Research Article

An Evaluation of a Classroom Science Intervention Designed To Extend the Bicycle Helmet Safety Message

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ABSTRACT

Background: *Wizards of Motion is a program of curriculum delivery through which experts in Kinesiology introduce grade 7 students to applications of physics for human movement. The program is linked closely to Ministry of Education curriculum requirements but includes human movement applications and data analysis experiences.* ***Purpose:*** *The purpose of this study was to evaluate students' head safety knowledge and attitudes toward helmet use after participating in the program.* ***Methods:*** *Data were collected from five grade 7 classrooms. Two classrooms (n = 37) receiving the program, while three classrooms, (n = 37) formed the control group (no intervention). Results on the Knowledge Test, and the Student Helmet Use Questionnaire were compared between intervention and control students.* ***Results:*** *A significant pre-post change in level of knowledge scores was observed in the intervention group. Likewise, intervention group students showed a significant increase in their intention to wear a helmet in future.* ***Discussion:*** *The successful program delivery illustrated the usefulness of linking public health promotion to standard classroom curriculum.* ***Translation to Health Education Practice:*** *This program exemplified the fundamental elements of knowledge translation and knowledge development, and is therefore recommended as a positive approach to delivering the public health message of helmet use for head safety.*

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BACKGROUND

It is commonly recognized that injury prevention and the development of programs that promote safety are central tenets of public health. Similarly, promotion of participation in sport and recreation at all levels of society is a major emphasis of public health promotion. Yet, participation in sport and recreational activity is not without risk of injury. For example, in 2000 the Canadian Institute of Child Health (CICH)[1] reported that unintentional injuries are the leading cause of death and a major cause of injury in children and adolescents. Likewise, in 2002, the World Health Organization[2] reported that over 700,000 children ages 14 and under died as a result of injuries, of which 90% were classified as unintentional. Among the risks associated with participation in sport and recreation is the risk of head injuries. In Canada, the Canadian Institute for Health Information[3] reported that in 2003-2004, participation in sport and recreation was the third leading cause of hospital admission due to traumatic head injuries for children and youth. Clinical studies of moderate to severe head injuries show that the consequences can include

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impairment of cognitive, emotional, social and physical functioning.

Cycling, Head Safety and Helmet Use

Although there is little research devoted to the cause of injury in many different activities, there is considerable information related to the cause of injury associated with participation in cycling both at the competitive and recreational levels. There are several published reports that describe the incidence and prevalence of cycling related injuries. For example, according to SmartRisk,[4] a Non-Government Office (NGO) safety advocacy group, there were 1266 Ontario cyclists hospitalized in 2002-2003 due to cycling related injuries. The impacts of these injuries become more profound when one considers that the rate of hospitalization accounted for more than 5000 days in acute care hospital treatments.[4]

With respect to head injuries, the ThinkFirst safety advocacy group reported that cycling is the leading cause of hospitalization due to head injuries among school age children,[5] while Safe Kids Canada,[2] also a safety advocacy group, reported head injuries are the leading cause of severe injury to children on bicycles. The prevalence of mild traumatic brain injuries has been estimated to be 29% of all cycling-related hospital admissions.

Most research has indicated that the risk of head injuries related to cycling can be reduced considerably by simply ensuring that cyclists wear size and age appropriate helmets. Early studies by Thompson, Rivera, and Thompson[6] reported that helmets reduce the risk of head injury by 85% and the risk of brain injury by 88%, findings which were later supported in research by Finnoff, Laskowski, Altman, and Diehl.[7] Despite the fact that in most provinces in Canada adolescents under the age of 18 years must wear a Canadian Standards Association (CSA)-approved bicycle helmet when cycling on public paths, recreation trails, and roadways, the ThinkFirst organization found that only 55% of individuals between the ages of 11-14 reported that they always wore a helmet when cycling.[5] Yet, how important is the notion of head protection to an adolescent? According to the Canada Safety Council,[8] youth will report several reasons for not wearing a helmet. The most frequently reported reason for not wearing a helmet is that they just do not bother. This is followed by the perception that a helmet negatively affects appearance (14%), helmet users are not cool (13%), and helmets are uncomfortable (11%). Many youth are unaware of the dangers when not wearing a helmet and some 10% indicated that helmets are simply inconvenient. The Canada Safety Council also reported that many children feel that helmets are not needed as they do not think they will have an accident; while some 6% of youth queried about helmet use believed that helmets are not mandatory. Finally, 5% explicitly state that helmets just look stupid or that they forget to wear a helmet when cycling.

Interventions Designed To Promote Head Safety and Helmet Use

The need to consider head safety among participants in recreational activities is a universal public health issue. Health promotion programs, rules for safe conduct, and incentives to participate are often replicated between jurisdictions, crossing political boundaries, and recreation activity. For example, in Canada, many of the provincial governments have decided that regulating the use of helmets is an important and effective way to prevent injuries and have created helmet legislation for bicycle use. In 1995, Ontario's provincial government implemented legislation that requires people under the age of 18 to wear a helmet when riding a bicycle on a public road. As of June 2005, six out of ten Canadian provinces had some form of bicycle legislation.[5] In a study by MacPherson et al,[9] bicycle related injuries decreased significantly with the implementation of helmet legislation in comparison to non-legislated provinces.

The Canadian Association for Sports Medicine, the ThinkFirst Foundation, and the Canadian Association of Road Safety Professionals have published position papers stressing the need for head safety and helmet use educational programs.[5,10,11] A number of community-based programs have been conducted and report increased helmet use after the implementation of head safety and helmet use interventions. An example of this is the MORE HEALTH Bicycle Safety Project[12] that was implemented in Florida and included a bicycle safety presentation and the provision of reduced priced helmets for public school students. The presentation included hands-on activities involving the use and effectiveness of helmets. The curriculum goals focused on teaching students about the value of head safety and helmet use. Classroom teachers evaluated the pre- and post-program activities, program content, instructional aids, and the instructor's enthusiasm, presentation style, knowledge of the area, and rapport with the students. Pre- and post-observational surveys were completed by an intervention and matched control group in order to determine the amount of helmet usage. The results demonstrated that there was no significant difference in helmet use between the control and intervention group in the pre-observational survey. However, a significant difference was found between the two groups following the intervention. Overall, teachers believed the program was effective. The suggested areas for improvement included providing pre-program material earlier, enhancing readability of material, and encouraging the preparation of an in-class colouring book. Post program data showed that 1008 helmets were sold through the program.

Wizards of Motion Program

Lakehead University's Wizards of Motion program, funded by Canada's Natural Sciences and Engineering Research Council (NSERC) PromoScience program, was designed to introduce the application of mechanics to the analysis of human motion. Scientific and technical experts in biomechanics, science, and education visited grade 7 and grade 10 Northwestern Ontario classrooms with portable, self-contained laboratory experiences that focused on measuring kinematic and kinetic variables associated with human movement. The Wizards of Motion curriculum was linked closely to the Ministry of Education science curriculum but expanded to include human

motion applications and hands-on quantitative data experiences. The program requires that students collect and analyze data and create customized reports with animated graphic displays. The program provided support to teachers to expand their science delivery programs and to encourage student interest in the science of human motion. Whereas, the Wizards of Motion program has two distinct curriculum packages, one for students in grade 7 science and one for students enrolled in the physics strand of the grade 10 academic science curriculum. The focus of this research was on the core Head Safety Intervention Module which was specifically prepared for grade 7.

Wizards of Motion Head Safety Intervention Module: The Head Safety Intervention Module was designed to be delivered to students in a single two-hour block during regular school hours. The program started with an introduction of concepts using a PowerPoint® presentation that incorporated videos and animation to help capture the student's attention. The concepts and terms included kinesiology, biomechanics, force, impulse, shock absorption, and safe helmet design and practice. Students used a custom designed Head Impact Measurement System (Figure 1) to simulate falls and subsequent head impact. The measurement system was comprised of a support frame and a mounted head-form with attached linear accelerometers. The device was interfaced to a laptop computer for analog-to-digital data conversion. The procedure enabled students to observe and compare kinematic and kinetic variables associated with head trauma based on impact.

At the end of the program the students were expected to:

- Define and identify basic biomechanical terms and concepts, determinants of head injury and safe head practices
- Discuss the characteristics of materials used to dampen or absorb force
- Generate and interpret data from the head impact measurement system and relate the finding to the design of protective helmets
- Discuss the specifications of helmets used to protect the head while cycling
- Articulate an increased interest in practicing safe helmet-use behaviors.

PURPOSE

The purpose of this study was to present the results of an evaluation of student head safety knowledge and their attitude toward helmet use following delivery of the Wizards of Motion Head Safety Intervention module delivered to grade 7 science classrooms.

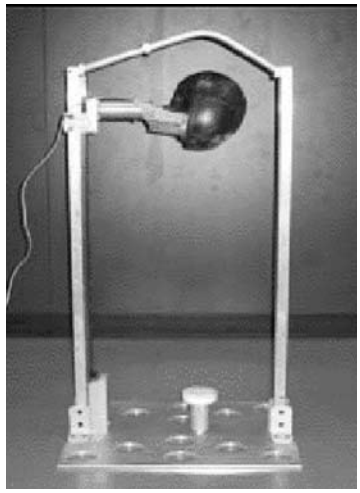
METHODS

This study involved 74 students from five grade 7 classrooms during the 2006-2007 school year. Classrooms were matched based on socioeconomic status and then randomly designated as part of either the intervention or control group. Two classrooms consisting of 37 students, received the Wizards of Motion intervention. Three classrooms, also consisting of 37 students, formed the control group and did not receive the Wizards of Motion intervention. Ethical approval was obtained from both the University Research Ethics Board, and the Public School Board. Information and consent forms were distributed to the participating schools. Due to the age of the students, both the participant's signature and the signature of the parent/guardian was required.

Data Collection

Two instruments were used to evaluate the student's biomechanical and head safety knowledge, and attitude toward helmet use. The first instrument was the Knowledge Based Test. Over a two-year period prior to this investigation, the Wizards Program introduced an independent sample of science teachers to the curriculum content and technology prepared for the grade 7 visits. The program delivery team led the teachers through the activities, providing them with the opportunity to ask questions and provide feedback about the suitability of the materials and activities for grade 7 science students. The Knowledge Based Test was developed based on the results of the preliminary sessions with the teachers and on the learning outcomes identified for the Head Safety Intervention Module. The test consisted of 15 multiple choice questions and two open-ended questions designed to evaluate the student's knowledge of basic biomechanical concepts, as well as their knowledge of head safety. Prior to the evaluation of the classroom science intervention, construct validity was established for the set of knowledge-based questions using a focus group of experts comprised of six grade 7 science teachers. A sample of questions asked on the Knowledge Based Test is presented in Table 2.

Figure 1. Head Impact Measurement System



The second instrument was a Student Helmet Use Questionnaire (Table 1), designed to assess the student's current and projected helmet use. Students were also asked to rate their agreement (agree, disagree) for each of a series of statements related to attitudes toward helmet use and reasons for wearing a helmet. The instrument was developed from previous work by Takriti, Lee, and Mann.[13]

Both the intervention and control groups were given the Knowledge Based Test and the Student Helmet Use Questionnaire approximately one week prior to the program delivery. The Wizards of Motion team then visited the classrooms that comprised the intervention group and delivered the Head Safety Intervention Module. Two days fol-

Table 1. The Student Helmet Questionnaire Including Responses For The Present Study

Please check the BOX that is the best answer for each question.

What is your gender?
❒ Male (n=35) ❒ Female (n=39)
What is your age?
❒ 11 ❒ 12 ❒ 13 ❒ 14 Average age = 12.30 ± 0.49
Do you own a bicycle helmet? *(Number of participants indicating yes male: n=31; female: n=34)*
❒ Yes ❒ No
In the summer, how often do you ride your bicycle? *(62 respondents indicated that they cycled most days)*
❒ Every day
❒ Most days (4 days a week or more)
❒ Some days (3 days a week or less)
❒ Not often (less than once a week)
❒ Hardly ride (less than once a month)
❒ Never ride a bicycle
Why do you ride your bicycle?
❒ To get you to and from school
❒ To go and see friends (16 respondents indicated that they cycled to see a friend)
❒ For fun (49 respondents indicated that they cycled for fun)
❒ Only when you have to
When you ride your bicycle, do you wear a helmet? *(respondents indicated that they always wear their helmet 9 males and 15 females)*
❒ Always
❒ Most times
❒ Half the time
❒ Sometimes
❒ Never
❒ I don't ride a bike
There is a law in Ontario that everyone (no matter how old) must wear a helmet when riding a bike?
❒ Yes ❒ No
In the future, how often will you wear your bike helmet?
❒ Always
❒ Most times
❒ Half the time
❒ Sometimes
❒ Never
❒ I don't ride a bike
On questions about attitude to future helmet use, the intervention group showed a significant positive change in their intention to wear a helmet in the future. The intervention group had a pre-test mean of 4.031 ± 1.177 and the post-test mean of 4.406 ± 1.043
Please tick ONE box which indicates your reason for wearing a bicycle helmet
❒ Makes you look good
❒ Allows you to cycle faster
❒ Makes you a safer cyclist
❒ Helps protect your head only
❒ Not worth wearing
❒ Makes you look bad
Do your parents wear a helmet when they ride their bike?
❒ Always *(Only 51% of children responded that one or both parents ride a bicycle—*
❒ Most times *of the respondents 20% of parents always wear a helmet while 33% don't wear*
❒ Half the time *a helmet while cycling)*
❒ Sometimes
❒ Never
❒ They don't ride bikes

Part II. Please place a check mark in the box which **BEST** describes how you feel.

	Yes, I agree	I kind of agree	I kind of disagree	No, I disagree
Helmets can prevent **minor** injuries when riding a bike.				
Only children should wear helmets.				
My parents believe wearing a bike helmet is important.				
Helmets can prevent **major** injuries when riding a bike.				
I feel safe wearing a helmet.				
Everyone should wear a helmet.				
I feel tough wearing a helmet.				
I feel silly wearing a helmet.				
I feel comfortable wearing a helmet.				
It feels unnecessary to wear a helmet.				
It is important to wear a helmet.				

Please place a check mark in the box which **BEST** describes how important the following reasons are to why you wear or don't wear a helmet?

	Not important at all	Not important	Important	Very Important
The way the helmet feels on your head.				
How the helmet looks.				
What your friends think and say.				
The cost of buying a helmet.				
If it was the law to wear a helmet.				
Whether your friends wear a helmet.				
If it was the school rule to wear a helmet.				

Please list 2 reasons why you think people choose **NOT** to wear helmets while participating in sports like bicycling, skateboarding, and inline skating.

1. _____ 2. _____

Please list 2 reasons you think people **SHOULD** wear helmets while participating in sports like bicycling, skateboarding, and inline skating.

1. _____ 2. _____

Table 2. Sample of Questions Asked on the Knowledge Based Test

Question	Answers
You need to get a new bike helmet after you have one big impact (hit).	❒ True ❒ False
Force is defined as:	❒ A person's ability not to move. ❒ A push or a pull. ❒ A person's ability to move. ❒ The shock absorption of a material.
Impulse is defined as:	❒ A push or a pull. ❒ Applying a force over a time. ❒ A person's desire not to move. ❒ The shock absorption of a material.
The _____ absorbs the force as it goes through the helmet, so that less force gets to your brain.	❒ Hard outer shell ❒ Inside foam ❒ Straps ❒ Safety sticker
The _____ spreads the force over the helmet, so that it does not act in one spot.	❒ Hard outer shell ❒ Inside foam ❒ Straps ❒ Safety sticker

lowing the delivery of the program, students in both the intervention and control groups were again required to complete the Knowledge Based Test and Student Helmet Use Questionnaire. Following the completion of the investigation, the Wizards of Motion team provided the students and teachers in the control group classrooms an opportunity to participate in the Wizards of Motion module.

Data Analysis

A matching quasi-experimental research design was used to evaluate the results of the Knowledge Based Test, and the Student Helmet Use Questionnaire. The scores from the Knowledge Based Test were analyzed with a repeated measures ANOVA. The students were asked to describe their attitude about helmet use before and after participation in the Wizards of Motion program. These data were evaluated with a t-test for difference scores for two independent groups to determine if there was a significant change in attitudes from the pre-test to the post-test, for each group independently in regards to their rating of statements dealing with helmet use.

RESULTS

The results were based on responses from five schools. In total, 74 (male = 35, female = 39) students took part in this study; 37 (male = 17, female = 20) students participated in the control group, and 37 (male = 18, female = 19) participated in the intervention group. Eighty-four percent of students reported riding a bicycle on a daily basis. When asked if they owned a helmet, 88% of students responded "yes," and 12% responded "no." When categorizing the responses by gender, the results indicated that 89% of males and 87% females owned a helmet, while 11% of males and 13% of females did not own a helmet. Although it is the law that children under the age of 18 wear a helmet when riding a bicycle, it is interesting to note that only 32% (n=24) responded that they always wore their helmet while cycling. Of these 24 participants, 15 were female and 9 were male.

Knowledge Based Test

The average pre-test scores on the Knowledge Based Test were 9.92 (±3.06) and 11.24 (±2.52) for the intervention and control groups, and the average post-test scores on the Knowledge Based Test were 12.57 (±4.4) and 11.68 (±2.75) for the two groups, respectively. The results of the repeated measures ANOVA used to evaluate the change in level of knowledge between the control and intervention groups are presented in Table 3. The findings indicated that a significant difference for the main effects was found between the pre- versus post-test scores ($F = 8.24$; $df = 1$; $P < 0.05$), but no significant difference was found between the control and intervention groups ($F = 0.16$; $df = 1$; $P > 0.05$). A significant interaction was found within the overall model ($F = 4.26$; $df = 1$; $P < 0.05$).

Post-hoc comparisons to determine the significant difference within the interaction

Table 3. ANOVA Summary Table for Knowledge Based Test

Average Response Scores by Group and Time			
	Pre	Post	
Intervention Group	9.92	12.57	
Control Group	11.24	11.68	
Source	Mean Square	F	p
Main Effect: Time	87.81	8.24	0.01
Main Effect: Group	1.73	0.16	0.69
Interaction Effect: Time*Group	45.43	4.26	0.04

term were evaluated with the Newman-Keuls' multiple range test. The results showed that while a significant difference existed between the intervention group pre-test and the intervention group post-test scores ($t_{obs} = 2.65 > t_{critical} = 1.82$; $P < 0.05$) no other comparisons were significant.

Helmet Use and Attitude

The results of the pair wise t-test were used to determine if there was a significant change in attitudes from pre-test to post-test, for each group independently in regards to their rating of statements dealing with helmet use. Students were asked to rate their agreement using a binary scale (agree/disagree) for each of the statements. The results indicated there was a significant decrease in the intervention group's measure of agreement for the statement "I feel tough wearing a helmet" (t=-2.25; df=36; P<0.05). No other changes in attitude within either group were significant.

The Student Helmet Use Questionnaire also explored students' attitudes toward future helmet use. The results indicated that there was a significant increase in predicted helmet use from pre-test to post-test (t = 2.82; df =31; P<0.05) for the intervention group. There were no significant changes observed for the control group from pre-test to post-test. The Student Helmet Use Questionnaire required the students to provide two reasons why people wear a helmet and two reasons why they do not. The students' answers were then categorized into themes and the frequency of each theme was calculated. When the students were asked to address the reasons people chose not to wear a helmet, 13 different themes were found: fit/size, appearance, peer pressure, affects cycling performance, not needed, cost, ownership, parents behaviour, age of helmet, cool factor, takes too much time, forgot to wear, and no reason. The frequency of responses varied between the control and intervention groups and across pre- and post-tests.

When the students were asked why people should wear their helmets, five themes were determined: safety, affects cycling performance, it is the law, to be a role model, and parental enforcement. The intervention group showed a pre- to post-test increase (25% to 68%) in the frequency of identifying safety as the reason why people should wear helmets. The control group responses remained relatively constant from pre- to post-tests.

DISCUSSION

The emphasis of the Wizards of Motion Head Safety Intervention Module was to increase the students' level of knowledge about safe bicycle helmet practices and to change attitudes toward bicycle helmet use. Although it is legislated by the Provincial Government that all children under the age of 18 must wear a helmet, the results from this study indicated that while approximately 88% of the students owned a helmet, only about 32% of them reported "always" wearing it. This finding is slightly less than the results from Canadian Health Surveys reported by Pless and Millar[14] where approximately 58% of children always wear their bicycle helmet while cycling. Providing education to encourage children to adopt helmet-wearing behaviors is paramount to increasing helmet use.

Prior to delivering the intervention, students in the present study reported the typical attitude about bicycle helmet use, which was to wear a helmet because it was required by law. This finding was consistent with the report of the Canada Safety Council,[8] in which students' reasons for wearing a helmet included, "it's the law" or "mom and dad make me." However, following the classroom demonstrations about head safety and biomechanics, as well as the specific group activities in which students were asked to measure impact forces on a protected versus an unprotected head-form using the *Head Impact Measurement System*, students more often reported safety as a primary reason for their choice to wear a helmet in the future. One of the goals of the program stakeholders was to have the students make a choice to wear a helmet based on knowledge about biomechanics and head impacts. The

results of the study indicated that the intervention group demonstrated an increase in knowledge of biomechanical and head safety concepts. The change in knowledge may have influenced the students' reason for wearing a helmet and contributed to the significant increase in intended future helmet use reported by the intervention group following delivery of the Wizards of Motion program. This finding is critical; in that it supports the notion that a classroom presentation using an education-based intervention module can be effective in changing behavioural intentions of students, especially related to safe practices.

The delivery style along with the methods used to coordinate the activities and demonstrations were considered to be critical to the success of the program. The presentations of the Head Safety Intervention module were delivered by members of the Wizards of Motion project team. These individuals were researchers/professors from the University and their visits to the classroom to deliver the module provided an exciting change in the regular routine of the grade 7 students. The Wizards of Motion instructors were intentionally dynamic and entertaining in their presentations, both with respect to style and content. For example, using action metaphors like throwing a raw egg against a taut sheet to demonstrate dissipation of forces and momentum or showing video clips of head injuries in unprotected individuals helped to accentuate the consequences of unsafe behaviours. The program was designed to extend the bicycle helmet safety message based on the expectations outlined for a grade 7 science curriculum. The Head Impact Measurement System successfully demonstrated the physics of impact on an individual's head when it hits the pavement with or without a helmet. Through such activities (especially when the egg missed the sheet and crashed against the wall), students were enthused and eager to relate their personal accounts of helmet protection (or lack thereof). Dropping the five-kilogram head-form from a one-meter height onto a landing plate was not only loud but effective in capturing the students' attention. Moreover, generating and displaying the absorption characteristics of different types of helmets engaged students in an authentic learning process.

Study Limitations

Grade 7 classrooms in a local school board were invited to be part of the Wizards of Motion program. Specific classrooms were subsequently selected to be part of the investigation based on matching the number of students in each classroom and on socioeconomic status. While the initial investigation was limited by the number of participating classrooms, the sample provided valuable insights into the efficacy of linking a health education message to a hands-on dynamic science lesson.

This program involved a single delivery session that may not have been sufficient to elicit sustained changes in student knowledge and attitude toward helmet use. However, the program was designed to extend the head safety message by building on the expectations outlined for a grade 7 science curriculum and was not intended to include repeated classroom presentations. The investigation of changes in student helmet wearing behaviour was also beyond the scope of this initial investigation. Students' intended helmet use was used in place of the behaviour change. Future research will examine both the long-term effects of the delivery of the program and changes in student behaviour as a function of the intervention.

This study would have benefited from a more inclusive participatory process that involved parents. Future delivery of the Wizards of Motion program will include distribution of a brochure to parents that will highlight material presented to the children. The brochure will be designed to encourage evidence informed conversations related to helmet use behaviours.

Finally, further investigation is necessary to establish the psychometric properties of the evaluation tools used in this study.

TRANSLATION TO HEALTH EDUCATION PRACTICE

The Wizards of Motion head safety intervention module provided a unique opportunity for students to visualize the outcomes of unsafe practices with respect to helmet use while studying specific concepts within the grade 7 science curriculum. Using a novel approach that combined the demonstration of injury outcomes with basic principles of biomechanics and physics, instructors focused on the science of traumatic head impacts and intentionally avoided the lament of negative consequences that can result from not wearing a helmet. In the Wizards of Motion delivery, the instructors were able to teach about, rather than preach about, the importance of helmet use.

Specifically, the Wizards of Motion instructors used the fundamental science of falling objects and impact forces to produce real acceleration data measured in "g's " for a head-form colliding with a fixed surface when dropped from a height of one meter. Next, the instructors and students worked together to compute the average impact forces for multiple trials for a number of helmet conditions. Comparing the computations of force acting on the head-form at the point of traumatic impact, the students were able to generate their own scientific support for the effectiveness of wearing a helmet during different activities.

Changing an individual's decision to wear a bicycle helmet requires modification to existing behavior that must be reinforced by several influences including peers, parents, and society. Without an emphasis on changing an individual's understanding and appreciation of the consequences of wearing or not wearing a helmet, individuals may not adopt the necessary behavior change into their lifestyle. The Wizards of Motion program provides health promoters with an approach to communicate the importance of wearing a helmet as a safety message woven into the delivery of standardized science curriculum. Through this approach, evidence of the effectiveness of wearing a helmet is observed directly by the student. According to Buckley and Sheehan[15] the ability to demonstrate the effectiveness of a health intervention, such as the helmet safety message presented here, is essential for ensuring that the intervention will have a positive influence on the intended cohort.

The success in delivering the Wizards of Motion program illustrated the versatility of linking concepts of health promotion to standardized curriculum, and invites considerations for additional health education program links across the curriculum.

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