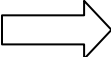


## Education Ranking by Country 2020

<https://worldpopulationreview.com/country-rankings/education-rankings-by-country>

Country	Total Score	Reading	Math	Science
China	1731	556	600	575
Hong Kong	1637	533	555	549
Finland	1631	536	541	554
Singapore	1630	526	562	542
South Korea	1623	539	486	538
Japan	1588	520	529	539
Canada	1580	524	527	529
New Zealand	1572	521	519	532
Taiwan	1558	495	543	520
Netherlands	1556	508	526	522
Australia	1556	515	514	527
Liechtenstein	1555	499	536	520
Switzerland	1552	501	534	517
Estonia	1541	501	512	528
Germany	1530	497	513	520
Belgium	1528	506	515	507
Macau	1523	487	525	511
Iceland	1503	500	507	496
Poland	1503	500	495	508
Norway	1501	503	498	500
United King.	1500	494	492	514
Denmark	1497	495	503	499
Slovenia	1496	483	501	512
Ireland	1491	496	487	508
France	1491	496	497	498
 <b>United States</b>	<b>1489</b>	<b>500</b>	<b>487 (25th)</b>	<b>502 (23rd)</b>
Hungary	1487	494	490	503

# ***Memo***

St. Teresa's Academy

Kansas City, Missouri

To: Judy Downey, MetLife  
From: Jessie Thompson  
Re: CRASH! The Science of Collisions Materials

I have been teaching physics at St. Teresa's Academy in Kansas City, Missouri, for the past ten years. One of my goals is to make physics exciting and interesting for my students. This past year I began using activities from CRASH! to teach many of the scientific principles I already cover in my curriculum. I did not change my curriculum to include these CRASH! activities; I simply used CRASH! materials in place of text or lab book exercises. CRASH! provides students with a powerful connection between science and real-life situations. Also through our discussion students became more aware of the importance of safe driving practices. Students enjoyed the learning process and were truly engaged in the CRASH! activities.

David Beier, a 6<sup>th</sup> grade teacher in Lee's Summit, Mo has used several CRASH! activities and says:

*"The CRASH! kit is full of materials that are a perfect supplement to many of my classes. I have used about six of the activities in my sixth-grade science classes, and I love that I can use the activities as assessments of what my students have been learning. The CRASH program is a tremendous way for me to keep my science classes interesting and vibrant. My students end up on a collision course with learning."*

I truly believe that the CRASH! materials are an excellent addition to my Physics and Physical Science classrooms. The materials are easy to incorporate into an already existing curriculum and should not require any changes to a schools' existing curriculum. I applaud MetLife for its commitment to improve and enhance students' learning in the classroom. At the same time CRASH! activities will raise students' awareness of the importance of driving safely and wearing seat belts as well as the consequences of accidents and collisions.

## Feedback About CRASH!

"We are thrilled to have the opportunity to bring the CRASH! program to high schools across New York State. This program not only brings invaluable applied science lessons into the classroom, but the residual safety message of the CRASH! program is so important to young and inexperienced drivers."

Kelly Costanza, New York Allstate Foundation spokesperson

"We continue to commit to programs like this to help educate our new drivers about the importance of responsible driving and safe driving. We are really proud of our partnership with CRASH!"

Krista Conte, Allstate Insurance Co.

"Thank you for bringing this program (CRASH!) to our attention. We have instituted CRASH! in all our schools; again, thank you for sharing this exceptional education tool with us."

James G. Hill, Commander, Citrus County (FL) Sheriff's Office

"Presenting injury prevention within the context of a physics course would improve comprehension of the implications of risky behavior. Presenting in a graphic and hands-on format the reasons why injuries occur and how they can be prevented would lead to more favorable attitudes."

Dr. Ricardo Martinez, former Exec. Dir. NHTSA

"With great enthusiasm I am writing to tell you about a program that will transform the teaching of science and math into an exciting hands-on program that involves students like never before. CRASH! is a series of activities that conform to existing New Hampshire Frameworks and can be incorporated into science, physics, and mathematics curricula."

Nicholas Donohue, Commissioner, New Hampshire Dept. of Education

"Following a serious car crash we all ask ourselves what we could have done. But it is always after the crash. Now we can do something before it happens."

Chief Robert Redfern (Ret.)

"We strongly believe that your students will get a better understanding of science and math, while learning tips about auto safety that just may save lives. The hands-on aspect of these in and out of classroom activities make this a truly different learning experience for students, and they are much more likely to retain the information than if they simply read it in a book because they "experience" and view it live. We believe we're on the cusp of something big here. This is a tremendous opportunity to advance safety, learning, and police/community relations simultaneously."

William D. Anker, PhD., Director, Rhode Island DOT  
Catherine Rein, President & CEO, MetLife Auto & Home

"We believe that children will learn from what they see".

Judy Downey, Project Manager, MetLife Auto & Home

“Without a doubt these materials will not only be an excellent resource for SRO’s, but it will result in saving young lives.”

Curtis Lavarello, Exec. Dir., National Assoc. of School Resource Officers

“In the next decade, educators expect the forensic sciences will play a major role in math and science curriculums nationwide.”

Mary Fran Ernst, American Academy of Forensic Sciences

“CRASH! does not replace existing lesson plans but rather works in conjunction with established New York State curriculums to provide hands-on activities that illustrate science and math through collision reconstruction. We firmly believe that practical reinforcement of traffic safety principles is an essential part of overcoming teenage invincibility. I am very encouraged by the responses of teachers. Keeping our children safe on the roads has no down side. Together we can change the culture that puts residents of Nassau County in harm’s way.”

Kathleen Rice, District Attorney, Nassau County, NY

“If kids would learn a lesson that it’s just too dangerous to drive recklessly or drunk. CRASH! is a program that reinforces that message through hands-on projects - what could be better.”

Maureen McCormick, Asst D.A., Nassau County, NY

“We try to use it to get the kids aware of the safety issues of getting behind the wheel of a car. It’s a fun think for the kids.”

Paul Ricci, Officer, North Providence, RI Police Dept.

“I believe you have an excellent product in CRASH!, and wish you success in the future.”

Sgt. Daniel Larkin, NY State Police Law Enforcement Division

“This innovative approach to combining education of our youth about science and math together with an understanding of the everyday dangers and consequences of driving behavior has the potential to save many lives. We encourage our members to support this program in their school systems.”

Scott Burns, Exec. Dir., National District Attorneys Association

“The brutal fact here is there are many countries that are far ahead of us ( U.S. students rank 25<sup>th</sup> in math and 17<sup>th</sup> in science) and improving more rapidly than we are. This should be a massive wake-up call to the entire country.”

U.S. Secretary of Education Arne Duncan, December, 2010

## Teachers' Comments:

"I have found the CRASH! materials to be an excellent addition to the current curriculum. In all cases we found the selected activities to be both educational and thoroughly enjoyed by the students. I would certainly recommend the use of this program."

Paul Joppe-Mercure, teacher, Burlington (VT) H.S.

"I liked that everything was there for me... So, as a teacher it was very easy to flip through and pick out the activities that I wanted to use."

Mary Anne Butler, Asst. Supt., Groton (CT) Public Schools

"CRASH! provides students with a powerful connection between science and real-life situations. The materials are easy to incorporate into an existing curriculum and should not require any changes; I simply used the CRASH! materials in place of text or lab book exercises. I was pleased to hear them talking to each other about wearing seat belts."

Jessie Thompson, St. Teresa's Academy, Kansas City, MO

The CRASH! kit is full of materials that are a perfect supplement to many of my classes. The CRASH! program is a tremendous way for me to keep my science classes interesting and vibrant. My students end up on a collision course with learning."

David Beier, teacher, Lees Summit, MO

"I'm really looking forward to using these materials as a way of jelling everything together that we learned during the year and showing the students that what we learned really has an application."

Philip Orlando, physics teacher, Plainedge H.S., North Massapequa, NY

"In high school the CRASH! project could turn some very competent students toward science or engineering careers. It is one of the surest ways to point out the relevance of science in everyday events. There is no problem in arousing and maintaining students' attention."

Frederick Wolf, Prof. of Physics, Keene State College, Keene, NH

"As a physics teacher for 29 years I can enthusiastically say that your materials have been a huge success at all levels of physics at Agawam H.S. MY students at each level seem to identify with the activities and materials in a way that I've never seen before. The materials and manuals are very thorough and provide a wide range of activities for various levels of ability and interest. Students are able to learn physics principles without even realizing it. They are enthusiastic and certainly learn physics concepts more quickly and more thoroughly."

Arthur G. Gage, teacher, Agawam H.S., Agawam, MA

"I have used "Distractions Can be Deadly" and "Quadratic Equations and Insurance Fraud." The lessons went well and the students were very involved in them. I enjoyed the lessons and will hopefully get to use some of the others."

Marguerite Falcone, teacher, WT Clarke HS

"The students loved it. It was very hands on and they enjoyed learning something that was so relevant to their lives. I used the Newton's laws labs and one of the accident investigations as a final project. It was amazing to see them discuss Newton's laws in reference to putting on a seat belt. The materials were relevant and all our students had a safe summer! This program works!"

Mary Sweeney Meadowbrook Alternative Program, N. Merrick, NY

"We will be integrating the use of the Crash Kit into one of our second semester Forensics courses. The physics teachers will also be using the materials in the second semester this year as well. Teachers in the mathematics department will be using the Crash Kit as part of a new applications course that is being offered for the first time. We are also hoping to integrate the some of the materials into health classes in the future as well. Once again, we are very appreciative for the opportunity to be included in this very worthwhile endeavor."

Mara Jorisch, Assistant Principal, Hicksville High School, Hicksville, NY

"I have created my own labs based off of the ideas from the Crash course. The materials that I use are the reaction time sticks and measuring tape. When I get to momentum I plan on using the little matchbox cars and accident investigation techniques. When I get to electricity I plan on using the light bulb filament pictures. I loved the course." Dan Wolfson, teacher, Oceanside High School, Oceanside, NY

School, Oceanside, NY

"I'm the science chairperson of the Glen Cove School District. Two of my teachers planned lessons using the Crash kit. As a matter of fact, one of them is doing his lesson with the help of the Glen Cove PD. One of our living environment teachers, also planned a lesson, which she will do in February."

Rae Montesano, Science Chairperson, Glen Cove CSD, Glen Cove, NY

"CRASH! invites using the student curiosity and pushing it, helping it, facilitating it. It just changes the realism of the classroom. It's for real. It's starting with a problem and that's the essence of science itself."

Dr. Robert Yager, Prof. Emeritus of Science Education, University of Iowa

## Students' Comments:

"The most significant thing I learned was how deadly distractions can be. I did not realize how large an amount of time and distance your eyes were off the road for. It was very helpful and I can easily relate th topics to my everyday life!"

Lauren Fowlkes, student, St. Teresa's Academy, Kansas City, MO

"After doing the drag sled project I realize how little it takes to get yourself in a serious accident. I liked this project because it made me so much more aware of safety on the road."

Jessica Reed, student, St. Teresa's Academy, Kansas City, MO

"I learned how dangerous switching a CD or reading directions really can be when I'm driving. I never thought it was a big deal before, but now I understand the risks that I have placed myself in."

Lizzy Beier, student, St. Teresa's Academy, Kansas City, MO

# HERE'S WHAT HAPPENED WHEN New Hampshire and Rhode Island implemented *CRASH!*

State Highway Safety Statistics (From the state web sites)

**State of New Hampshire:** CRASH! introduced into schools in 2004 and 2005  
*CRASH!* was funded in NH by the Governor's Office for Highway Safety,  
Peter Thompson, Director

	Before CRASH!	After CRASH!
Fatal crashes (16-20 yr olds):	156 (2005)	116 (2006) <b>(-26%)</b>

**State of Rhode Island:** CRASH! introduced into schools in 2003.  
*CRASH!* was co-funded by the Governor's Office for Highway Safety and  
MetLife Insurance Co.

	Before CRASH!	After CRASH!
Fatalities (16-20 yr olds):	20 (2003)	15 (2004) <b>(-25%)</b> 14 (2005) <b>(-30%)</b> 9 (2006) <b>(-55%)</b>

***CRASH!*** take-home activities that students do with their parents:

Social hosting responsibilities  
Can you afford a DWI?  
Distracted driver survey  
Do seat belts save lives?

Seat belt survey  
Does speeding save time?  
Safety while backing up

[www.legalsciences.com/crash!/](http://www.legalsciences.com/crash!/)

## A Description of the CRASH! Activities:

### Physical Science:

Examining Lamps for ON/OFF	Students determine whether each lamp was ON or OFF at the time of impact, based on material's properties and Newton's Laws. Ten forensic photographs of lamps from real crashes are provided.
Investigating a MV Homicide Case	Students question witnesses, collect physical evidence from the crash scene, make measurements of tire mark evidence, and specify photographs to document the evidence
Was It Safe to Cross?	Students measure pedestrian walking speeds, and use statistical analysis to determine a traffic condition that is safe for crossing.
Driver Perception-reaction Time	Measurements of perception-reaction time are the basis for an analysis of safe following distance, effects of impairment, etc. Students make measurements using "chronoscopes" that are based on the Galileo free-fall equation
Distractions Can Be Deadly !	Students apply the equations of motion to analyze distance traveled while distracted, the danger zone in front of a moving car, etc.
Skateboards and Cars Don't Mix	Study of perception-reaction time in a common situation, and the ability of a driver to avoid a sudden emergency when a skateboarder enters the roadway
People Can't Fly	How energy and forces cause injuries to unbelted occupants. Analysis includes potential and kinetic energies.
Vehicle Kinematics	Newton's First and Third Laws applied to injuries in car crashes.
Does Speeding Really Save Time ?	Analysis of common travel patterns and the difference in time at speeds above the posted safe speed to show how little time is saved by speeding.

## Biology:

Using an Autopsy Report to Determine Who Was Driving	Students make a drawing of the injuries reported in an autopsy report to determine who was driving. By visualizing the injury locations the students are learning the meaning of anatomical terms like lateral, medial, etc. rather than just memorizing them.
Alcohol and Driver Performance	Fundamentals of the toxicology of alcohol, including absorption and elimination and the BAC (Blood Alcohol Concentration) v. time curve. Shows students how long it takes to clear ETOH from the blood.
Using the BACSim Software	Computer simulation of the effects of drinking on driver performance includes an interactive perception-reaction time test that can simulate reacting while impaired
Calculating with the Widmark Equation	Students determine the level of impairment for various drinking patterns, and the differing effects of alcohol on males and females, and how the BAC level is affected by body weight
Observing Impairment in Driving Tests	Effects of impairment are observed in videotaped driver performance tests; students are asked to observe and identify the impaired behaviors at various drinking levels.
"I only had two beers !"	Students research the ETOH content of various drinks to determine how many drinks it would take to reach the .02 BAC level of legally impaired for teen drivers
Under the Limit, But Seriously Impaired	Effects of low BAC's (under .08) on driving performance and the reality of how little alcohol it takes to cause impairment.
The Intoxilyzer as Proof of Impairment	Police officer demonstrates the use of a breath test instrument, and the legal implications of the test, showing that a small breath sample can reveal BAC levels accurately.
You Can't Afford a DWI !	Students tabulate the various hidden costs of a DWI arrest to understand how costly it can be to drink and drive.
The "cough medicine" defense	Students apply the Widmark equation to calculate the impairment caused by drinking cough medicine to dispel the myth that you can easily get impaired by taking cough syrup that contains ETOH.
It's All in the Blood	Converting hospital blood test results to whole blood equivalents for forensic applications; this activity demonstrates which components of the blood absorb ETOH

## Physics :

Measuring Friction with a Police Drag Sled	Students measure road friction and apply it to determine stopping distance, speed estimates, etc
Projectile Motion in Accident Reconstruction	Examples of pedestrian collision, vaulting from the roadway, etc. that can be analyzed using projectile motion equations
Weighing a Car with a Bath Scale	Application of torques to a hands-on problem in which the weight of a car is measured with a scale using a lever
Reconstructing a Murder by Automobile	Students apply physics equations and concepts to reconstruct speed, using an actual police accident report
Reconstructing a Motorcycle-Vehicle Collision	Applying energy conservation to determine vehicle speed in an actual motorcycle-car collision case to prove that the operator was criminally negligent (this activity can also be used to have a mock trial in which the laws of physics are challenged by the "defense" expert
Linear Momentum in Accident Reconstruction	Reconstruction of speed using linear momentum
Vehicle and Occupant Kinematics	Newton's First and Third Laws applied to injuries in car crashes
How Do Crumple Zones Save Lives? prevention	Newton's 2 <sup>nd</sup> Law applied to seat belt use and injury
Newton's Laws in Court -Sargent v. Smith	Using an actual police report to reconstruct a crash Using Newton's Laws
Newton's Laws in Court - Sullivan v. Mitton	Investigation of a collision in anticipation of a trial; Newton's Laws are used to solve a mystery involving the direction of travel of a vehicle entering an intersection prior to a crash.
Determining Whether a Vehicle Ran a Stop Sign	Students measure vehicle acceleration into an intersection to determine whether a driver is negligent for not stopping for a stop sign.
Newton Would Have Worn a Seat Belt	Application of Newton's 2 <sup>nd</sup> Law to seat belt use, showing why a properly used seat belt can greatly reduce the risk of injury in a crash
Linear Momentum Takes the Witness Stand	Students look at the uncertainty of a momentum calculation by showing how sensitive the calculations are to uncertainties in the field data.
Projectile Motion - Impact Speed in a Fatal Crash	Students find the speed of a motorcycle at impact from the flight of the operator's body

## Math :

Parametric Equations and Tractor Trailer Speed	Algebraic manipulation of equations to produce a working equation for police investigators in a tractor-trailer crash. (algebra)
Quadratic Equations in Accident Reconstruction	Quadratic equation applied to analyze a pedestrian motion, throw of debris in a collision, etc. (quadratic equation)
Was It Safe to Cross ?	Students measure pedestrian walking speeds, and use statistics to determine a traffic condition that is safe for crossing (statistics)
Alcohol and Driver Performance	Application of a linear equation to determine driver BAC at the time of a crash based on subsequent blood tests (slope and intercept of a linear function)
Analyzing the BACSim Software	Computer simulation of impaired driving, and the analysis to determine the algorithm used in the software (linear functions)
AFIS Fingerprint Mapping	Use of coordinate pairs to match fingerprints to a suspected operator; the AFIS system of computerized fingerprint matching replaced the long, tedious process of visually inspecting fingerprint cards to find a match to a defendant.
Calculations Solve a Murder	Math analysis of a vehicle trajectory develops the theory of negligence in a motor vehicle homicide case; students use trigonometry to make field measurements needed for the calculations (algebra, trigonometry)
Quadratic Equations and Insurance Fraud	Students analyze vehicle damage and speed in a fraudulent insurance claim to show whether the claim for a personal injury and property damage was legitimate.

## *Frequently-asked Questions*

- Q     *How much time does it take to do CRASH! activities?***
- A     The activities are not sequential, nor is there any need to do all the activities. There's really no fixed amount of time. *CRASH!* is a set of activities, both indoor and outdoor, designed as resources that teachers can select to supplement existing math and science lessons, and some of the activities invite local law enforcement to assist with demonstrations, discussions, etc. The *CRASH!* resources are used as homework assignments, lab exercises, and special projects for individual students, and can take as little as 15 minutes to do. The activities are adaptable to remote learning use.
- Q     *What makes CRASH! more effective than other approaches to teen driving safety?***
- A     *CRASH!* directly involves students in learning science and math through real-world problem solving in a CSI-like environment. *CRASH!* tells kids WHY crashes happen. They see how far a car going 45 mph will go while its driver looks away from the road to adjust the radio; many of the *CRASH!* activities focus on impaired/distracted driving – a major problem for teen drivers.
- Q     *How do we know CRASH! works to save kids' lives?***
- A     After introducing the *CRASH!* activities into their schools statewide, both New Hampshire and Rhode Island saw dramatic decreases the next year in their teen driving fatalities (25% and 26% reductions), with no new legislation such as graduated licensing or license restrictions that would explain the dramatic reduction in teen fatalities. Kids don't want to be in crashes, but they don't know why crashes happen - *CRASH!* tells them WHY crashed happen.
- Q     *Do the CRASH! activities help prepare my students for the state-mandated tests?***
- A     The *CRASH!* activities have been cross referenced to state learning guidelines and educational frameworks, and support teachers' preparations for state-mandated tests – *CRASH!* does not require that they give up any of their lesson time, it support the topics already being taught.  
The *CRASH!* activities do not introduce new topics or trigger curriculum considerations.
- Q     *Do teachers need to be specially trained to use the CRASH! package?***
- A     No. No special orientation or training is needed to do the activities.
- Q     *Why were the CRASH! materials developed?***
- A     They were developed to generate enthusiasm for learning science and math.

More information and two short videos about *CRASH!* are at [www.legalsciences.com/crash/](http://www.legalsciences.com/crash/)



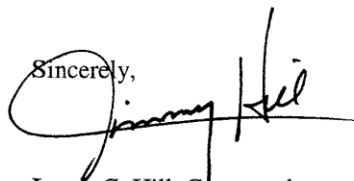
John Kwasnoski, Professor of Forensic Physics  
Western New England College  
51 Nash Hill Road  
Ludlow, MA 01056

  
Dear Mr. Kwasnoski:

I am attaching an article that was published in our local newspaper's editorial column on Tuesday, July 11 for your review. I want to thank you for bringing this program to our attention and I am very pleased to let you know that we have instituted this in all our schools as you will note in the article. Please feel free to use the attached article in any future campaigns in efforts to make this a nationally-known program.

Again, thank you for sharing this exceptional educational tool with us.

Sincerely,



James G. Hill, Commander  
Law Enforcement Services Bureau

JGH:paf  
Attachment

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**PRO-ACTIVE APPROACH**

CITRUS COUNTY CHRONICLE

# Sheriff's office's proactive view to be commended

**Y**OU CAN DO WHAT you've always done and get along OK until someone tells you differently.

Or, you can look ahead and find ways to improve the way you do your job.

The Citrus County Sheriff's Office has recently announced some impressive actions that demonstrate an aggressive philosophy of dedicating its operations to the things that will bring the very best to the residents of the community. The approaches and actions exhibit an increased focus toward a proactive, often pioneering, mode of operations that will make a significant impact on the community.

- The announcement of the replacement of the DARE program with an internally developed FOCUS program is an significant course of action that will bring our youths up-to-date curriculum to educate, prevent and stimulate discussion concerning issues of drugs, drug abuse, violence, self-esteem, behavioral influences, conflict resolution, gangs, citizenship and laws.

The previously used program was good. But school resource officers, who work hand-in-hand with the Citrus County School System, knew that a more personalized program was needed to stay relevant with the concerns and needs of Citrus County. The new program targets the appropriate areas in a broader approach that will be more flexible and relevant to the problems our schools are facing.

➡ ● As the number of youths killed on Citrus County roads continues to rise, another solution identified through the Citrus County Sheriff's Office will be finding its way to local classrooms through a program called "CRASH: The Science of Collision."

Students will address the issues of safe driving not from simply a statistical analysis, but will actually learn about the dynamics of vehicle crashes, examining firsthand the causes and effects of

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**The issue:**

*Sheriff's office steps out to bring higher quality of services to the community.*

**Our opinion:**

*Positive changes will bring positive results.*

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crashes.

Again, this program illustrates a more innovative approach in our law enforcement agency — not just a reaction to problems and concerns, but a progressive and innovative commitment to find better ways of prevention to deter the tragedies that can happen when laws are not obeyed.

- It was recently announced that the sheriff's office has been awarded accredited status by the Commission for Florida Law Enforcement. This is a voluntary review of all aspects of this agency and includes policies, procedures, management and support services that provides an intense scrutinization to ensure the highest of standards are adhered to.

More importantly, the accreditation process is considered to be the highest level of documented quality review that uses as its basis more than 250 standards of excellence.

The statewide accreditation demonstrates this agencies' continued efforts to continuously move ahead and find better ways to pursue its increasing responsibilities and to evaluate its effectiveness.

These recent accomplishments and initiatives are a good sign that this office is making positive changes that will keep our community safe not just for today but for tomorrow as well.

Sheriff Jeff Dawsey is to be commended for his leadership and all those who work with him are recognized for the positive changes that are taking place.