



**NATIONAL ARCHERY  
IN THE  
SCHOOLS PROGRAM**



# The NASP<sup>®</sup> Evaluation: Summary of Results

*"It reinforces cause-and-effect for them, and it reinforces decision-making, responsibility, and accountability. They know that where that arrow goes, it's their fault. They know that it was nobody else's fault if they get a bulls-eye or if they miss the target. It's total accountability."*

*—Minnesota Instructor*

*"It gives those students who are not gifted in other sports the ability to compete for the school on a team and showcase their talents. This gives them more confidence and has changed how the rest of school sees them."*

*—Kentucky Instructor*

*"It is an exciting sport—a brand new opportunity for the students. It is a sport where the students compete with themselves as well as with each other."*

*—Florida Instructor*

*"I have seen students change their behavior 180 degrees in this unit. I work in an archery shop and since the class I have noticed an increase of students coming in with parents getting them involved in archery also."*

*—Minnesota Instructor*

*"NASP® has enabled me to offer an activity that is very motivating and enjoyable for all, especially the non-athletic student, at-risk, and special education students."*

*—Michigan Instructor*

# The NASP<sup>®</sup> Evaluation: Summary of Results



## What Is the National Archery in the Schools Program?

In 2002, the Kentucky Department of Fish and Wildlife Resources worked with schools throughout the state to pilot the National Archery in the Schools Program (NASP<sup>®</sup>), which began as an opportunity for schools to offer archery as a physical education (P.E.) option for 4th–12th-grade students. Since its inception, NASP<sup>®</sup> has quickly become the premiere archery program: more than 4.6 million students at 5,400 schools located in 46 states and 5 countries have participated in the NASP<sup>®</sup>.

NASP<sup>®</sup> was developed to provide international-style target archery training through a standardized education package that can be directly incorporated into a school's P.E. curriculum. NASP<sup>®</sup> offers unique partnerships for state departments of education, state fish and wildlife agencies, and archery equipment manufacturers and organizations through its dual mission of promoting student education and lifelong interest/participation in the sport of archery. Curriculum content helps student develop an appreciation for the historical, physical, emotional, and social benefits of archery, while simultaneously focusing on transferable learning skills: research skills, listening skills, observation skills, hand-eye coordination, refined motor skills, self-evaluation, and communication skills, among other core learning skills.

Educators agree that NASP<sup>®</sup> "engages the unengaged" and inspires students to greater achievement in school. And NASP<sup>®</sup> offers benefits that extend beyond the classroom. In addition to providing an opportunity to engage students from diverse backgrounds, abilities, and interests, NASP<sup>®</sup> helps to increase participation and long-term interest in all forms of recreational archery. This increased interest and participation in shooting sports helps to provide much needed financial and public support for wildlife education and conservation. Schools that implement NASP<sup>®</sup> are not only investing in their students' futures, but they are also helping to ensure the sustainability of wildlife management, education, and conservation.

## Research

In 2008–2009, Responsive Management, in consultation with Hilarie Davis, Ed.D., of Technology for Learning Consortium, conducted an evaluation for the NASP<sup>®</sup> to examine four hypotheses: (1) learning archery is engaging to students; (2) through archery, students improve learning skills and attitudes; (3) archery positively affects student interest in archery and other sports, and student participation in the archery program positively affects family interest in archery; and (4) archery positively affects student attendance and performance in school.

The evaluation of NASP<sup>®</sup> and its effects on student attendance and academic achievement, as well as its effects on student and family interest in archery, was completed in three phases:

- Phase I: A survey of NASP<sup>®</sup> instructors regarding their observations and perceptions of the effects of NASP<sup>®</sup>
- Phase II: A survey of students who participated in NASP<sup>®</sup> and students who did not participate in NASP<sup>®</sup>
- Phase III: An analysis of student grades to assess student performance as it related to NASP<sup>®</sup> participation

## **HIGHLIGHTS**

- *NASP® has generated interest in 14 countries, including Iraq, Japan, Spain, Finland, Netherlands, Morocco, and Barbados. As of September 2008, Australia, Canada, and South Africa have also joined NASP®.*
- *Most school insurance policies recognize the safety of archery by providing coverage under existing policies that cover all other recreational activities.*
- *Archery is engaging and accessible to all students, including students with special needs and/or disabilities. Mobility and hearing impairments are not obstacles to the program, and even visually impaired shooters are able to participate with sighted partners. A section on teaching students with disabilities is included in curriculum content.*
- *Teachers take National Archery Association (NAA) Level I training so that they can teach archery safely and with proper technique.*
- *Equipment used is state-of-the art and designed to fit every student. Thanks to support from the archery industry, these equipment packages can be purchased by schools for a discounted price.*
- *Schools needing financial assistance can utilize the Adopt-A-School program. The program was implemented to help schools purchase their archery equipment through sponsorship and donations.*
- *Over 4,565 students participated in the 2009 NASP® Championship, making it the largest recorded archery tournament in world history.*

Responsive Management conducted the instructor survey from August through September 2008 and obtained 408 completed questionnaires. Responsive Management obtained a total of 3,355 completed NASP® student questionnaires and 1,145 completed control student questionnaires from September 2008 to May 2009.

## **The Link Between NASP® and Student Education**

While the link between NASP® and the promotion of interest and participation in archery is intuitive, the link between NASP® and the promotion of student education is less straightforward. This latter link depends on a possible correlation between physical activity and academic achievement. While this study seeks to assess that possible link, a review of past research has bearing on this subject and suggests that physical activity may benefit academic performance.

### ***Effect of Physical Activity on Measures of Academic Performance***

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,

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, & Penneypacker, 1985). 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).

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. 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?



*"You don't have to be strong, you don't have to be tall, you don't have to be fast—anyone can be an archer. And it's a life sport, it's something you can do until you're seventy or eighty. And I think that's huge for kids."*

*—Minnesota Instructor*



*“The NASP® program has given students that have not been that successful in other sports or even in school in general a chance to be successful, and be on the school team that attended the state tournament. This was a big boost in self-esteem.”*

*—Ohio Instructor*

### ***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 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 NASP® and after completion of NASP® 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 P.E. 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, standardized test scores), results suggest that the program had a positive effect on student self-esteem and confidence.

### **NASP® in the Context of Sports Activities and Academic Performance**

Building on this review of past research regarding physical activity (including P.E. and sports participation) and academic performance discussed above, researchers hypothesize that NASP® has a positive effect on overall academic performance of students. Specifically, researchers hypothesize that learning archery is engaging to students; that archery participation improves learning skills and attitudes; and that archery positively affects students' attendance and performance in school. It is also conjectured that the archery program increases students' and their families' interest in archery and other sports. These hypotheses are contained in the NASP® Logic Model (Figure 1) that was developed to show the intended inputs, outputs, and outcomes of NASP®. The outcomes depend, in part, on the hypotheses, which are also shown in the NASP® Logic Model. Finally, the NASP® Logic Model includes the evaluation parameters to be studied.

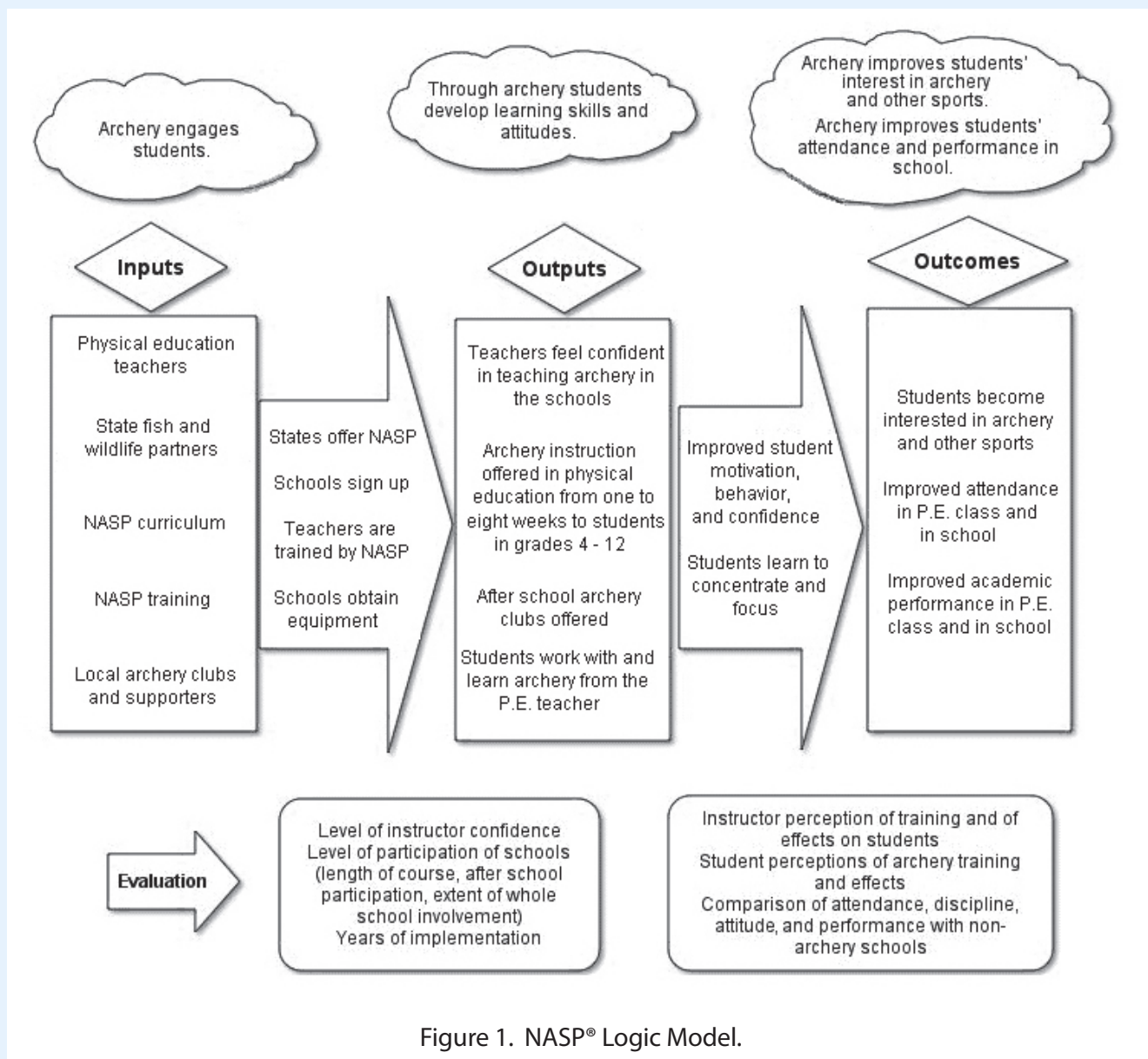


Figure 1. NASP® Logic Model.

The outcomes of the NASP® Logic Model depend, in part, on the four hypotheses shown in the NASP® Logic Model and that are written below. This study seeks to assess the validity of these hypotheses. The four hypotheses are:

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 increases students' interest in archery and other sports, and student participation in the archery program increases family interest in archery.
4. Archery positively affects students' attendance and performance in school.

## Instructors

### *Instructor Satisfaction*

In general, the vast majority of instructors are satisfied with the NASP® curriculum and their own training and that they feel competent in teaching it (see Figure 2).

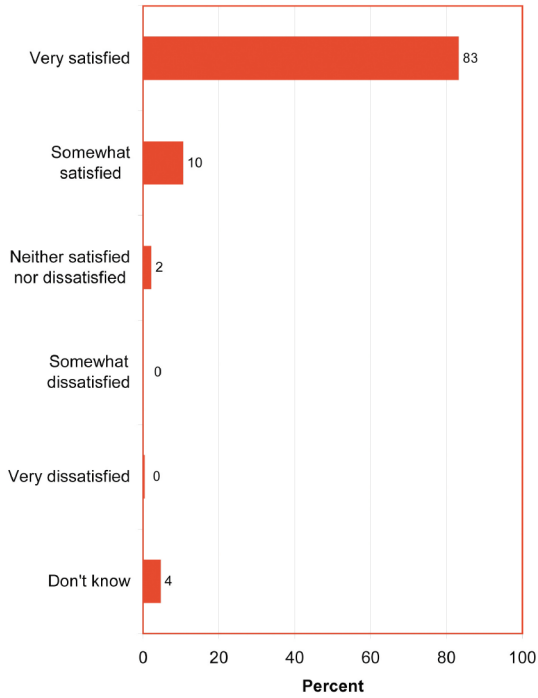


*"Discipline and concentration are hard skills for some to master and participation in a program that requires this and yet is fun could help increase performance in all areas."*

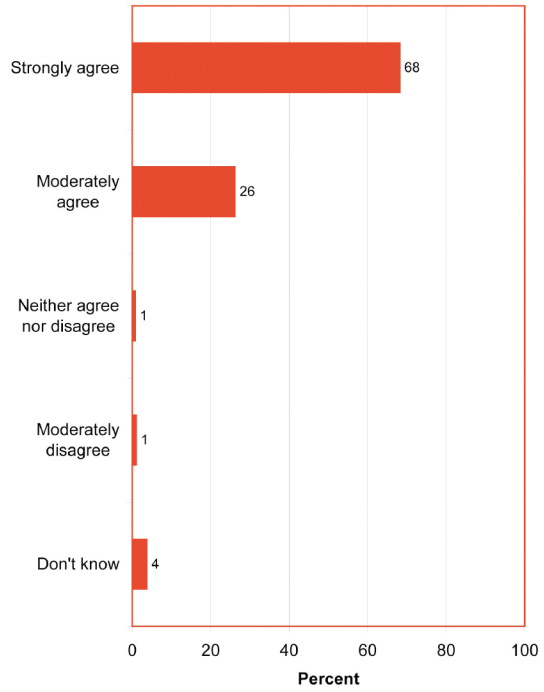
*—Arizona Instructor*



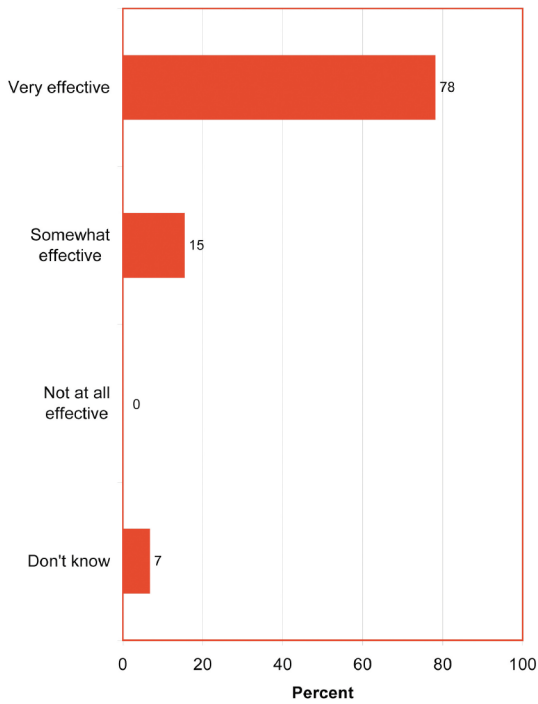
**Q13. How would you rate your overall satisfaction with the NASP?**



**Q17. Do you agree or disagree that your NASP training adequately prepared you to teach the NASP course?**



**Q14. How effective is the NASP?**



**Q18. On a scale of 0-10, with 0 being incompetent and 10 being extremely competent, please rate your competency in teaching the NASP archery course.**

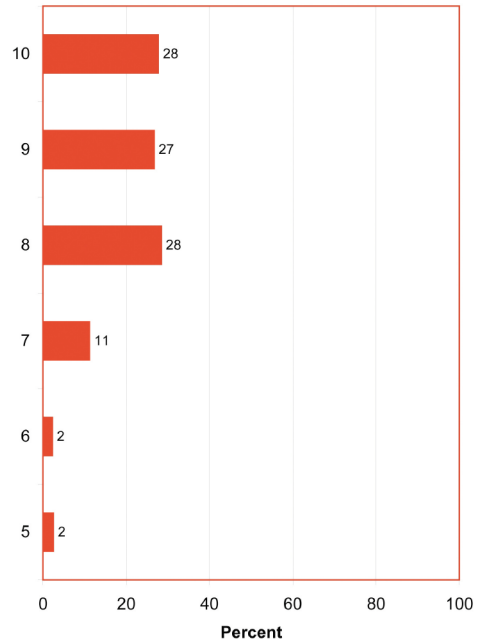


Figure 2.

## Impact on Students

The majority of NASP® instructors agree that the archery program improves student self-confidence, motivation, behavior, and concentration and focus. Roughly half of NASP® instructors report that NASP® has improved academic performance and attendance in their P.E. class, and many agree that NASP® has improved student attendance, interest in other sports, and academic performance in school (see Figure 3).

## Students

In general, students like the archery program in their schools, think the program is exciting, and believe their instructors did a good job teaching the program. Students also appear to look forward to school more on days that they have the archery program: the percentage of NASP® students who looked forward to going to school more on days that they had archery exceeded the percentage of students who looked forward to going to school less by more than three times (see Figure 4). Students enjoyed most aspects of the program, some much more than others. Over three quarters of NASP® students rated their archery skills as either good or very good after taking the course (see Figure 5).

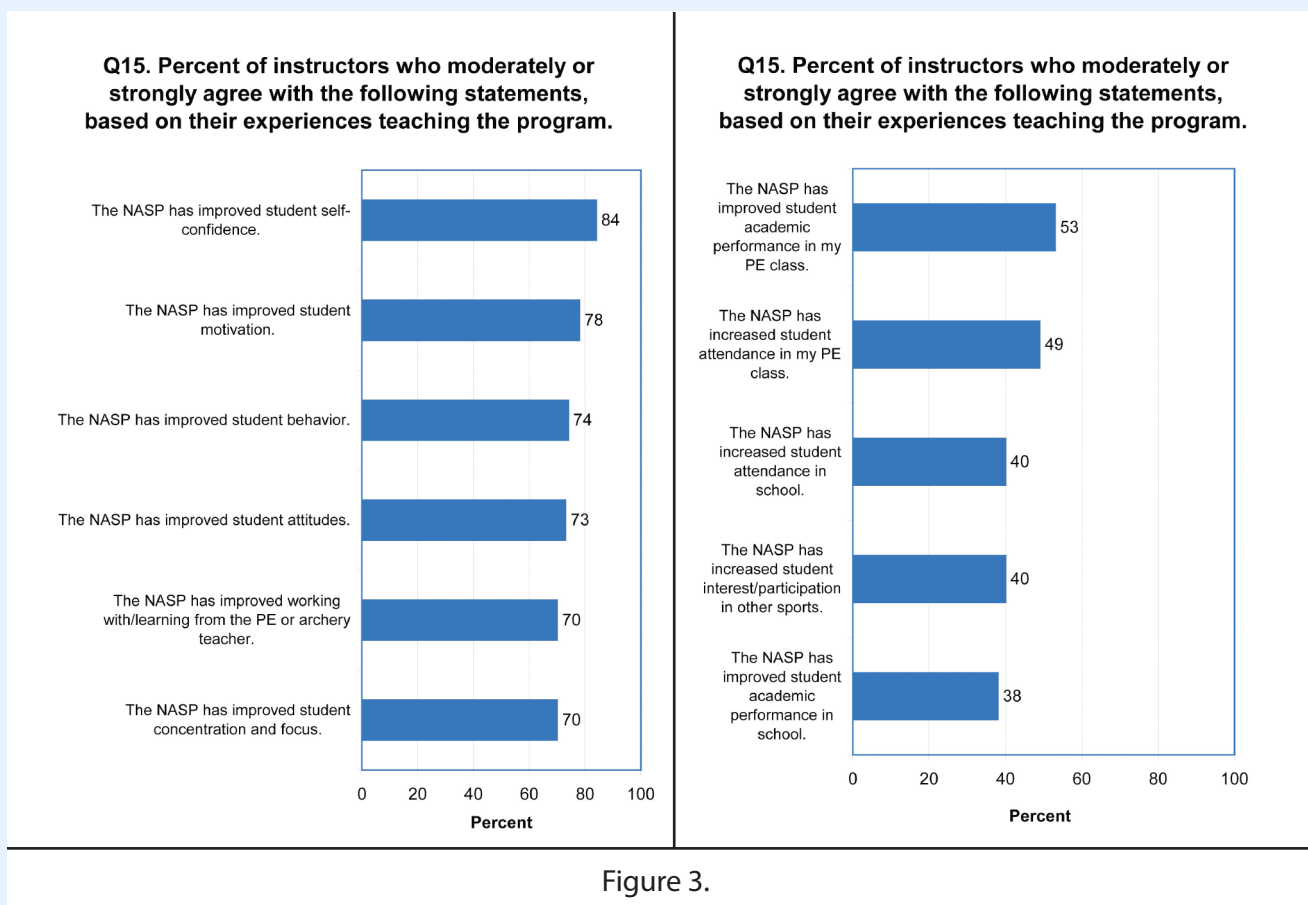
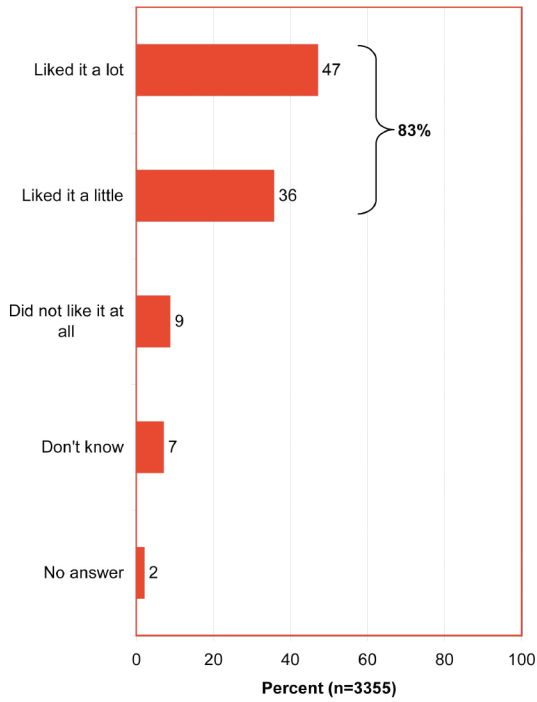


Figure 3.

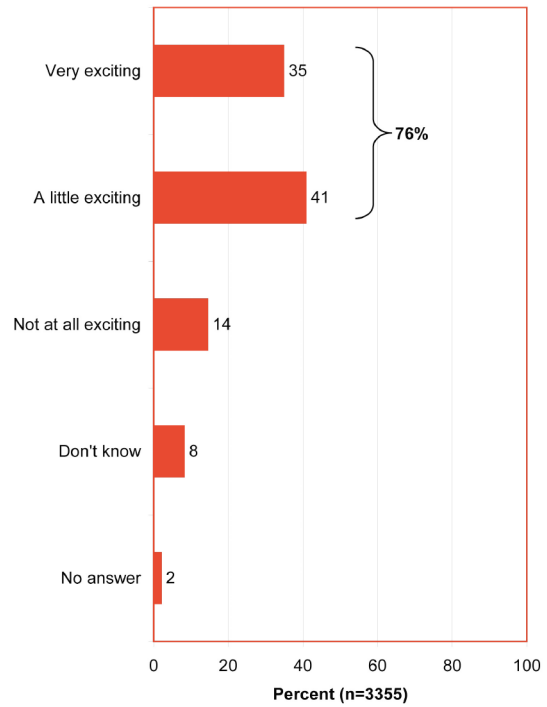
*“The NASP® has given students that have not been that successful in other sports or even in school in general a chance to be successful, and be on the school team that attended the state tournament. This was a big boost in self-esteem.”*

—Ohio Instructor

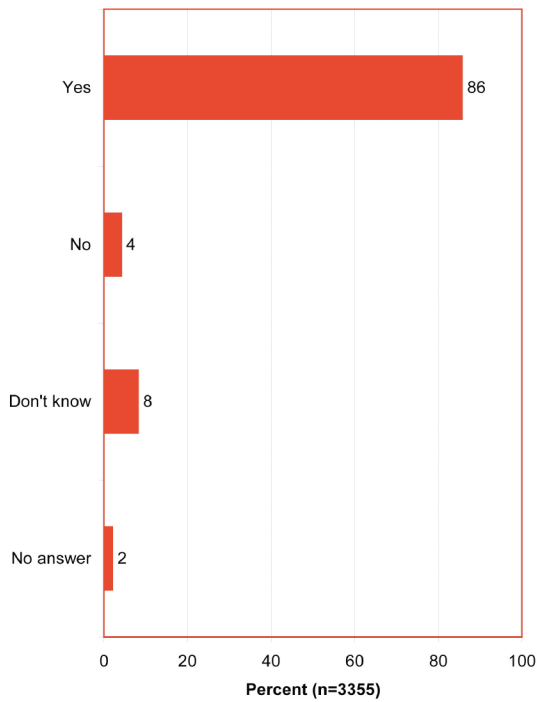
**Q8. Overall, how much did you like the archery program in your school?  
(NASP Students)**



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



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



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

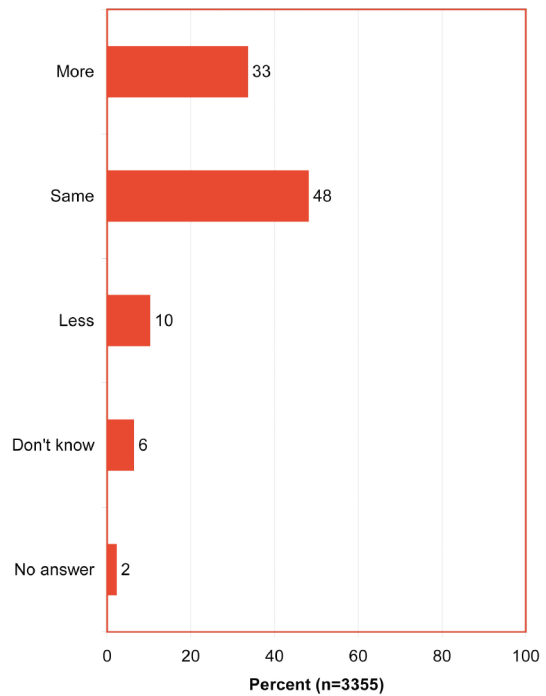


Figure 4.

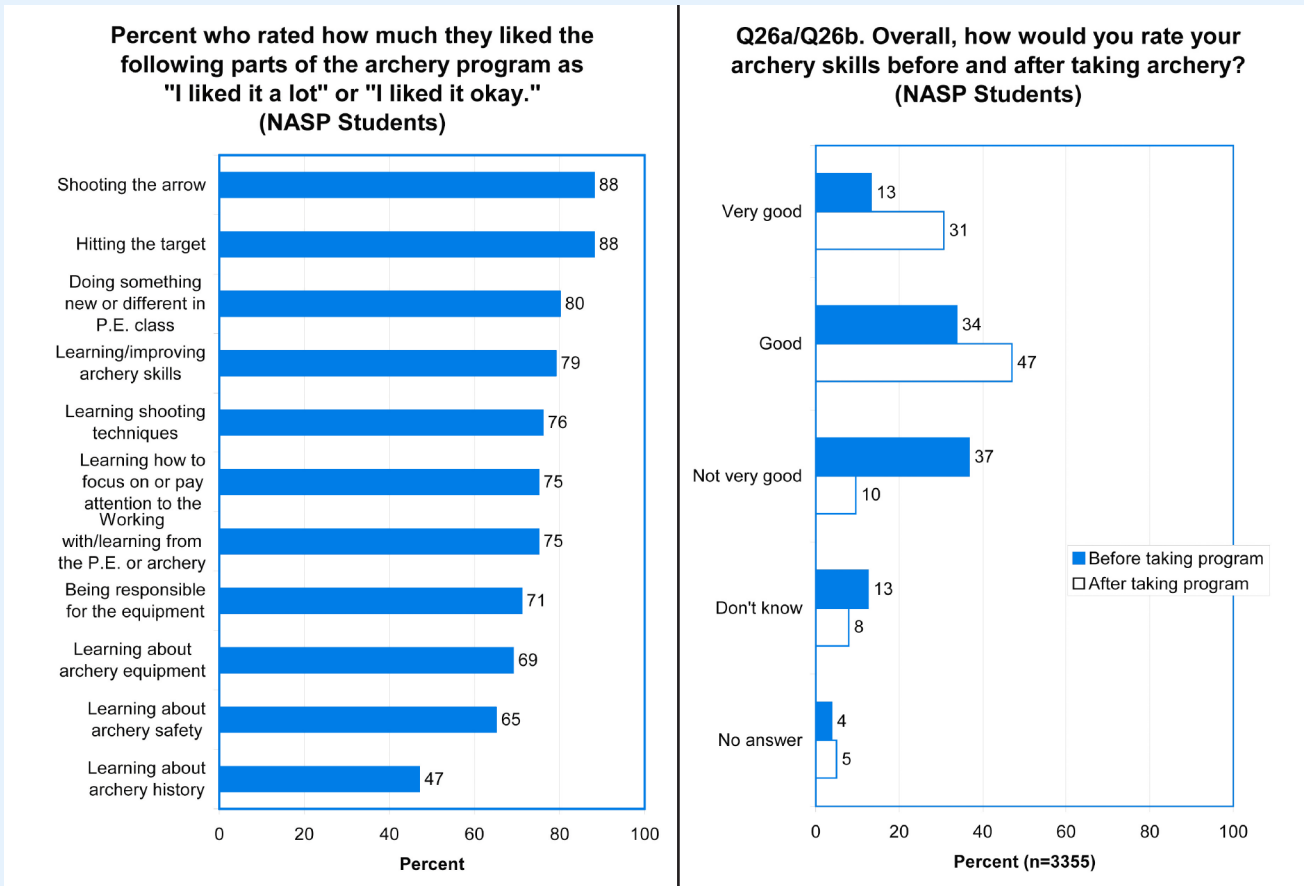


Figure 5.

*“NASP® is strong due to the precise training certification program that beginning instructors must complete. Also, the strength is due to the dedication of educators to bring this unique curriculum to their students.”*

*—Kentucky Instructor*

### **Effects on Student Motivation and Self-Confidence**

Among those students who indicated that they learned how to pay attention and focus better in archery, students also say that the program has helped them pay attention or focus better in learning other things (see Figure 6). Substantial percentages of NASP® students say the program gives them more motivation to participate in archery, to learn other sports, to get good grades, to participate in other sports and activities, to stay out of trouble, to be respectful of adults and friends, and to attend school. More than a quarter 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, about their relationships with teachers, and about their ability to do their school work (see Figure 7).

### **Effects on Student Interest and Participation in Archery and the Shooting Sports**

Almost two-thirds of NASP® students indicate that they have participated in archery since taking part in NASP® in school and roughly a third indicate that they are more interested in other shooting sports since taking part in the archery program at school (see Figure 8).

**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)**

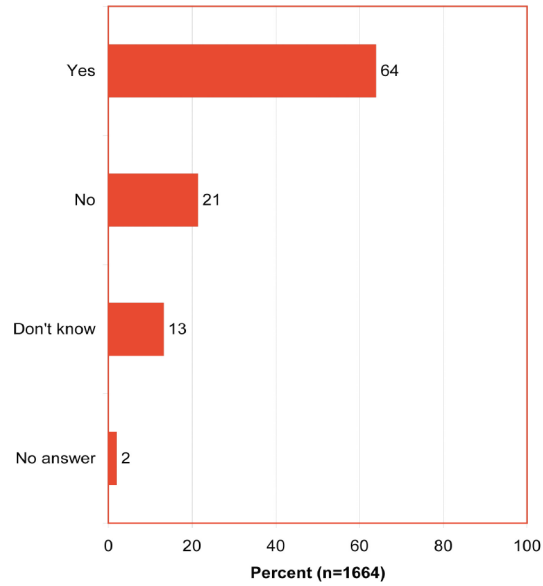
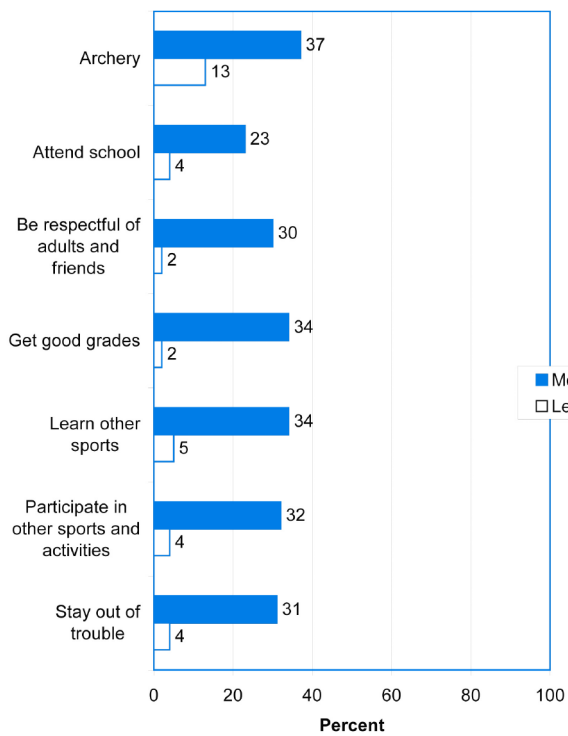


Figure 6.

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



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

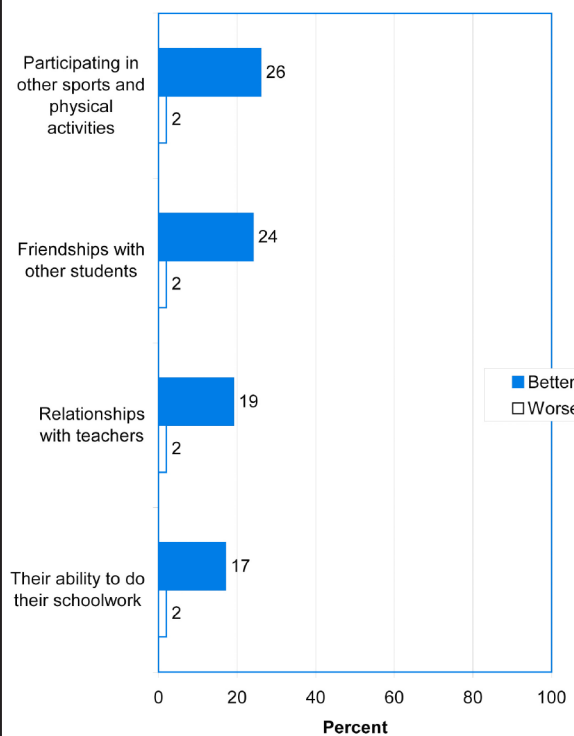


Figure 7.

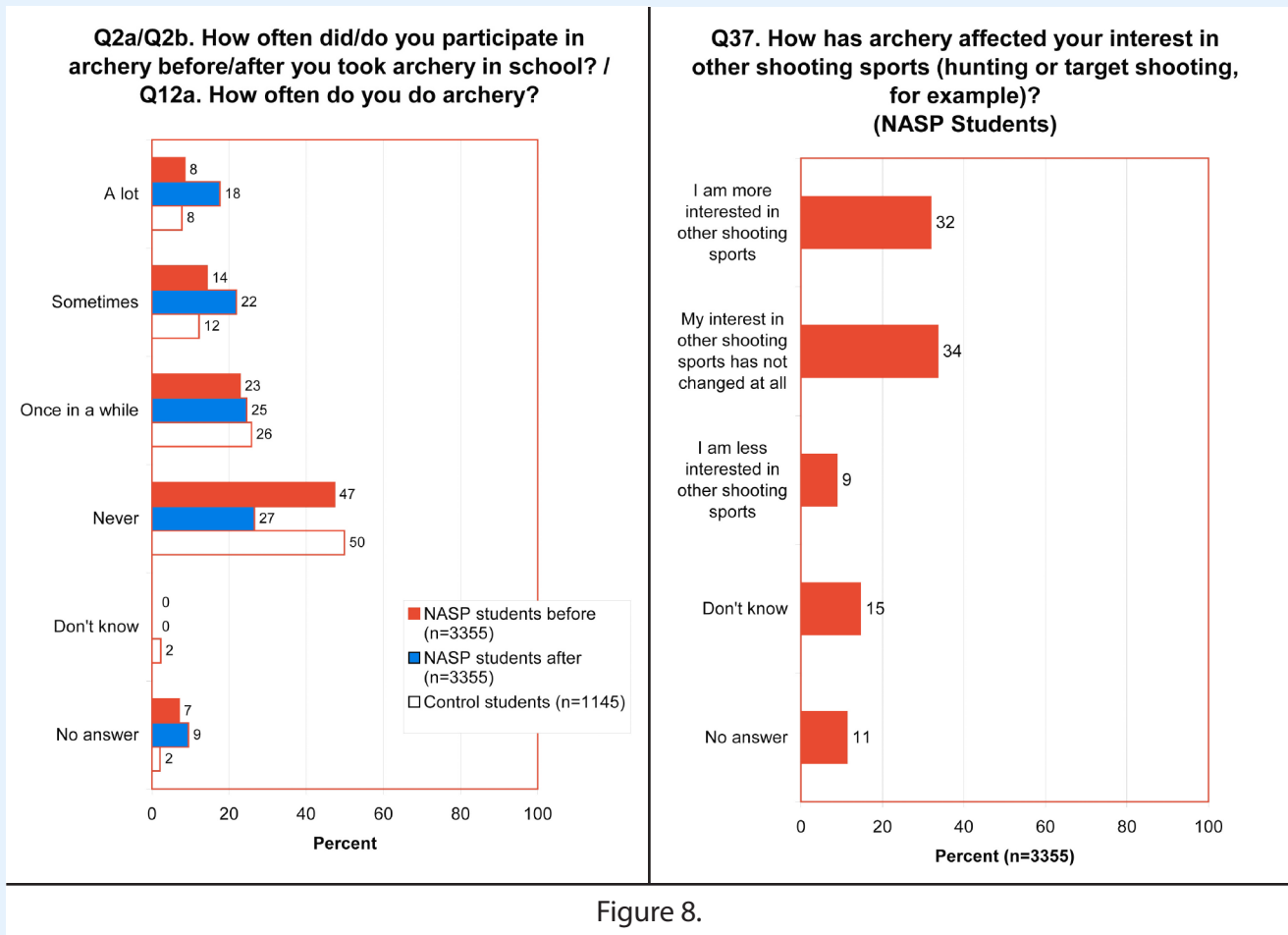


Figure 8.

## What Impact Is NASP® Having on Students?

The effect of physical activity in a student’s overall academic experience has been extensively studied in the past several years, prompted in part because of school systems’ limited funding, the increased demand to meet scholastic standards, and curriculum time constraints. The consensus is that physical activity, including P.E. in schools and students’ participation in sports, has a beneficial effect on students’ attitudes and self-confidence, which leads to improved academic achievement. 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.”

Nearly all measures of engagement show that students are, indeed, engaged by the archery program. Not only do students enjoy participating in the archery program, but the curriculum is designed to promote inclusion and diversity and reach students of all levels, skills, and backgrounds. Instructors praise the program for providing a comfortable outlet for non athletes and at-risk, special needs, and disabled students to experience success in sports activities. Providing these opportunities makes school more enjoyable and rewarding for students, and qualitative data suggests that students achieve a certain amount of satisfaction and confidence in reaching a definable goal or “target” and that this results in positive attitudes and behaviors. The data show that students’ self-confidence is certainly improved, and evidence suggests that they are more motivated in school, as well. Students also feel that they learn to concentrate and focus better, which carries over into other aspects of their academic experience. NASP® appears to improve students’ learning skills, in and outside of P.E.

NASP® also appears to increase students’ interest and involvement in archery. Not only is student interest in archery increased by the program, but it also appears that interest in other shooting sports is increased, as

well. Based on the link between physical activity and a well-rounded academic experience, this increased interest in archery and shooting sports could have a potentially beneficial effect on students.

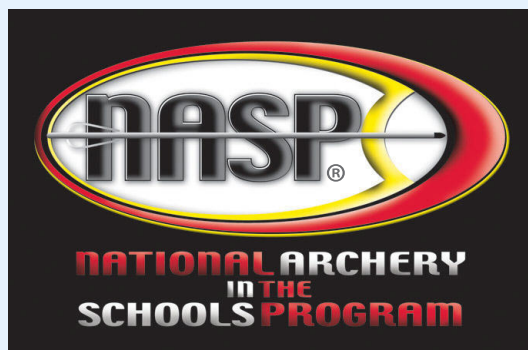
For Phase III of this project, grades were obtained from more than 700 students in four NASP®-participating schools. There were some positive correlations indicating that NASP® impacted several subject areas: Reading, Writing, and English. Counterbalancing this, however, some negative correlations were found that are unexplainable at this point. Despite extensive analysis, results were inconclusive. While this analysis was ambitious, obtaining grade and student record data was difficult due to legal and confidentiality issues. The positive results in self-reported attendance and academic performance because of the NASP® suggest that further study is needed before any definitive statement can be made on the effect that NASP® has on attendance and performance. Certainly, a better attitude among students can only help with attendance and academic performance.

Research suggests that a correlation between physical activity and academic performance does exist—that participation in physical activities is part of a well-rounded set of positive behaviors linked to good academic performance. While the link between NASP® and the promotion of interest and participation in archery is intuitive, the link between NASP® and the promotion of student education is less straightforward. This latter link depends on a possible correlation between physical activity and academic achievement. The data obtained in this project show positive results regarding the impact of NASP® on student performance and achievement.



*“Following directions, listening, concentrating, patterning, joyful physical activity are all essential school skills that are taught directly as a part of the NASP®.”*

*—Michigan Instructor*



National Archery in the Schools Program [www.nasparchery.com](http://www.nasparchery.com)