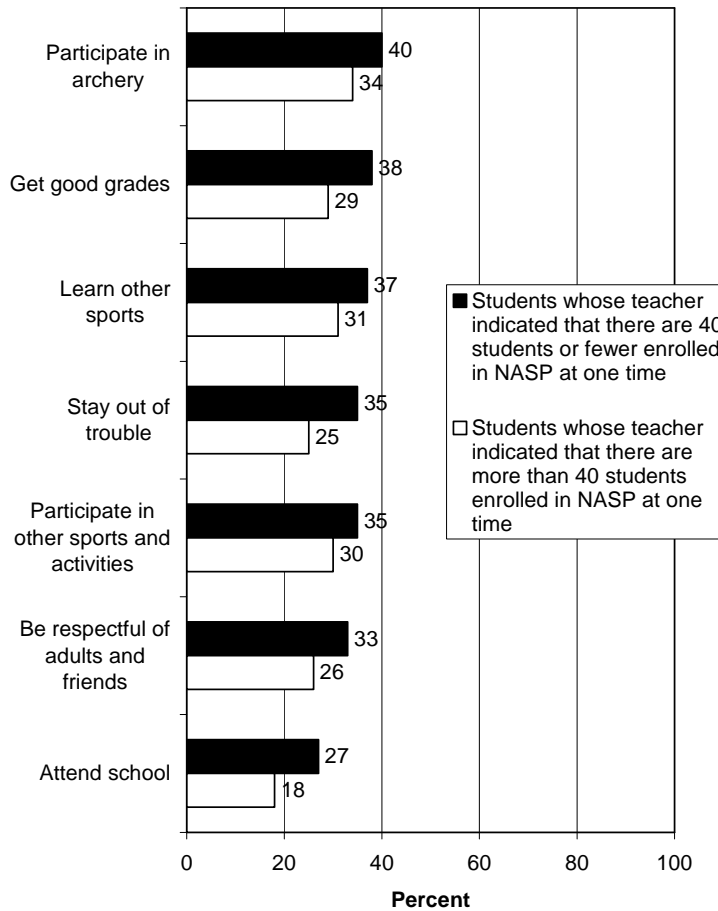


Figure 29. Student Motivation Correlated to Class Size.

Table 7. Student Motivation Correlated to Class Size.

| More motivation to: | Class Has 40 Students or Fewer | Class Has More Than 40 Students | Significance |
|--|---------------------------------------|--|---------------------|
| Participate in archery | 40% | 34% | $p \leq 0.001$ |
| Get good grades | 38% | 29% | $p \leq 0.001$ |
| Learn other sports | 37% | 31% | $p \leq 0.001$ |
| Stay out of trouble | 35% | 25% | $p \leq 0.001$ |
| Participate in other sports and activities | 35% | 30% | $p \leq 0.001$ |
| Be respectful of adults and friends | 33% | 26% | $p \leq 0.001$ |
| Attend school | 27% | 18% | $p \leq 0.001$ |

Percent who want to do the following things more after taking archery:

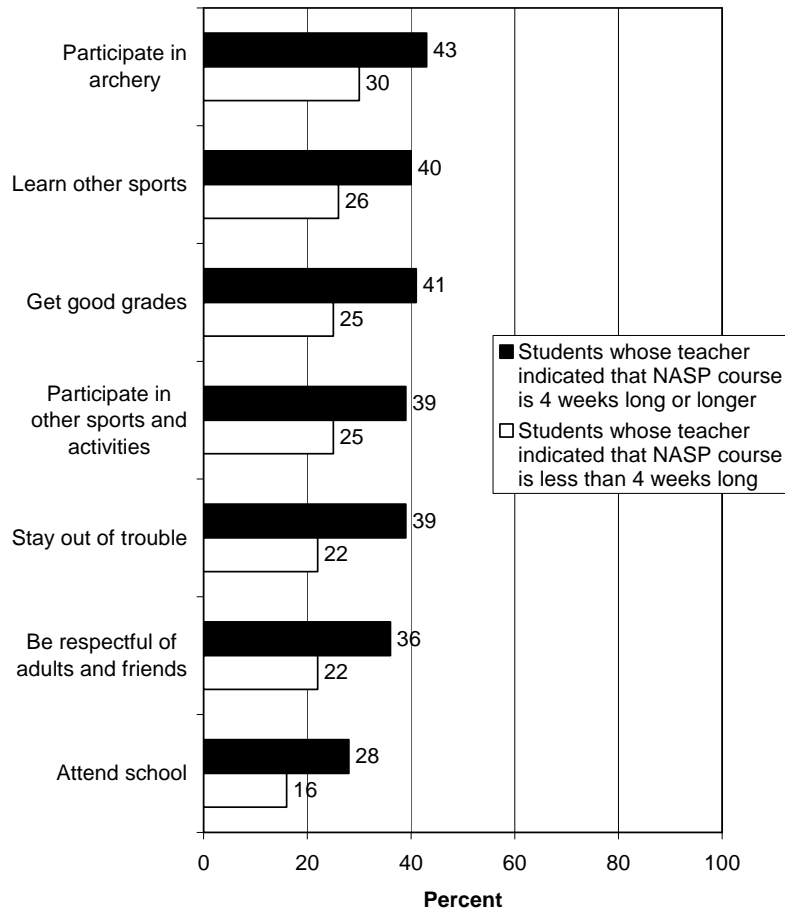


Figure 30. Student Motivation Correlated to Course Length.

Table 8. Student Motivation Correlated to Course Length.

| More motivation to: | Class Is 4 Weeks Long or Longer | Class Is Shorter than 4 Weeks | Significance |
|--|--|--------------------------------------|---------------------|
| Participate in archery | 43% | 30% | $p \leq 0.001$ |
| Learn other sports | 40% | 26% | $p \leq 0.001$ |
| Get good grades | 41% | 25% | $p \leq 0.001$ |
| Participate in other sports and activities | 39% | 25% | $p \leq 0.001$ |
| Stay out of trouble | 39% | 22% | $p \leq 0.001$ |
| Be respectful of adults and friends | 36% | 22% | $p \leq 0.001$ |
| Attend school | 28% | 16% | $p \leq 0.001$ |

Students' motivations in the several aspects of school and life about which the survey asked are correlated to students' excitement (or lack of) with archery. Students who are very excited about archery are more motivated to do the various things subsequent to the NASP, compared to students who are only a little excited or not excited (Figure 31). These differences are statistically significant (Table 9).

Percent who want to do the following things more after taking archery:

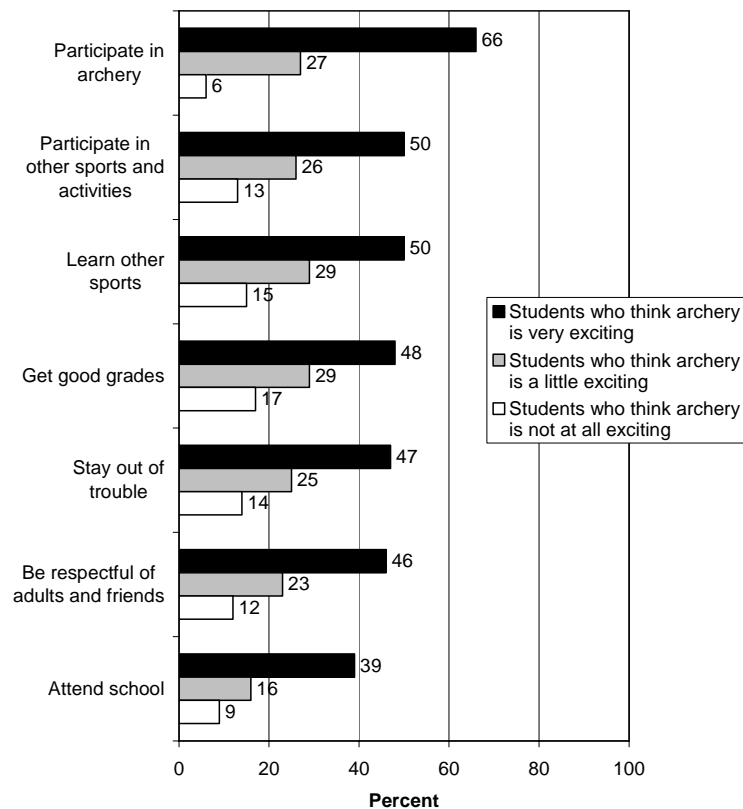


Figure 31. Student Motivation Correlated to Excitement with Archery.

Table 9. Student Motivation Correlated to Excitement with Archery.

| More motivation to: | Program Very Exciting | Program a Little Exciting | Program Not at All Exciting | Significance |
|--|-----------------------|---------------------------|-----------------------------|----------------|
| Participate in archery | 66% | 27% | 6% | $p \leq 0.001$ |
| Participate in other sports and activities | 50% | 26% | 13% | $p \leq 0.001$ |
| Learn other sports | 50% | 29% | 15% | $p \leq 0.001$ |
| Get good grades | 48% | 29% | 17% | $p \leq 0.001$ |
| Stay out of trouble | 47% | 25% | 14% | $p \leq 0.001$ |
| Be respectful of adults and friends | 46% | 23% | 12% | $p \leq 0.001$ |
| Attend school | 39% | 16% | 9% | $p \leq 0.001$ |

Students' motivations in the several aspects of school and life about which the survey asked are correlated to whether or not they belong to an archery team or club. Students on a team or in a club show higher motivations after NASP, relative to those not on a team/in a club (Figure 32). These differences are statistically significant (Table 10).

Percent who want to do the following things more after taking archery:

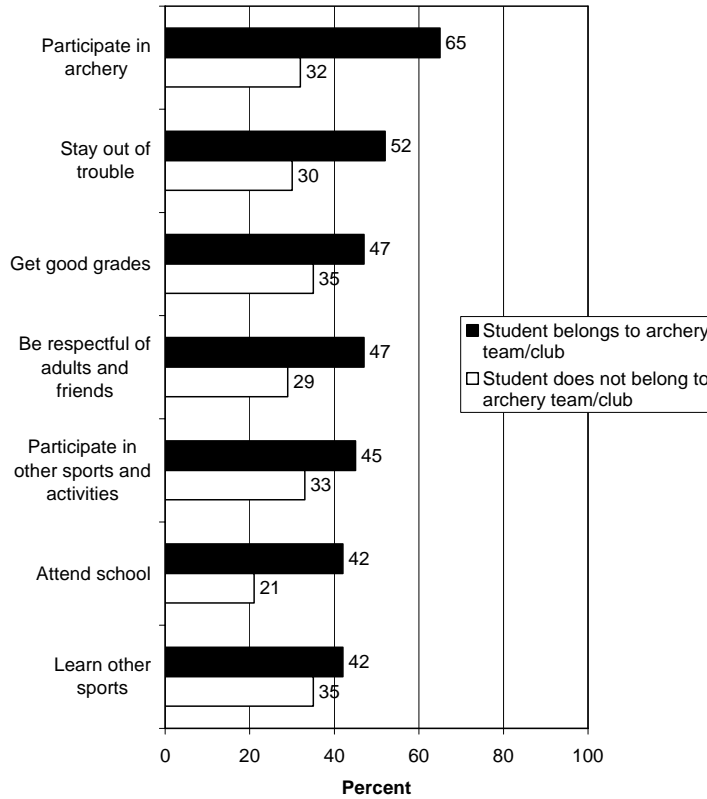


Figure 32. Student Motivation Correlated to Team/Club Membership.

Table 10. Student Motivation Correlated to Team/Club Membership.

| More motivation to: | Belongs To Team/Club | Does Not Belong To Team/Club | Significance |
|--|----------------------|------------------------------|----------------|
| Participate in archery | 65% | 32% | $p \leq 0.001$ |
| Stay out of trouble | 52% | 30% | $p \leq 0.001$ |
| Get good grades | 47% | 35% | $p \leq 0.001$ |
| Be respectful of adults and friends | 47% | 29% | $p \leq 0.001$ |
| Participate in other sports and activities | 45% | 33% | $p \leq 0.001$ |
| Attend school | 42% | 21% | $p \leq 0.001$ |
| Learn other sports | 42% | 35% | $p \leq 0.05$ |

Student Improvement in Self-Confidence

The survey also asked students if the NASP affected their confidence in several different areas. Again, the percentage of NASP students who indicated that the NASP made them feel better about each area far exceeded the percentage of students who indicated that the NASP made them feel worse (Figure 33). More a quarter (26%) of NASP students reported that they feel better about participating in other sports and physical activities after taking archery in school. Many students also said that they feel better about friendships with other students (24%), about their relationships with teachers (19%), and about their ability to do their school work (17%) (Table 11).

Table 11. Effect of the NASP on Self-Confidence in Relationships with Teachers, on Other Sports, on Friendships, and on Schoolwork.

| Self-confidence about: | Better | Same | Worse |
|--------------------------------------|---------------|-------------|--------------|
| Other sports and physical activities | 26% | 56% | 2% |
| Friendships with other students | 24% | 60% | 2% |
| Relationships with teachers | 19% | 61% | 2% |
| School work | 17% | 66% | 2% |

**Q32. Percent who feel better/worse about the following after taking archery:
(NASP Students)**

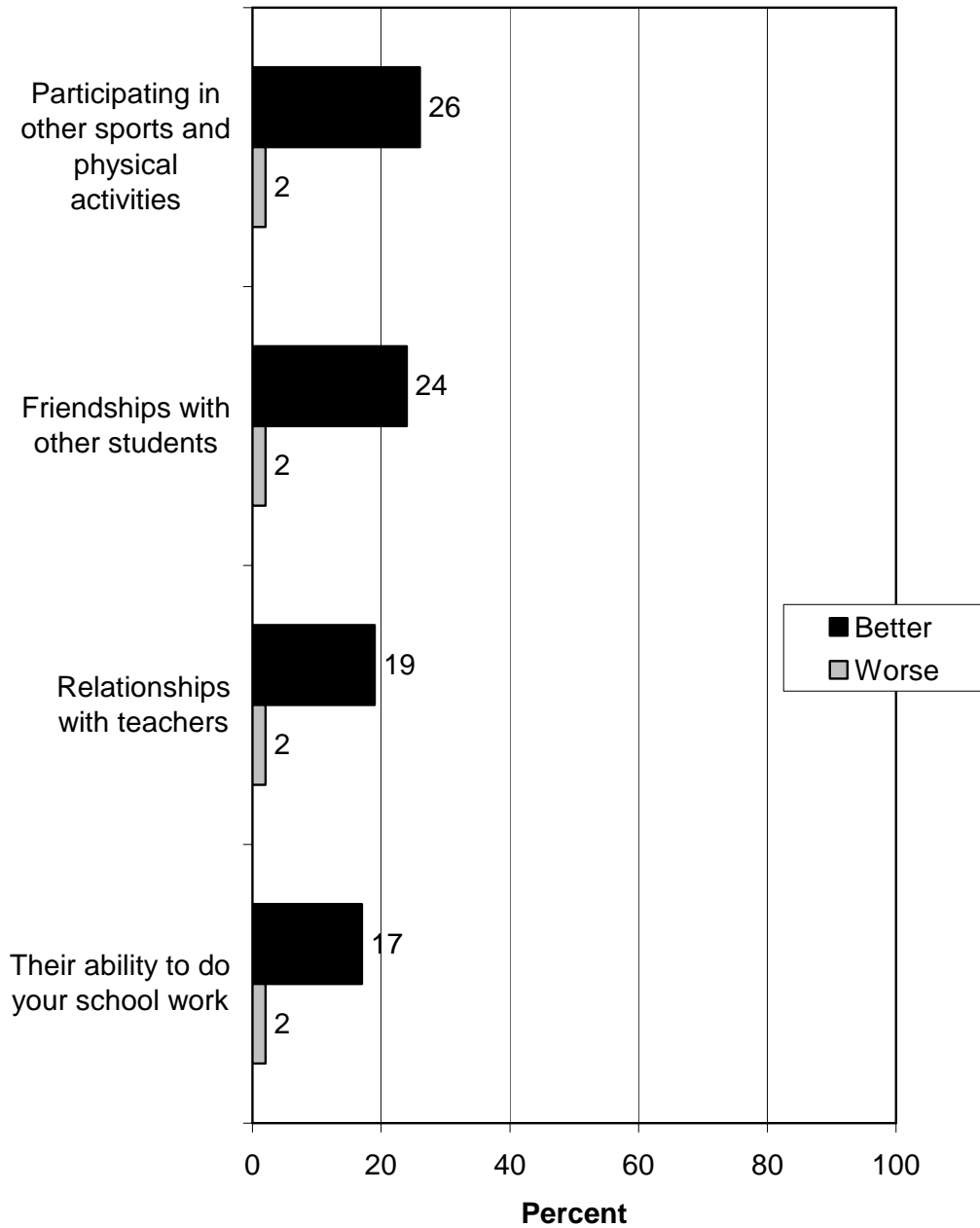


Figure 33. Effect of the NASP on Self-Confidence.

Characteristics Associated with Student Self-Confidence

Students' ratings of self-confidence are correlated to the aforementioned factors in the delivery of the NASP instruction. Students who thought that their instructor did a good job, relative to those who did not, show greater self-confidence in various aspects of school and life (Figure 34), and the differences are statistically significant (Table 12). Likewise, students whose teachers have been teaching NASP for 3 or more years, relative to students whose teachers have been teaching it for less than 3 years, show more self-confidence (Figure 35). Those differences are statistically significant (Table 13). Class size is correlated to subsequent self-confidence, as well. Smaller NASP classes are correlated with more self-confidence (Figure 36). These differences are statistically significant (Table 14). Lastly, the length of the course is correlated to self-confidence. Students who took an archery course of 4 weeks long or longer show more self-confidence than do students who took shorter archery courses (Figure 37). These differences also are statistically significant (Table 15). These graphs and tables start on the following page.

Percent who feel better about the following after taking archery:

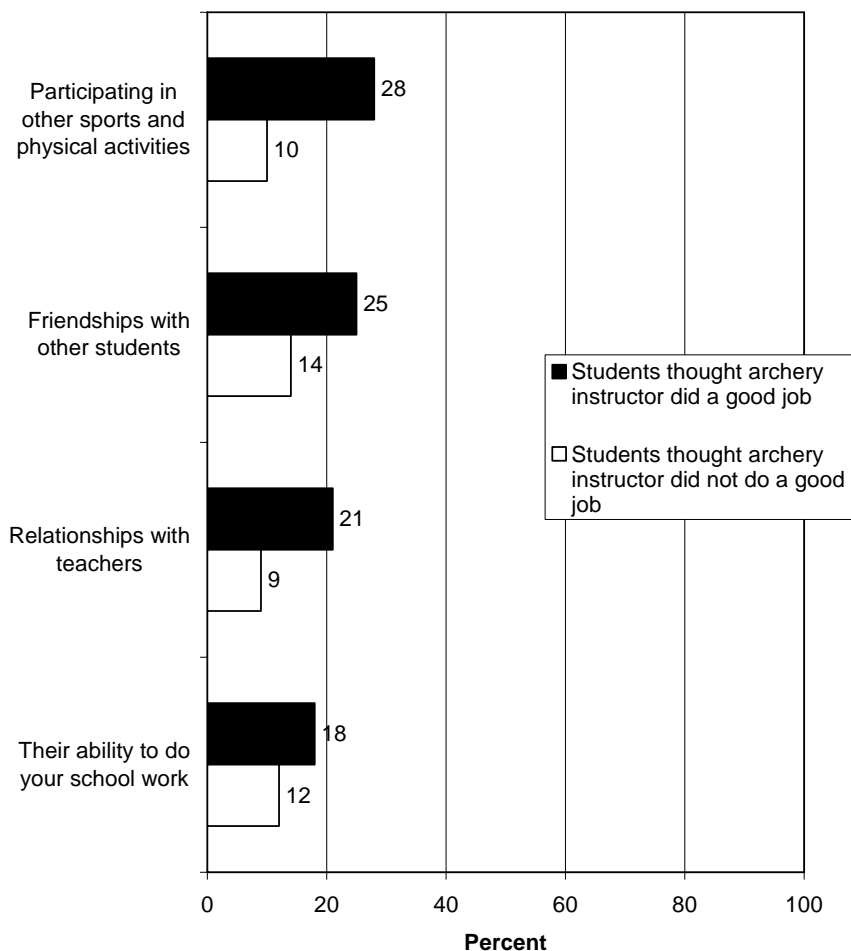


Figure 34. Self-Confidence Correlated to Rating of Instructor.

Table 12. Self-Confidence Correlated to Rating of Instructor.

| More self-confidence about: | Instructor Did Good Job | Instructor Did Not Do Good Job | Significance |
|--------------------------------------|--------------------------------|---------------------------------------|---------------------|
| Other sports and physical activities | 28% | 10% | $p \leq 0.001$ |
| Friendships with other students | 25% | 14% | $p \leq 0.001$ |
| Relationships with teachers | 21% | 9% | $p \leq 0.001$ |
| School work | 18% | 12% | $p \leq 0.001$ |

Percent who feel better about the following after taking archery:

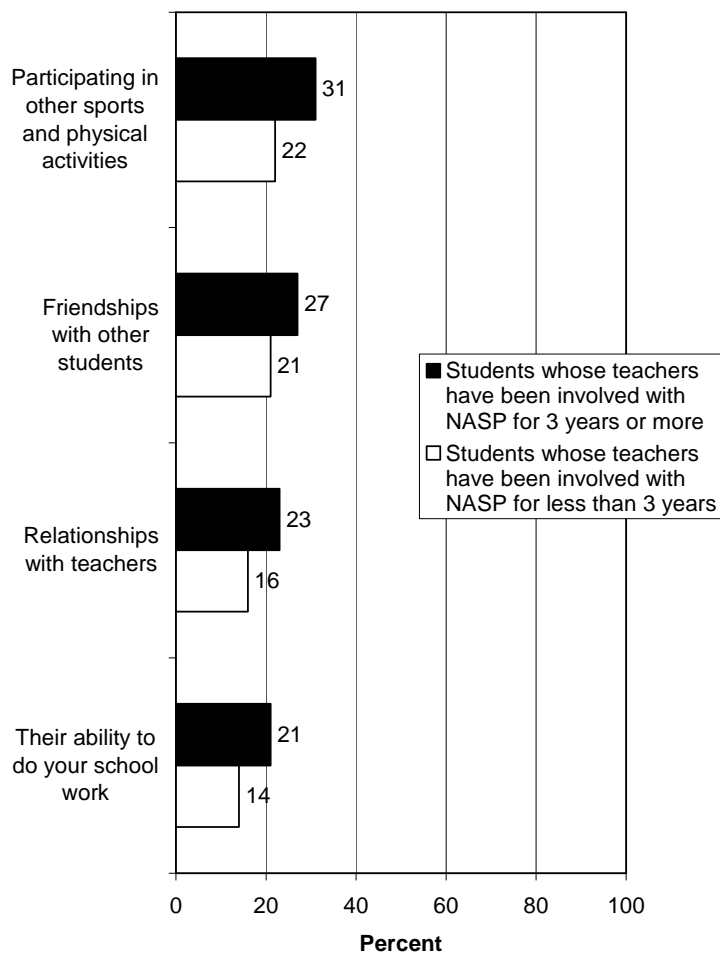


Figure 35. Self-Confidence Correlated to Instructor Experience.

Table 13. Self-Confidence Correlated to Instructor Experience.

| More self-confidence about: | 3 Years of Experience or More | Less Than 3 Years of Experience | Significance |
|--------------------------------------|--------------------------------------|--|---------------------|
| Other sports and physical activities | 31% | 22% | $p \leq 0.001$ |
| Friendships with other students | 27% | 21% | $p \leq 0.001$ |
| Relationships with teachers | 23% | 16% | $p \leq 0.001$ |
| School work | 21% | 14% | $p \leq 0.001$ |

Percent who feel better about the following after taking archery:

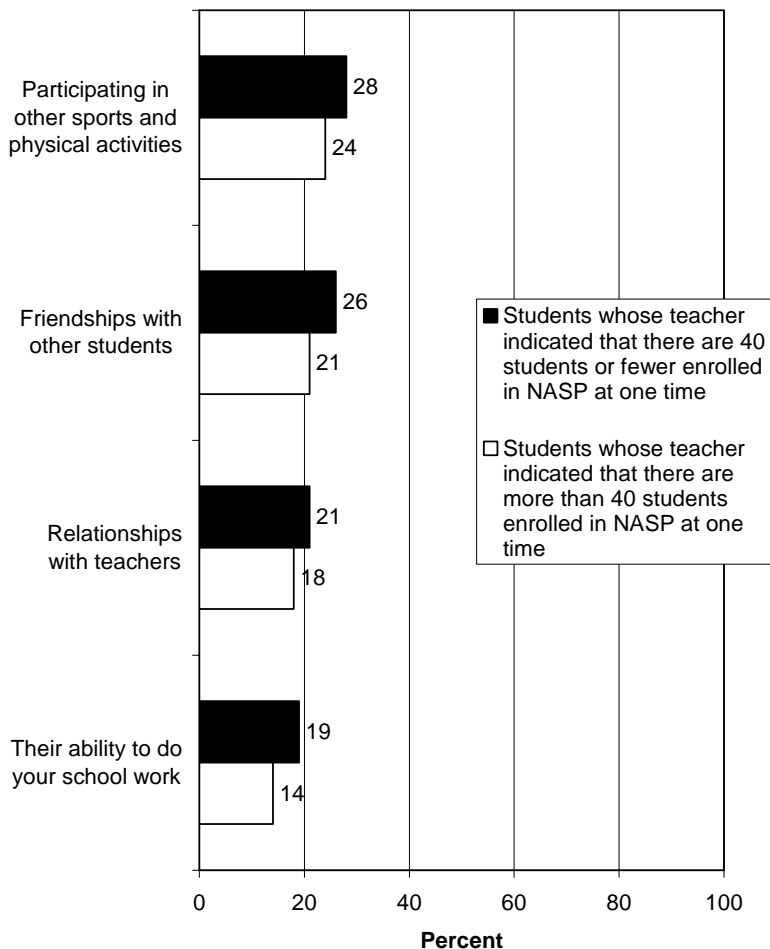


Figure 35. Self-Confidence Correlated to Class Size.

Table 14. Self-Confidence Correlated to Class Size.

| More self-confidence about: | Class Has 40 Students or Fewer | Class Has More Than 40 Students | Significance |
|--------------------------------------|---------------------------------------|--|---------------------|
| Other sports and physical activities | 28% | 24% | $p \leq 0.001$ |
| Friendships with other students | 26% | 21% | $p \leq 0.001$ |
| Relationships with teachers | 21% | 18% | $p \leq 0.001$ |
| School work | 19% | 14% | $p \leq 0.001$ |

Percent who feel better about the following after taking archery:

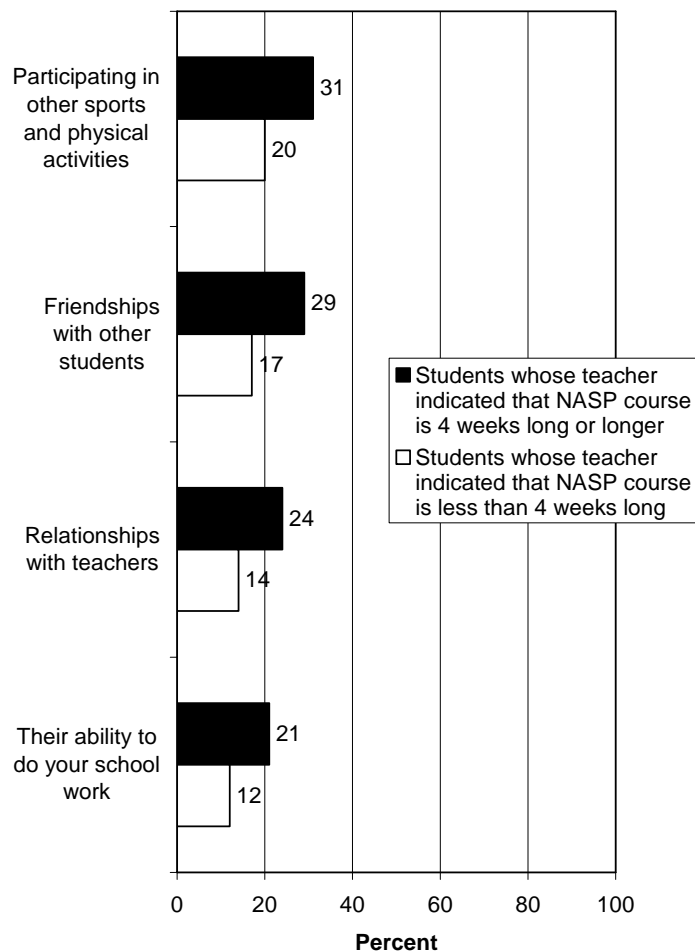


Figure 37. Self-Confidence Correlated to Course Length.

Table 15. Self-Confidence Correlated to Course Length.

| More self-confidence about: | Class Is 4 Weeks Long or Longer | Class Is Shorter than 4 Weeks | Significance |
|--------------------------------------|--|--------------------------------------|---------------------|
| Other sports and physical activities | 31% | 20% | $p \leq 0.001$ |
| Friendships with other students | 29% | 17% | $p \leq 0.001$ |
| Relationships with teachers | 24% | 14% | $p \leq 0.001$ |
| School work | 21% | 12% | $p \leq 0.001$ |

The data show a correlation between self-confidence and students' excitement with archery. Students who are very excited about archery show more self-confidence subsequent to NASP, compared to students who are only a little excited or not excited (Figure 38). These differences are statistically significant (Table 16).

Percent who feel better about the following after taking archery:

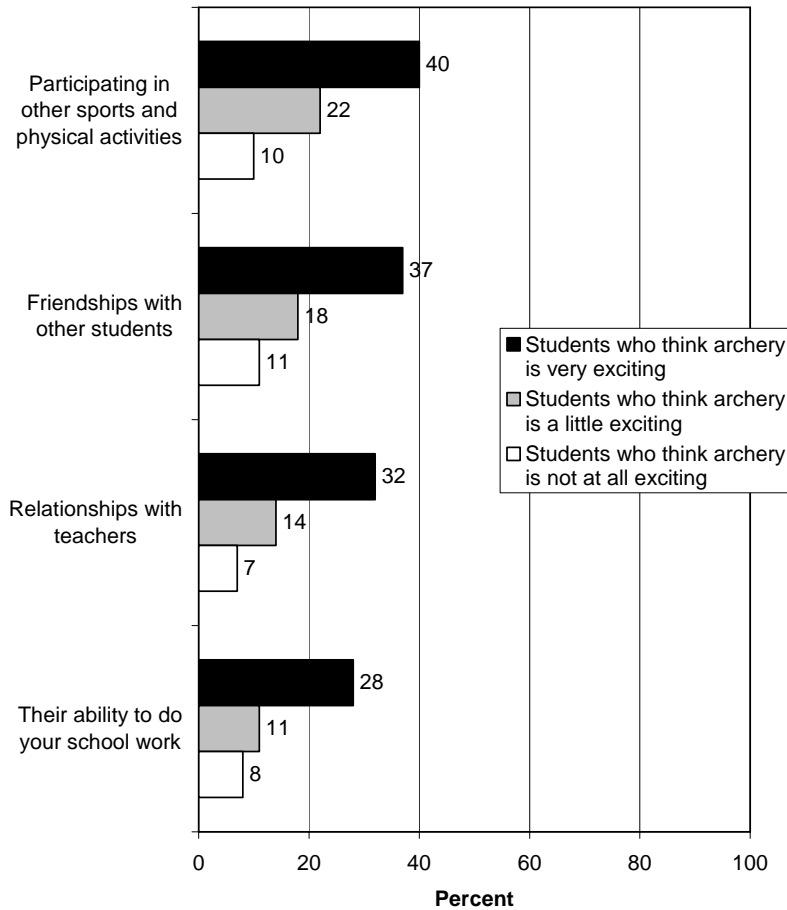


Figure 38. Self-Confidence Correlated to Excitement with Archery.

Table 16. Self-Confidence Correlated to Excitement with Archery.

| More self-confidence about: | Program Very Exciting | Program a Little Exciting | Program Not at All Exciting | Significance |
|--------------------------------------|-----------------------|---------------------------|-----------------------------|----------------|
| Other sports and physical activities | 40% | 22% | 10% | $p \leq 0.001$ |
| Friendships with other students | 37% | 18% | 11% | $p \leq 0.001$ |
| Relationships with teachers | 32% | 14% | 7% | $p \leq 0.001$ |
| School work | 28% | 11% | 8% | $p \leq 0.001$ |

Self-confidence is correlated to whether or not students belong to an archery team or club. Students on a team or in a club have more self-confidence, relative to those not on a team/in a club (Figure 39). These differences are statistically significant (Table 17).

Percent who feel better about the following after taking archery:

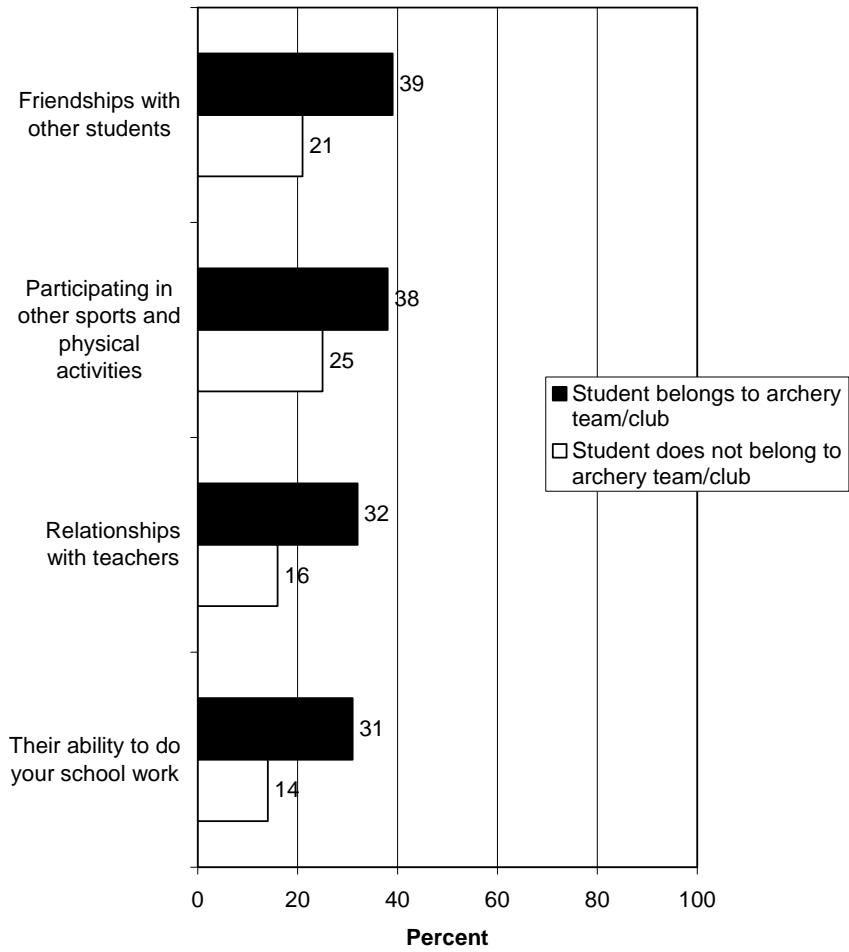


Figure 39. Self-Confidence Correlated to Team/Club Membership.

Table 17. Self-Confidence Correlated to Team/Club Membership.

| More self-confidence about: | Belongs To Team/Club | Does Not Belong To Team/Club | Significance |
|--------------------------------------|----------------------|------------------------------|----------------|
| Friendships with other students | 39% | 21% | $p \leq 0.001$ |
| Other sports and physical activities | 38% | 25% | $p \leq 0.001$ |
| Relationships with teachers | 32% | 16% | $p \leq 0.001$ |
| School work | 31% | 14% | $p \leq 0.001$ |

Conclusions About Hypothesis 2: Through Archery, Students Improve Learning Skills and Attitudes

These data suggest that the NASP positively affects students' learning skills and attitudes.

Archery Improves Student Concentration and Focus. More than a quarter (26%) of NASP students think that they pay more attention in archery class than they do in other classes, a percentage that is more than triple the percentage of students who indicate that they pay *less* attention in archery than in other classes (8%). Students are also more likely to say that they learned how to pay attention better in archery (50%) than to say that they do not (32%). Further, among those students who indicate that they learn how to pay attention and focus better in archery, a large majority (64%) indicate that their experience in NASP helps them pay attention or focus better in learning *other things*.

Archery Improves Student Motivation. When NASP students are asked about whether the archery program gives them more, the same, or less motivation in several aspects of school and life, NASP students more often say that the NASP gives them more motivation than say it gives them less motivation. For most aspects, about a third of NASP students indicate that the NASP has a positive effect on their motivation; typically, less than 5% give a negative answer. Substantial percentages of NASP students say the program gives them more motivation to participate in archery (37%), to learn other sports (34%), to get good grades (34%), to participate in other sports and activities (32%), to stay out of trouble (31%), to be respectful of adults and friends (30%), and to attend school (23%).

Archery Improves Student Self-Confidence. The survey also asked students if the NASP affects their confidence in several different areas. Again, the percentage of NASP students who indicate that the NASP gives them more self-confidence in each area far exceeds the percentage of students who indicate that the NASP gives them less self-confidence. More a quarter (26%) of NASP students report that they feel better about participating in other sports and physical activities after taking archery in school. Many students also say that they feel better about friendships with other students (24%), about their relationships with teachers (19%), and about their ability to do their school work (17%).

Summary of Evidence for the Effects on Student Learning Skills and Attitudes. The findings in this section provide some evidence that the NASP has a positive effect on student learning skills and attitudes. Across these output effects on learning skills and attitudes, students typically say they learn how to pay attention or focus better in archery, and this better focus and concentration transfers to other areas of school and their life. The data suggest that students who have participated in the archery program demonstrate an increased interest in and motivation to learn and participate in other sports, and they increase their confidence in general. Finally, the data suggest that the NASP has a positive effect on students' relationships with others.

Hypothesis 3: Archery Positively Affects Students' Interest in Archery and Other Sports, and Student Participation in the Archery Program Positively Affects Family Interest in Archery

For the analysis of this hypothesis, students reported on the effect that the program had on their interest and involvement in archery and other sports. Studies indicate that student involvement and participation in sports and extracurricular activities offers a more rounded academic experience and appears to contribute to increased self-confidence and a sense of belonging. Because there is a correlation between physical activities and student learning skills and behaviors, increasing student interest in various sports may encourage students to participate more fully in their academic experience, thereby affecting their overall performance. Possible indicators of student interest in archery include participation in the sport following the NASP, pursuit of additional information about archery, and investment in archery equipment.

The analysis also explored the program's effect on family interest and participation in archery. Within the context of this hypothesis, the NASP has a dual mission: promoting student interest and participation in the sport of archery, and promoting family interest and participation in archery. Numerous studies indicate that early initiation into the shooting sports is vital to recruitment and retention. Further, initiation into these sports almost always occurs within the context of the family. Because most hunters and sport shooters start in childhood and younger initiation is correlated with greater avidity and retention, establishing a culture that embraces these activities is crucial to increased participation; in short, family participation and mentoring play a key role in children's and youth's interest in the shooting sports (Responsive Management/National Shooting Sports Foundation, 2008). Because of the program's dual mission, it is important to assess its impact on family interest and participation in archery. For this hypothesis, students reported on the effect of the program on their family's interest and participation in archery.

For this hypothesis, control students were asked similar questions to assess their overall interest in archery in comparison to the students who took the NASP. The results of the control survey are presented where comparisons with the NASP student survey allow.

Increase in Student Involvement in Archery

A graph shows the percentage of NASP students who participated in archery at various levels of frequency before taking archery, the percentage of them who now participate, and the percentage of control students who participate, clearly showing the increase in participation among those who have had archery classes (Figure 40).

Q2a/Q2b. How often did/do you participate in archery before/after you took archery in school? / Q12a. How often do you do archery?

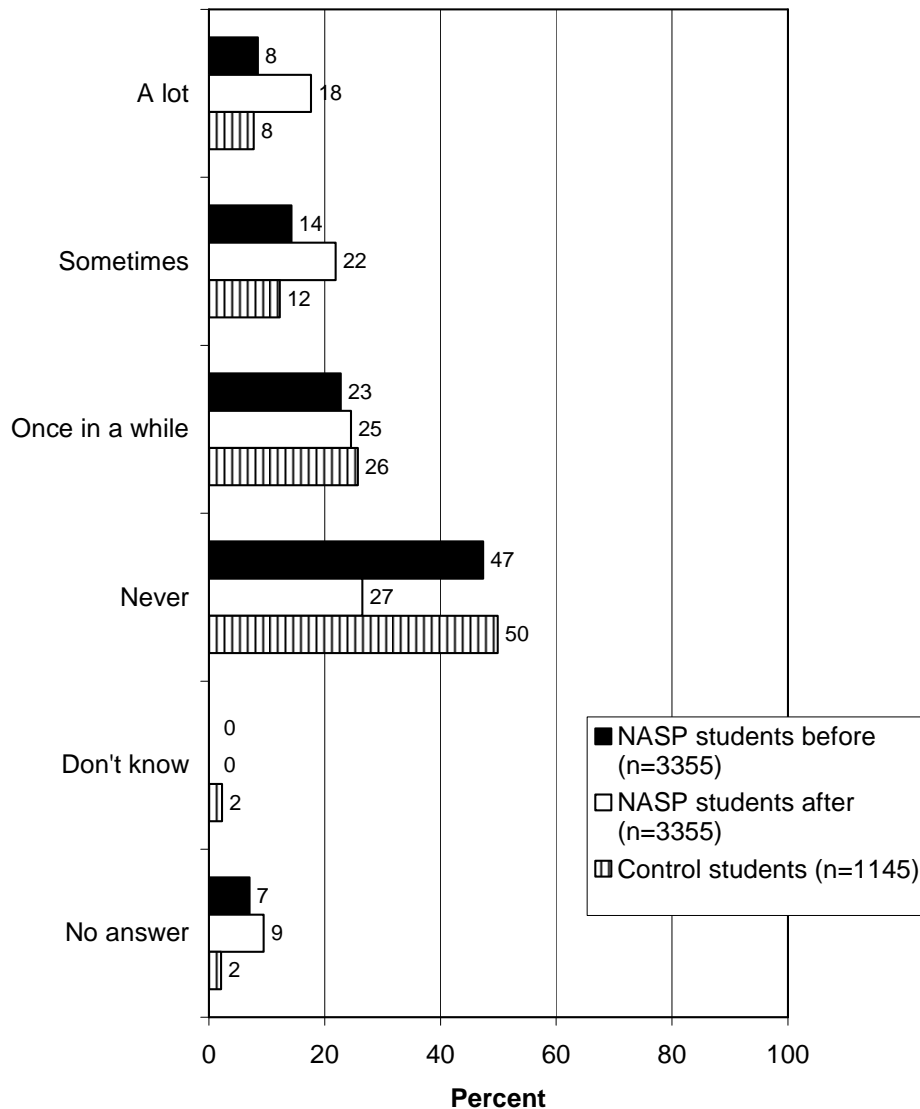


Figure 40. Effect of the NASP on Student Participation in Archery.

Increase in Student Interest in Archery, Hunting, and Other Shooting Sports

Figure 41 shows that 48% of NASP students reported that they think that they will participate in archery in the future, compared to 31% who do *not* think that they will participate. The NASP appears to have an impact on student interest in other shooting sports, as well. A substantial percentage of NASP students (32%) express more interest in other shooting sports after taking archery (Figure 42).

Q35. Do you think you will participate in archery in the future? (NASP Students)

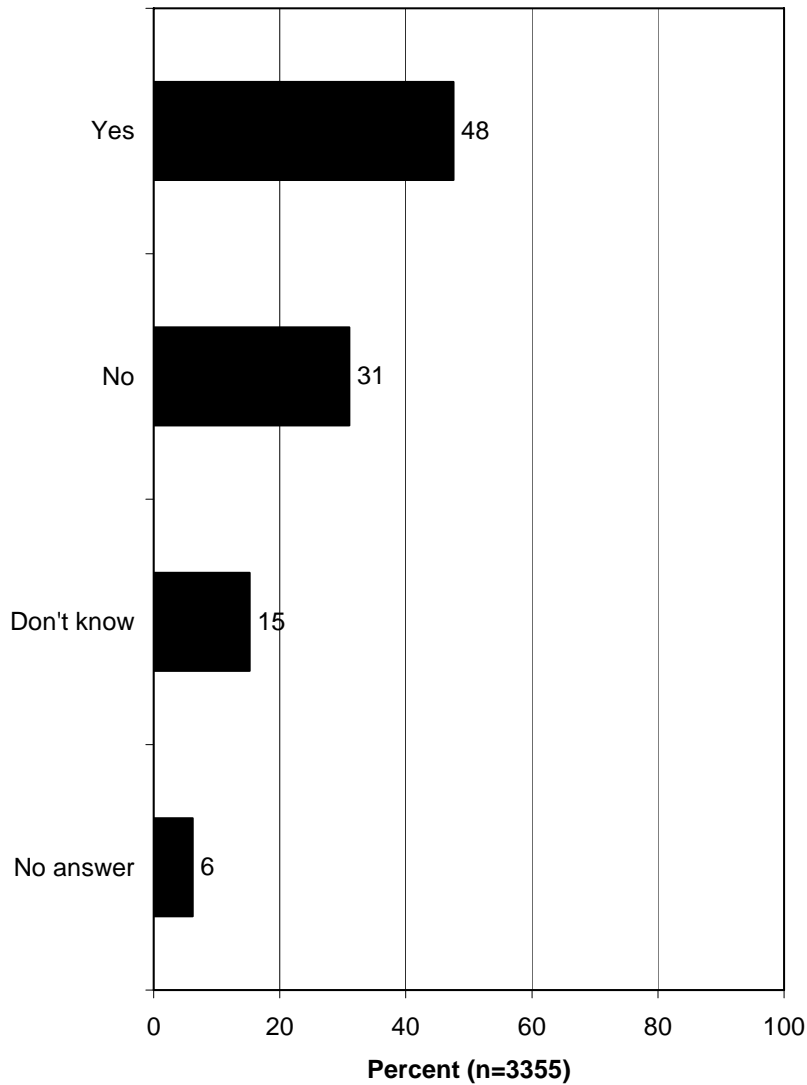


Figure 41. Effect of the NASP on Interest in Future Archery Participation.

**Q37. How has archery affected your interest in other shooting sports (hunting or target shooting, for example)?
(NASP Students)**

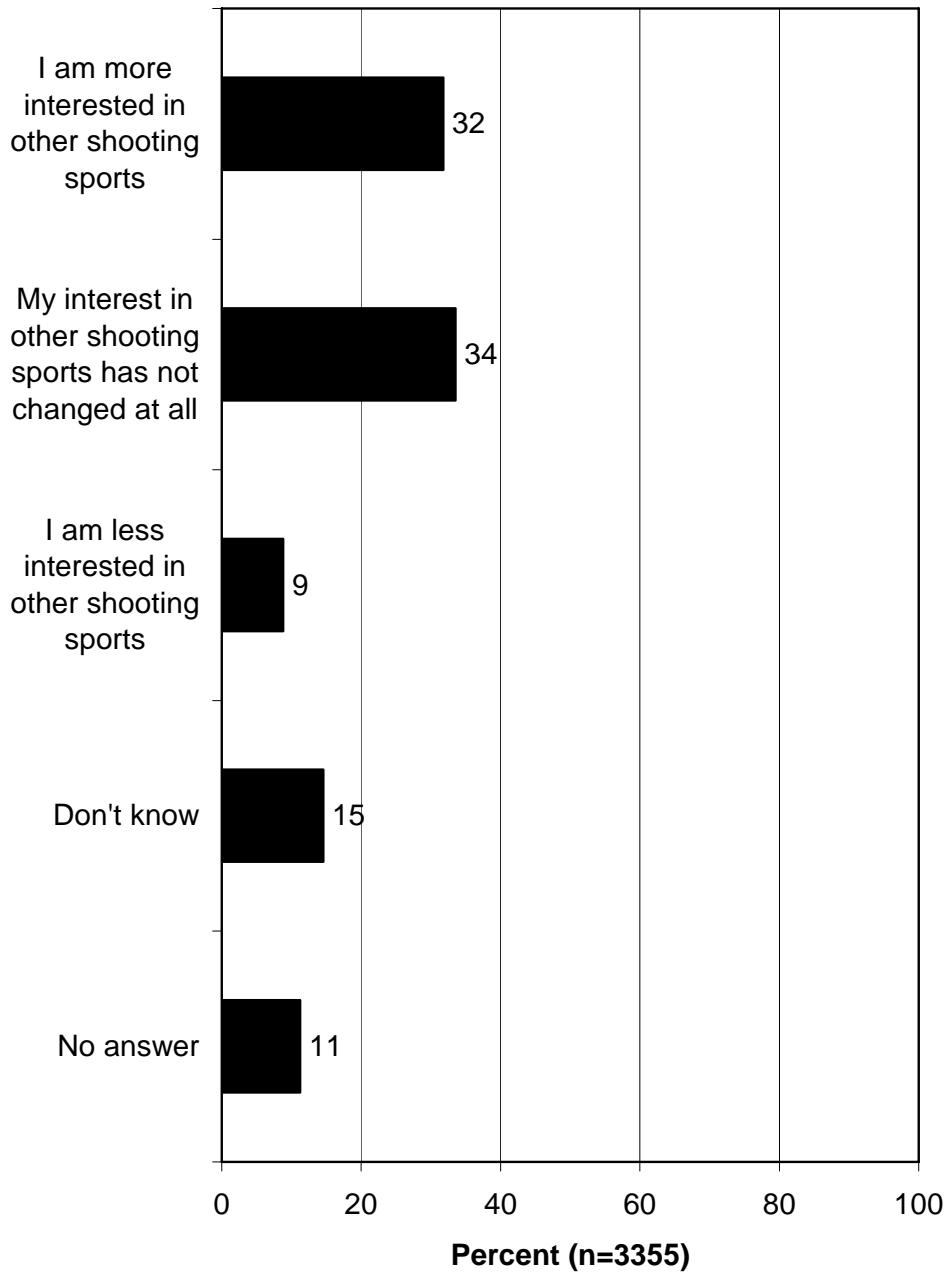


Figure 42. Archery's Effect on Student Interest in Other Shooting Sports.

Increase in Family Participation in Archery

As shown in Figure 43, NASP students who think that they will participate in archery in the future say they are most likely to go with a friend (58% of those who plan to go). However, at nearly as high a percentage is father (53% of those who plan to go), and at a fairly high percentage is brother (35%). Cousins (35%) and uncles (27%) are also prominent. These percentages indicate robust family participation.

Q36. With whom do you think you will participate in archery? (Asked of students who think that they will participate in archery in the future.) (NASP Students)

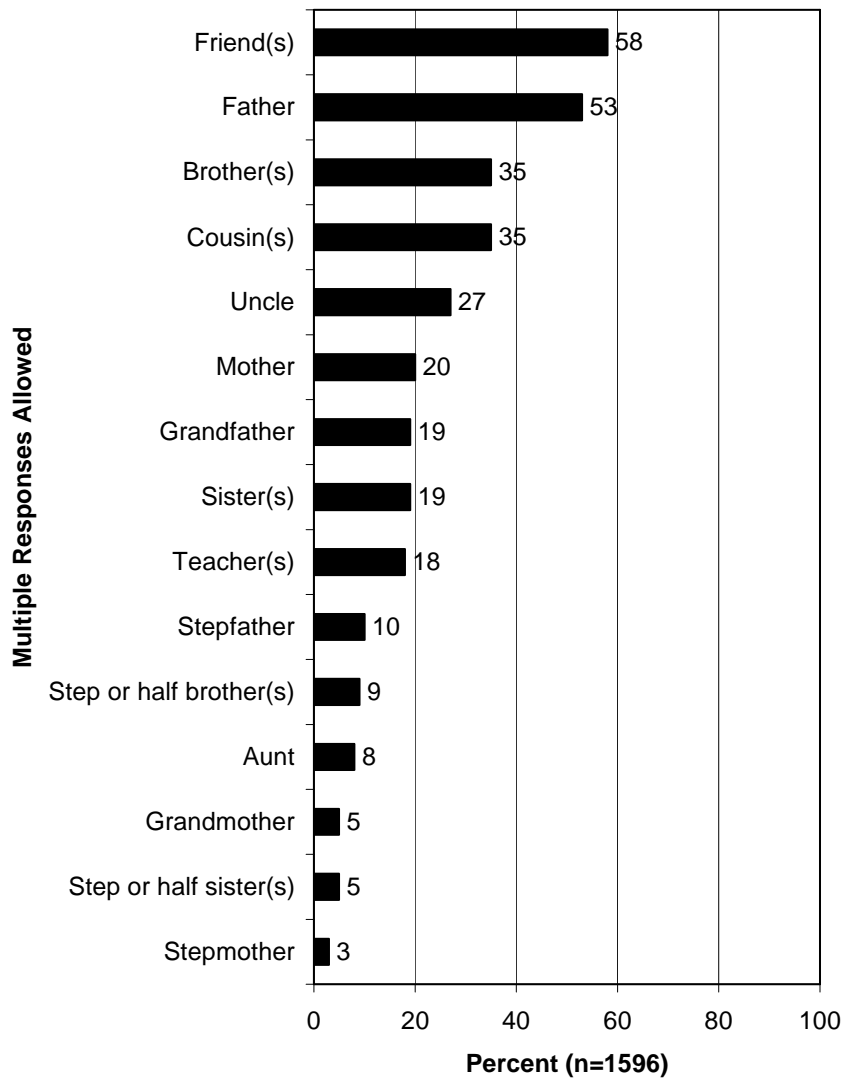


Figure 43. Students' Family Participation in Archery.

When asked specifically about how their participation in the archery program affected their family's interest in archery, a small, but not insubstantial, percentage (11%) of NASP students indicated that their family is more interested in archery (Figure 44).

**Q42. How has your participation in the archery program affected your family's interest in archery?
(NASP Students)**

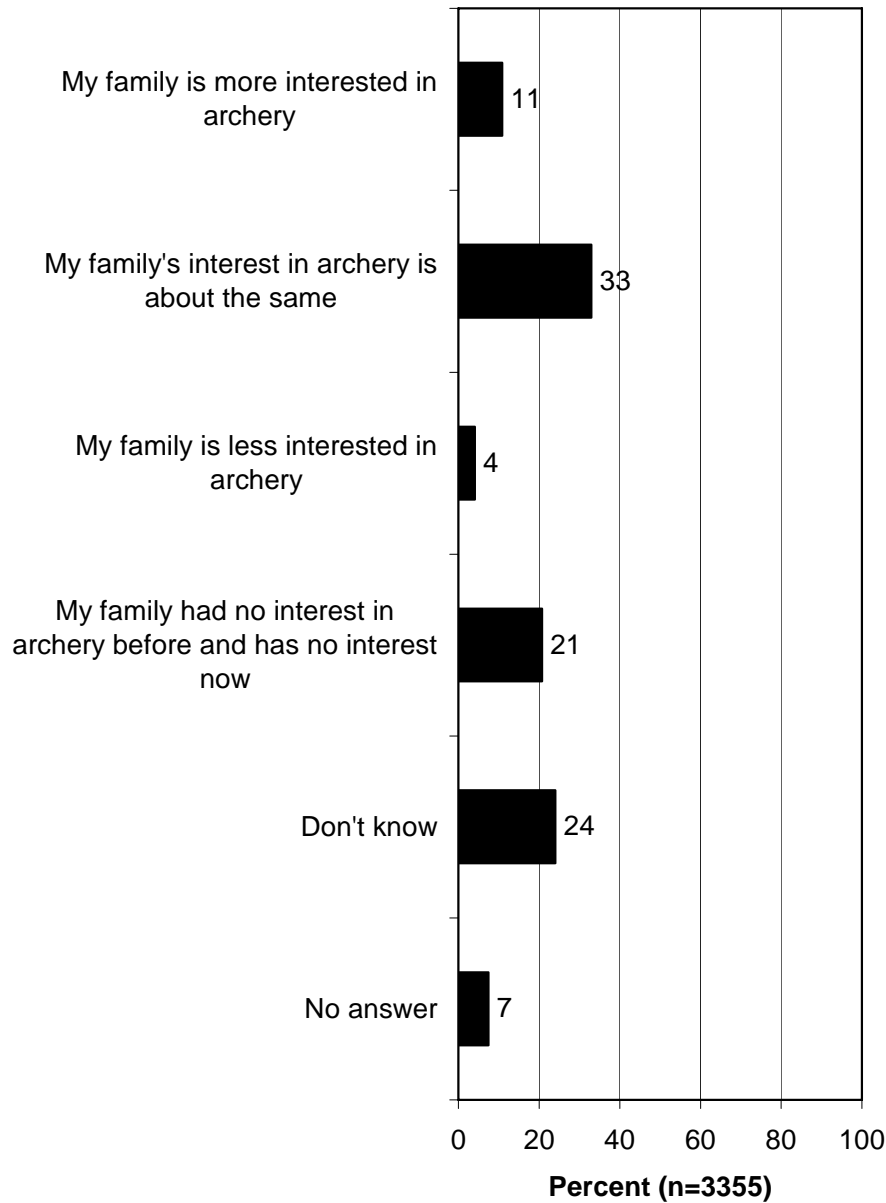


Figure 44. Effect of Student Participation in Archery on Family Interest in Archery.

Conclusions About Hypothesis 3: Archery Affects Student Interest in Archery and Other Sports, and Student Participation in the Archery Program Positively Affects Family Interest in Archery

These data suggest that the NASP positively affects student interest in archery and other sports.

The NASP Increases Student Involvement in Archery. Just over half (53%) of NASP students indicate participating in archery since taking it in school. Nearly half of NASP students (48%) report that they plan to participate in archery in the future, compared to 31% who do not plan to participate in archery. Also, NASP students participate in archery at a greater rate than do control students.

The NASP Increases Student Interest in Archery, Hunting, and Other Shooting Sports.

The data suggest that the NASP has a positive impact on student interest in hunting and other shooting sports, with 32% of NASP students expressing more interest in hunting and other shooting sports after taking the archery program in school.

The NASP Increases Family Interest in Archery. Fairly high percentages of NASP students who think that they will participate in archery in the future say they will likely go with their father (51%) and/or their brother (35%)—an indication of robust family participation. While these results are not necessarily indicative of an increase in family interest, they offer evidence of the student's and his/her family's continued participation in the sport. Other results suggest that the NASP appears to have a slight effect on family participation in archery: 11% of NASP students indicate that the NASP increases their family's interest in archery.

Summary of the Effect of the NASP on Interest in Archery and Other Sports. In these data on outcomes, there is evidence that the NASP affects student involvement in archery and student interest in archery, hunting, and other shooting sports. More than half of NASP students (53%) indicate that they have participated in archery since taking it in school, and 48% report that they plan to participate in the future. Further, almost a third of NASP students (32%) indicate that they are more interested in other shooting sports since taking the archery program in school.

Hypothesis 4: Archery Positively Affects Student Attendance and Performance in School

For this hypothesis, students were asked to self-report their attendance and performance in school. This section of the survey explored the impact of the NASP on student performance and attendance.

Improvement in Attendance in School and in P.E.

Any effort to improve student attendance at school would undoubtedly be furthered by helping the student develop a positive attitude about school, which the NASP apparently does. NASP students were about eight times more likely to say that archery makes school better (33%) than to say that archery makes school worse (4%) (Figure 45). This finding is consistent with the previously reported finding that 33% of NASP students look forward to going to school *more* on days they have archery (see Figure 4). However, other findings do not show that the NASP positively affects attendance in school, nor in P.E. class, as shown in Figures 46 and 47 (although the findings show that NASP does *not* negatively affect attendance, either).

**Q14. Did the archery program make school better, about the same, or worse?
(NASP Students)**

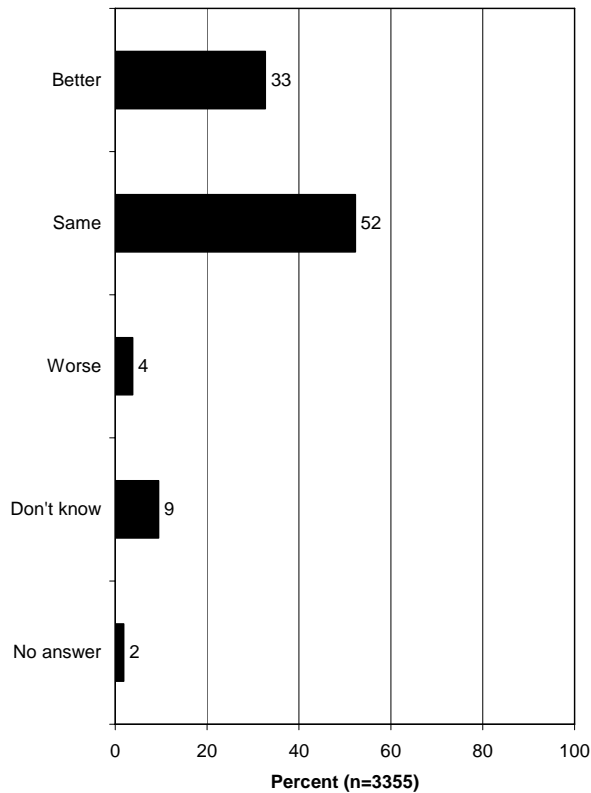


Figure 45. Impact of the NASP on Feelings About School.

Q16a/Q16b. How was your attendance in school before/after taking archery? / Q6. How is your overall attendance in school?

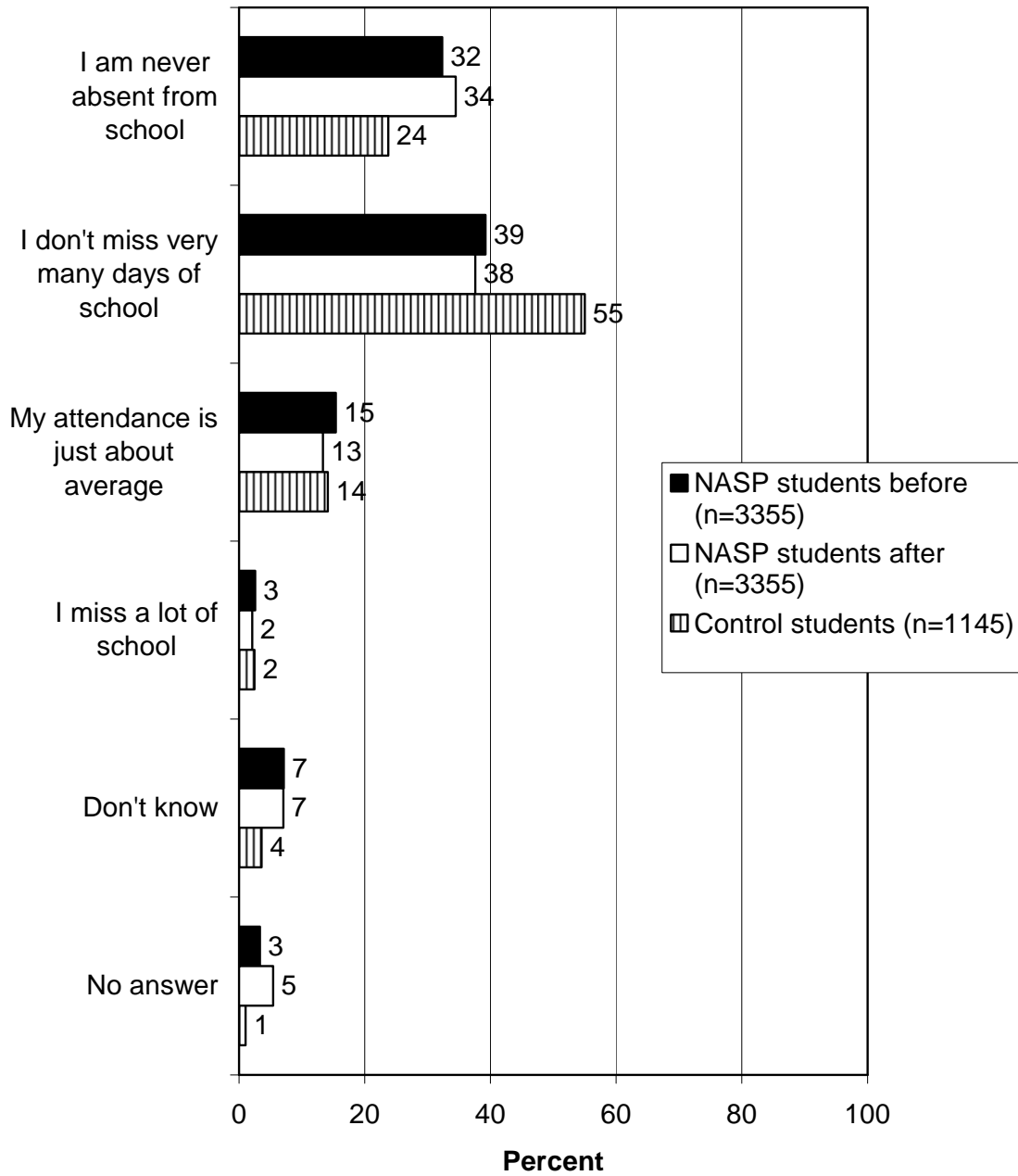


Figure 46. Self-Reported Attendance in School.

Q19a/Q19b. How was your attendance in P.E. class before/after taking archery? / Q7. How is your overall attendance in P.E. class?

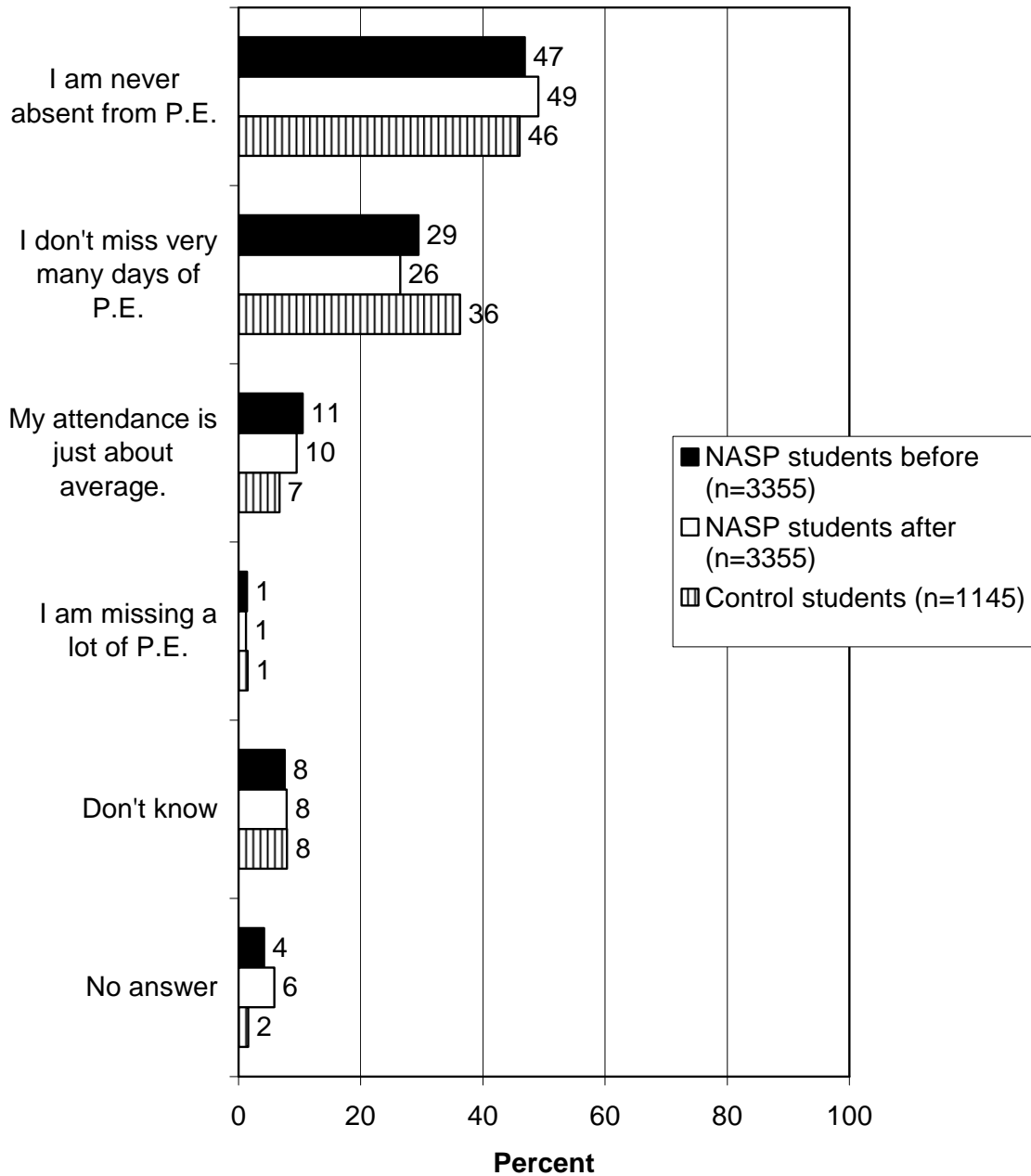


Figure 47. Self-Reported Attendance in P.E. Class.

Improvement in Academic Performance

When asked to rate their performance in other classes before and after the archery program, a majority of NASP students rated their performance as excellent or good both before (65%) and after (66%) (Figure 48). Similarly, control students also gave high ratings of their performance in other classes, with 64% rating their performance as excellent or good. These data do *not* indicate that NASP markedly affects student academic performance.

Q23a/Q23b. How were/are you doing in your other classes before/after taking archery? /
Q8. Overall, how are you doing in your classes?

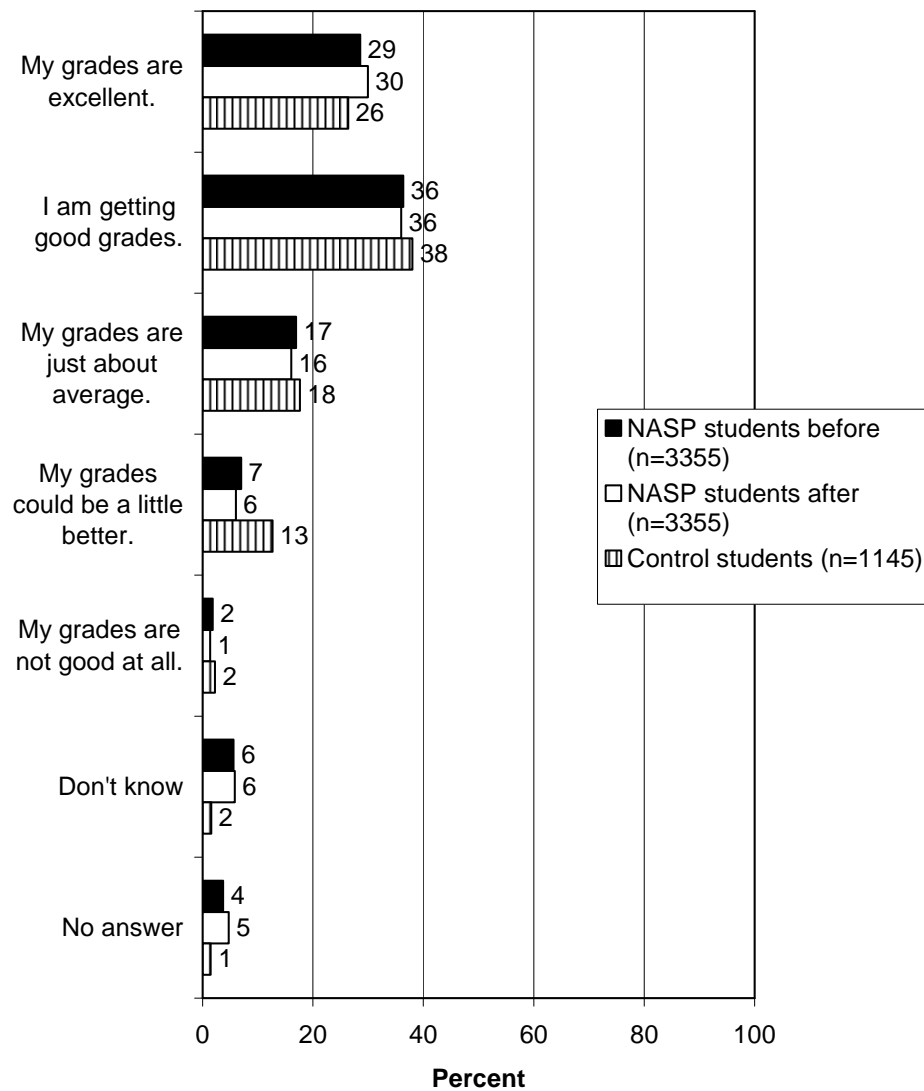


Figure 48. Self-Reported Student Performance in Other Classes.

Conclusions About Hypothesis 4: Archery Positively Affects Student Attendance and Performance in School

Current Data Show That the NASP Affects Attitudes Toward School, but the Data Do Not Show That the NASP Affects Student Attendance in School. While many students indicate that archery class makes school better (and that they look forward to school *more* on days that they have archery), this does not appear to translate into better school attendance. As is shown in the data, 33% of NASP students say that archery makes school better, a much higher percentage than who say that archery makes school worse (4%). However, self-reported attendance is about the same: 32% of NASP students say that they were never absent from school prior to taking the NASP, compared to 34% who are never absent from school after the NASP, and this difference is not statistically significant. The results of other answers show the same similarity: 39% say that they did not miss very many days of school prior to the NASP, compared to 38% who say this same thing after taking the NASP.

Current Data Do Not Show That the NASP Appears to Impact Student Attendance in P.E. Class. In a question that asks students to rate their attendance in P.E. class before and after the archery program, no marked differences are found. Like the results above regarding attendance at school, attendance in P.E. is not markedly different: 47% of NASP students say that they were never absent from P.E. prior to taking the NASP, compared to 49% who are never absent from P.E. after the NASP. In the next answer down, 29% of NASP students say that they did not miss very many days of P.E. prior to the NASP, compared to 26% who say this after taking the NASP. These differences are not statistically significant.

Data Do Not Show That the NASP Affects Student Performance in Other Classes. When asked how to rate their performance in school before and after the archery program, a majority of NASP students rate their performance as excellent or good both before (65%) and after (66%). Similarly, control students also give high ratings of their performance in other classes, with 64% rating their performance as excellent or good. These differences are not statistically significant, so these data do not indicate that NASP markedly affects student academic performance.

Summary of the Effect of the NASP on Student Attendance and Performance in School. In these data on outcomes, there is little evidence that implementing the NASP affects student attendance in school or in P.E., although it does promote a positive attitude toward school. This latter result of the NASP may, in the long run, positively affect attendance—it seems intuitive that it would—in school and in P.E., but further study would need to be conducted to ascertain this.

It is worth noting that in informal discussion with many of the teachers involved with this project, the researchers learned of fairly stringent existing rules regarding how much school students can miss prior to disciplinary and/or counseling measures being taken. Because of the vigorous effort currently being made to ensure adequate attendance at school, many of these teachers indicated that they did not anticipate that there would be *improvement* in attendance. In other words, the teachers indicated that for many students a “ceiling” has been reached in attendance above which there is little room for improvement.

IV. IMPLICATIONS AND RECOMMENDATIONS

During this phase of the study on the NASP, Responsive Management collected data on students' perceptions of the program and its effects. The goal was to test how the NASP fits into the larger context of sports activities and how it affects academic performance. Specifically, researchers tested four hypotheses of the NASP Logic Model (see Figure 1): that learning archery is engaging to students; that archery participation improves learning skills and attitudes; that the archery program positively affects students' and their families' interest in archery and other sports; and that archery positively affects students' attendance and performance in school.

The data show that students respond positively to the NASP. Many students look forward to coming to class more during archery, and most find the program exciting. A large majority rate their archery skills as either good or very good after taking the course. The data indicate that students are satisfied with their instructors and the NASP curriculum. Students overwhelmingly like nearly all components of the NASP, and they particularly respond to elements of the curriculum that achieve tangible and immediate results, such as shooting the arrow and hitting the target.

When the data about the effects on learning skills and attitudes and the outcomes are analyzed, findings provide some evidence that the NASP has a positive effect on learning skills, motivation, and self-confidence. The data suggest that students learn to pay attention and focus in archery class and that this focus transfers into other areas of school. Many students say that they have more motivation in several aspects of school and life, such as getting good grades and being respectful of others. The findings also suggest that students' self-confidence improves, with some students saying that they feel better about their ability to do other school work.

The data indicate an increase in student interest in archery. The data also suggest that there is some increase in participation in archery among students who have taken the NASP, and there is also more interest hunting and other shooting sports. There appears to be a slight increase in family interest in archery, as well.

The data indicate that the NASP has a positive effect on attitudes toward school, which may have a positive role in attendance. However, the data do not show an overall correlation regarding completing the NASP and attendance in school. The data show, as previously discussed, that the program has a positive effect on motivation in several aspects of school, which may have an effect on both school attendance and academic performance in the long term. However, the study did not find any correlations between completion of NASP and students' self-reported academic performance.

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APPENDIX: NASP STUDENT SURVEY

National Archery in the Schools Program (NASP) Implementation Instructions for Instructor STUDENT Survey

As you are aware, we are working with nine different states to administer this survey to NASP students to measure the overall impact of the archery program. This survey is designed to explore the program's effect on student performance and attendance, differences in the level of transfer to other skills or subjects, and the program's impact on student self-esteem and confidence. Because the survey addresses these topics, it is recommended that there is a time lapse between the end of the student's archery course and survey completion.

Timing of Implementation

We recommend that the survey be administered at the end of a grading period, the beginning of a new grading period, or a minimum of one month following the course. This will allow the student time to notice changes that may have occurred following their participation in the program. If this is not feasible, due to recall issues with younger students or scheduling conflicts, please administer the survey according to your schedule flexibility and convenience. This survey will take approximately 15-30 minutes to complete (depending on grade level).

Instructor Assistance

This survey has been developed for students between third and twelfth grade. Because of the wide range of age and skill levels, some students may need additional assistance with understanding concepts or completing the survey. For this reason, you may want to review the survey thoroughly so that you are familiar with the questions being asked of your students. It is also advisable to give students the answer to those questions that will be the same for all students in the classroom (for example, the school name, county, state, and grade level may be the same for all students taking the survey).

Some questions have instructions to skip certain questions based on the student's response. Students may have difficulty with these directions and may require additional help or clarification. These questions include: #6, #7, #30, #35, #38, #39, and #40. If the survey is being administered online, many of these instructions will not appear because the survey will automatically skip certain questions based on the response; however, if the survey is taken by paper and pencil, the student will need to be cognizant of these instructions.

Student Privacy and Confidentiality

Responsive Management is committed to maintaining student privacy and confidentiality in the completion of this study. **We will never have access to student names or records.** For our purposes, students will *only* be identified by their case number and will remain anonymous; however, each instructor will have a log that identifies the student for each case number. Responsive Management will supply each instructor with a log that includes a case number and a blank space to include the name of each student. When you assign each student a case number, be sure to put his/her name on the log beside the correct number. **Please make sure you give each student his/her case number because it will be required to complete the survey.**

Please keep the case number log in your files during the current **school year**. This identification is crucial to obtaining additional research and/or case studies of individual student progress, as needed. For example, Responsive Management is working with selected schools to obtain grade, attendance, and discipline information on some students involved in this study. By maintaining the log, the teacher is able to work with school administrators to obtain records without Responsive Management ever having access to student names or records. This will allow administrators and instructors to match ID numbers on the log with student names and records; only a case ID number is submitted to Responsive Management.

Survey Completion and Submission

If your students are completing this survey online, the information will be collected and submitted to Responsive Management upon completion. **PLEASE make sure each student hits the “DONE” button at the end of the survey to submit his/her completed survey.** No additional requirements are necessary for submission.

If your students are completing this survey by paper and pencil, return **all** completed surveys to the following address:

Responsive Management
Attn: Amanda Ritchie, NASP
130 Franklin Street
Harrisonburg, VA 22801

Please include the date students took the survey and the total number of surveys enclosed.

Please be sure to include a comprehensive return address and a person to contact with any questions or requests. If you need assistance with postage, please contact me.

Questions or Clarification

Please let me know if you have any questions about this study or require additional clarification on survey instructions or implementation. Thank you for your participation; your support and encouragement are essential to obtaining the feedback we need to determine the efficacy and impact of this valuable program.

Amanda Ritchie, Research Associate
Responsive Management
130 Franklin Street
Harrisonburg, VA 22801
(540) 432-1888/phone
(540) 432-1892/fax
amanda@responsivemanagement.com
www.responsivemanagement.com

ONLINE SURVEY LINK: To access the online survey, please direct your students to the following website link: **<https://www.surveymk.com/NASPstudent>**

NUMBER OF HARD COPIES PROVIDED:

NATIONAL ARCHERY IN THE SCHOOLS PROGRAM (NASP) ASSESSMENT

NASP STUDENT SURVEY

Don't worry about this survey—it's NOT a test! We'd like to know what you think about the archery program you took in school. We'd also like to know about you and how much you liked archery before and after you took archery in school. If you didn't do archery before or after taking it in school, don't worry—you can still answer the questions in this survey.

There are several types of questions inside this survey. Some only need one answer and will tell you when to “check only one answer.” Some questions are followed by a list of items. For these questions, we'd like for you to answer all the items on the list by checking an answer for each item. Other questions will tell you to “check all that apply.” For these questions, you should check the boxes next to any answer that fits you and your situation.

Thank you for answering the survey. Please make sure that your teacher assigns you an ID number so you can complete the survey.

**PLEASE COMPLETE ALL INFORMATION IN THE BOX TO FOLLOW.
THIS INFORMATION IS REQUIRED FOR TRACKING PURPOSES**

| |
|--|
| What is the name of your school? _____ |
| In which county is your school located? _____ |
| In which state is your school located? _____ |
| What grade are you in? _____ |
| Please enter the identification number your teacher assigned to you. _____ |

PREVIOUS EXPERIENCE:

To answer the questions in this section, please think about how you felt about archery BEFORE and AFTER you took archery in school. Please check the box next to your answer for each question.

1. How much archery experience did you have BEFORE participating in archery at your school?
(Check only one answer)

- None
- A little
- A lot
- Don't know
- Other: _____

2. How often **did you do** each of the following activities BEFORE you took archery in school and how often **do you do** each of the following activities AFTER you took archery in school? (Check one box for each activity for participation BEFORE and AFTER taking the course.)

| BEFORE | | | | ACTIVITY | AFTER | | | |
|--------|-----------------|-----------|-------|---|-------|-----------------|-----------|-------|
| Never | Once in a while | Sometimes | A lot | | Never | Once in a while | Sometimes | A lot |
| | | | | Archery | | | | |
| | | | | Soccer | | | | |
| | | | | Basketball | | | | |
| | | | | Volleyball | | | | |
| | | | | Baseball or Softball | | | | |
| | | | | Target shooting with a gun | | | | |
| | | | | Hunting with a bow and arrow | | | | |
| | | | | Hunting with firearms, such as a rifle or shotgun | | | | |
| | | | | Shooting BB, pellet, or air guns | | | | |
| | | | | Shooting paintball | | | | |

PROGRAM INFORMATION:

To answer the questions in this section, please think about your experience in the archery program you took in school. Please check the box next to your answer for each question.

3. How long ago did you take archery in school? (Check only one answer)

- Within the past 2 weeks
- 2 weeks to 1 month ago
- 1 to 6 months ago
- 6 months to 1 year ago
- Over 1 year ago
- Other: _____

4. During what season did you take archery in school? (Check all that apply)

- Fall
- Winter
- Spring
- Summer
- Other: _____

5. How many years have you participated in archery in school? (Check only one answer)

- This is my first year
- 2 years
- 3 years
- 4 years
- 5 years
- More than 5 years

6. Does your school have an after-school archery team or club? (Check only one answer)

- Yes (If you answered "yes," go to Question #7)
- No (If you answered "no," go to Question #6a)
- Don't know

a. If your school had an archery team or club, how interested would you be in joining?

(Check only one answer)

- Very interested
- A little interested
- Not at all interested
- Don't know

b. Please explain why you **would** or **would not** be interested in joining your school's archery team or club.

7. Do you belong to the archery team or club? (Check only one answer)

- Yes (If you answered "yes," go to Question #8)
- No (If you answered "no," go to Question #7a)

a. Please explain why you **do not** belong to the archery team or club at your school.

PROGRAM REACTION:

To answer the questions in this section, please give us your overall opinion on the archery program/class you took in school. Please check the box next to your answer for each question.

8. Overall, how much did you like the archery program in your school? (Check only one answer)

- Liked it a lot
- Liked it a little
- Did not like it at all
- Don't know

9. How exciting was the archery program? (Check only one answer)

- Very exciting
- A little exciting
- Not at all exciting
- Don't know

10. Please rate how much you liked each part of the archery program:

| Activity | I liked it a lot | I liked it okay | I didn't like it at all | Don't know |
|---|-------------------------|------------------------|--------------------------------|-------------------|
| Learning about archery history | | | | |
| Learning about archery safety | | | | |
| Learning shooting techniques | | | | |
| Learning about archery equipment | | | | |
| Learning how to focus on or pay attention to the target | | | | |
| Learning/improving archery skills | | | | |
| Shooting the arrow | | | | |
| Hitting the target | | | | |
| Being responsible for the equipment | | | | |
| Doing something new or different in P.E. class | | | | |
| Working with/learning from the P.E. or archery teacher | | | | |

11. How hard was the archery program? (Check only one answer)

- Very hard
- A little hard
- About average
- Easy
- Don't know

12. Did your archery instructor do a good job teaching archery? (Check only one answer)

- Yes
- No
- Don't know

13. Please explain why your archery instructor **did** or **did not** do a good job teaching archery.

PROGRAM EFFECTS:

To answer the questions in this section, please tell us what you think about the archery program and how it makes you feel about going to school, your P.E. class, and your other classes in school. Please check the box next to your answer for each question.

Attendance in School

14. Did the archery program make school better, about the same, or worse? (Check only one answer)

- Better
- Same
- Worse
- Don't know

15. Did you look forward to going to school more, about the same, or less on the days you had archery? (Check only one answer)

- More
- Same
- Less
- Don't know

16. How was your attendance in school BEFORE and AFTER taking archery? (Check only one answer in each box)

| BEFORE | AFTER |
|--|---|
| <input type="checkbox"/> I was never absent from school. | <input type="checkbox"/> I am never absent from school. |
| <input type="checkbox"/> I didn't miss very many days of school. | <input type="checkbox"/> I don't miss very many days of school. |
| <input type="checkbox"/> My attendance was just about average. | <input type="checkbox"/> My attendance is just about average. |
| <input type="checkbox"/> I was missing a lot of school. | <input type="checkbox"/> I am missing a lot of school. |
| <input type="checkbox"/> Don't know | <input type="checkbox"/> Don't know |

17. If your attendance was changed, was the change in attendance in school caused by the archery program? (Check only one answer)

- Yes
- No
- Don't know

18. What about the archery program (if anything) affected your attendance in school?

Attendance in P.E. Class

19. How was your **attendance in P.E. class** BEFORE and AFTER taking archery? (Check only one answer in each box)

| BEFORE | AFTER |
|--|---|
| <input type="checkbox"/> I was never absent from P.E. | <input type="checkbox"/> I am never absent from P.E. |
| <input type="checkbox"/> I didn't miss very many days of P.E. | <input type="checkbox"/> I don't miss very many days of P.E. |
| <input type="checkbox"/> My attendance was just about average. | <input type="checkbox"/> My attendance is just about average. |
| <input type="checkbox"/> I was missing a lot of P.E. | <input type="checkbox"/> I am missing a lot of P.E. |
| <input type="checkbox"/> Don't know | <input type="checkbox"/> Don't know |

20. If there was a change in attendance, was the change in **attendance in your P.E. class** caused by the archery program?

- Yes
- No
- Don't know

21. Did the archery program make **P.E. class** better, about the same, or worse? (Check only one answer)

- Better
- Same
- Worse
- Don't know

22. What about the archery program (if anything) affected your **attendance in P.E. class**?

Effect on Other Classes

23. How were you **doing in your other classes** BEFORE and AFTER taking archery? (Check only one answer in each box)

| BEFORE | AFTER |
|---|--|
| <input type="checkbox"/> My grades were excellent. | <input type="checkbox"/> My grades are excellent. |
| <input type="checkbox"/> I was getting good grades. | <input type="checkbox"/> I am getting good grades. |
| <input type="checkbox"/> My grades were just about average. | <input type="checkbox"/> My grades are just about average. |
| <input type="checkbox"/> My grades could have been a little better. | <input type="checkbox"/> My grades could be a little better. |
| <input type="checkbox"/> My grades were not good at all. | <input type="checkbox"/> My grades are not good at all. |
| <input type="checkbox"/> Don't know | <input type="checkbox"/> Don't know |

24. If there was a change, was the change in **how you did in other classes** caused by the archery program? (Check only one answer)

- Yes
- No
- Don't know

25. What about the archery program (if anything) has affected how you are **doing in your other classes**?

Archery Skills

26. Overall, how would you rate your **archery skills** BEFORE and AFTER taking archery? (Check only one answer in each box)

| BEFORE | AFTER |
|---|--|
| <input type="checkbox"/> My archery skills were <i>very</i> good. | <input type="checkbox"/> My archery skills are <i>very</i> good. |
| <input type="checkbox"/> My archery skills were good. | <input type="checkbox"/> My archery skills are good. |
| <input type="checkbox"/> My archery skills were <i>not</i> very good. | <input type="checkbox"/> My archery skills are <i>not</i> very good. |
| <input type="checkbox"/> Don't know | <input type="checkbox"/> Don't know |

27. What did you learn in the archery program that helped you to improve at archery?

28. Do you think you pay more, about the same, or less attention to what you are doing in archery than in other classes? (Check only one answer)

- More
- Same
- Less
- Don't know

29. Why?

Skills Obtained Through Archery Program

30. Did you learn how to pay attention or focus better in archery? (Check only one answer)

- Yes (If you answered “yes,” go to Question #31)
- No (If you answered “no,” go to Question #32)
- Don’t know

31. If yes, has that experience helped you to pay attention or focus better in learning other things?

(Check only one answer)

- Yes
- No
- Don’t know

32. After taking archery, how do you feel about the following?

| Area | Better | Same | Worse | Don’t know |
|---|--------|------|-------|------------|
| Your ability to do your school work | | | | |
| Participating in other sports and physical activities | | | | |
| Friendships with other students | | | | |
| Relationships with teachers | | | | |

33. After taking archery do you want to do the following things more, about the same, or less?

| Area | More | About the same | Less | Don’t know |
|--|------|----------------|------|------------|
| Attend school | | | | |
| Get good grades | | | | |
| Stay out of trouble | | | | |
| Participate in other sports and activities | | | | |
| Be respectful of adults and friends | | | | |
| Learn other sports | | | | |
| Do more archery | | | | |

Involvement in Archery and Other Shooting Sports

34. How much archery have you participated in since taking it in school? (Check only one answer)

- A lot
- A little
- None at all
- Don't know

35. Do you think you will participate in archery in the future? (Check only one answer)

- Yes (*If you answered "yes," go to question #36*)
- No (*If you answered "no," go to question #37*)
- Don't know

36. With whom do you think you will participate in archery? (Check all that apply)

- | | | |
|--------------------------------------|--|-------------------------------------|
| <input type="checkbox"/> Mother | <input type="checkbox"/> Sister(s) | <input type="checkbox"/> Cousin(s) |
| <input type="checkbox"/> Father | <input type="checkbox"/> Brother(s) | <input type="checkbox"/> Friend(s) |
| <input type="checkbox"/> Stepmother | <input type="checkbox"/> Step or half sister(s) | <input type="checkbox"/> Teacher(s) |
| <input type="checkbox"/> Stepfather | <input type="checkbox"/> Step or half brother(s) | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Grandmother | <input type="checkbox"/> Aunt | _____ |
| <input type="checkbox"/> Grandfather | <input type="checkbox"/> Uncle | _____ |

37. How has archery affected your interest in other shooting sports (hunting or target shooting, for example)? (Check only one answer)

- I am more interested in other shooting sports
- My interest in other shooting sports has not changed at all
- I am less interested in other shooting sports
- Don't know

INFORMATION SOURCES:

To answer the questions in this section, please let us know if you have ever looked up information on archery. Please check the box next to your answer for each question.

38. Have you tried to get information about archery since taking archery in school? (Check only one answer)

- Yes (If you answered "yes," go to question #38a and b)
- No (If you answered "no," go to question #39)
- Don't know

a. What type of information were you looking for? (Check all that apply)

- Where to go to do archery
- Where to take lessons
- Where to purchase equipment/cost of equipment
- Information about how to use equipment
- Information about how to be better at shooting
- Other: _____

b. Where have you looked for information on archery? (Check all that apply)

- Internet
- Newspapers
- TV
- Radio
- Magazine
- Phone books/Yellow pages
- Sporting goods store
- Friends/family
- Archery teacher (at school)
- Archery teacher (not at school)
- At a park, recreation, or other activity area
- Game warden
- Don't know
- Other: _____

39. Have you looked for a store or online source that sells archery equipment? (Check only one answer)

- Yes (If you answered "yes," go to question #39a and b)
- No (If you answered "no," go to question #40)
- Don't know

a. If yes, did you find a store or online source that sells archery equipment? (Check only one answer)

- Yes (If you answered "yes," go to question #39b)
- No (If you answered "no," go to question #40)
- Don't know

b. If yes, did the store or source have the archery equipment you were looking for? (Check only one answer)

- Yes
- No
- Don't know

40. Have you purchased archery equipment since taking archery in school? (Check only one answer)

- Yes (If you answered "yes," go to question #40a)
- No (If you answered "no," go to question #40b)
- Don't know

a. What equipment have you bought? (Check all that apply)

- Bow
- Arrow(s)
- Target(s)
- Repair kit
- Don't know
- Other: _____

b. What was your reason for **not** buying the equipment? (Check all that apply)

- I'm not interested in archery
- I'm not interested in hunting with a bow and arrow
- I found equipment but didn't buy it because I have no place to shoot
- I didn't find or couldn't get to a store that sold equipment
- The equipment costs too much
- I was not ready to buy equipment / only looking
- I didn't find the equipment I wanted
- I didn't find the equipment I needed
- Don't know
- Other: _____

FAMILY PARTICIPATION:

For this section of questions, please tell us about your family's interest and participation in archery. Please check the box next to your answer for each question.

41. Who taught you to shoot with a bow and arrow? (Check all that apply)

- | | | |
|--|--|-------------------------------------|
| <input type="checkbox"/> No one, I taught myself | <input type="checkbox"/> Sister(s) | <input type="checkbox"/> Cousin(s) |
| <input type="checkbox"/> Mother | <input type="checkbox"/> Brother(s) | <input type="checkbox"/> Friend(s) |
| <input type="checkbox"/> Father | <input type="checkbox"/> Step or half sister(s) | <input type="checkbox"/> Teacher(s) |
| <input type="checkbox"/> Stepmother | <input type="checkbox"/> Step or half brother(s) | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Stepfather | <input type="checkbox"/> Aunt | _____ |
| <input type="checkbox"/> Grandmother | <input type="checkbox"/> Uncle | _____ |
| <input type="checkbox"/> Grandfather | | |

42. How has your participation in the archery program affected your family's interest in archery? (Check only one answer)

- My family is more interested in archery.
- My family's interest in archery is about the same.
- My family is less interested in archery.
- My family had no interest in archery before and has no interest in archery now.
- Don't know

43. Since you took archery in school, have any of your family members attended archery program events, clubs, competitions, or other archery events outside of school? (Check only one answer)

- Yes
- No
- Don't know

44. AFTER you took archery in school, would you say that your family members attended more, about the same amount, or fewer archery program events, clubs, competitions, or other outside archery school events? (Check only one answer)

- More
- Same
- Fewer
- My family did not attend archery events before or after the program.
- Don't know

45. Is there anyone in your family who began participating in archery AFTER you took archery in school? (Check only one answer)

- Yes
- No
- Don't know

46. If yes, how many family members began participating in archery AFTER you took archery?

47. Of the people that you know, who was involved in archery BEFORE you took archery, and who became involved in archery AFTER you took archery in school? (Check all that apply; if someone was involved both before and after, please check both columns)

| BEFORE | RELATIVE | AFTER |
|--------------------------|-------------|--------------------------|
| <input type="checkbox"/> | Mother | <input type="checkbox"/> |
| <input type="checkbox"/> | Father | <input type="checkbox"/> |
| <input type="checkbox"/> | Stepmother | <input type="checkbox"/> |
| <input type="checkbox"/> | Stepfather | <input type="checkbox"/> |
| <input type="checkbox"/> | Grandmother | <input type="checkbox"/> |
| <input type="checkbox"/> | Grandfather | <input type="checkbox"/> |
| <input type="checkbox"/> | Sister(s) | <input type="checkbox"/> |
| <input type="checkbox"/> | Brother(s) | <input type="checkbox"/> |

| BEFORE | RELATIVE | AFTER |
|--------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> | Step or half sister(s) | <input type="checkbox"/> |
| <input type="checkbox"/> | Step or half brother(s) | <input type="checkbox"/> |
| <input type="checkbox"/> | Aunt | <input type="checkbox"/> |
| <input type="checkbox"/> | Uncle | <input type="checkbox"/> |
| <input type="checkbox"/> | Cousin(s) | <input type="checkbox"/> |
| <input type="checkbox"/> | Friend(s) | <input type="checkbox"/> |
| <input type="checkbox"/> | Teacher(s) | <input type="checkbox"/> |

OVERALL IMPRESSIONS:

48. What are some of the strengths of the archery program in your school?

49. What changes need to be made to improve the archery program in your school?

ABOUT YOU:

The final few questions ask questions to find out more about you and your interests. Please check the box next to your answer for each question.

50. Describe how much you do with your family. (Check only one answer)

- We do lots of things together as a family.
- We do some things together as a family.
- We do few things together as a family.
- We almost never do things together as a family.
- Don't know

51. What is your favorite subject in school? (Check only one answer)

- | | |
|---|---|
| <input type="checkbox"/> Math | <input type="checkbox"/> Physical Education |
| <input type="checkbox"/> Science | <input type="checkbox"/> Foreign Language |
| <input type="checkbox"/> English (including Reading and Spelling) | <input type="checkbox"/> Music |
| <input type="checkbox"/> History | <input type="checkbox"/> Art |
| <input type="checkbox"/> Social Studies | <input type="checkbox"/> Other: _____ |

52. What types of grades do you get in school? (Check only one answer)

- Mostly As and Bs
- Mostly Bs and Cs
- Mostly Cs and Ds
- Mostly Ds and Fs

53. How many years have you attended this school? _____

54. How likely do you think it is that you will go to college? (Check only one answer)

- Very likely
- Likely
- Not at all likely
- Don't know

55. What type of area do you live in? (Check only one answer)

- I live in a large city
- I live in a suburb or just outside of a large city
- I live in a small city or town
- I live on a farm
- I live in a rural area but *not* on a farm
- Don't know

56. How old are you? _____

57. Please check one:

- I am a boy
- I am a girl

THANK YOU FOR COMPLETING THIS SURVEY!