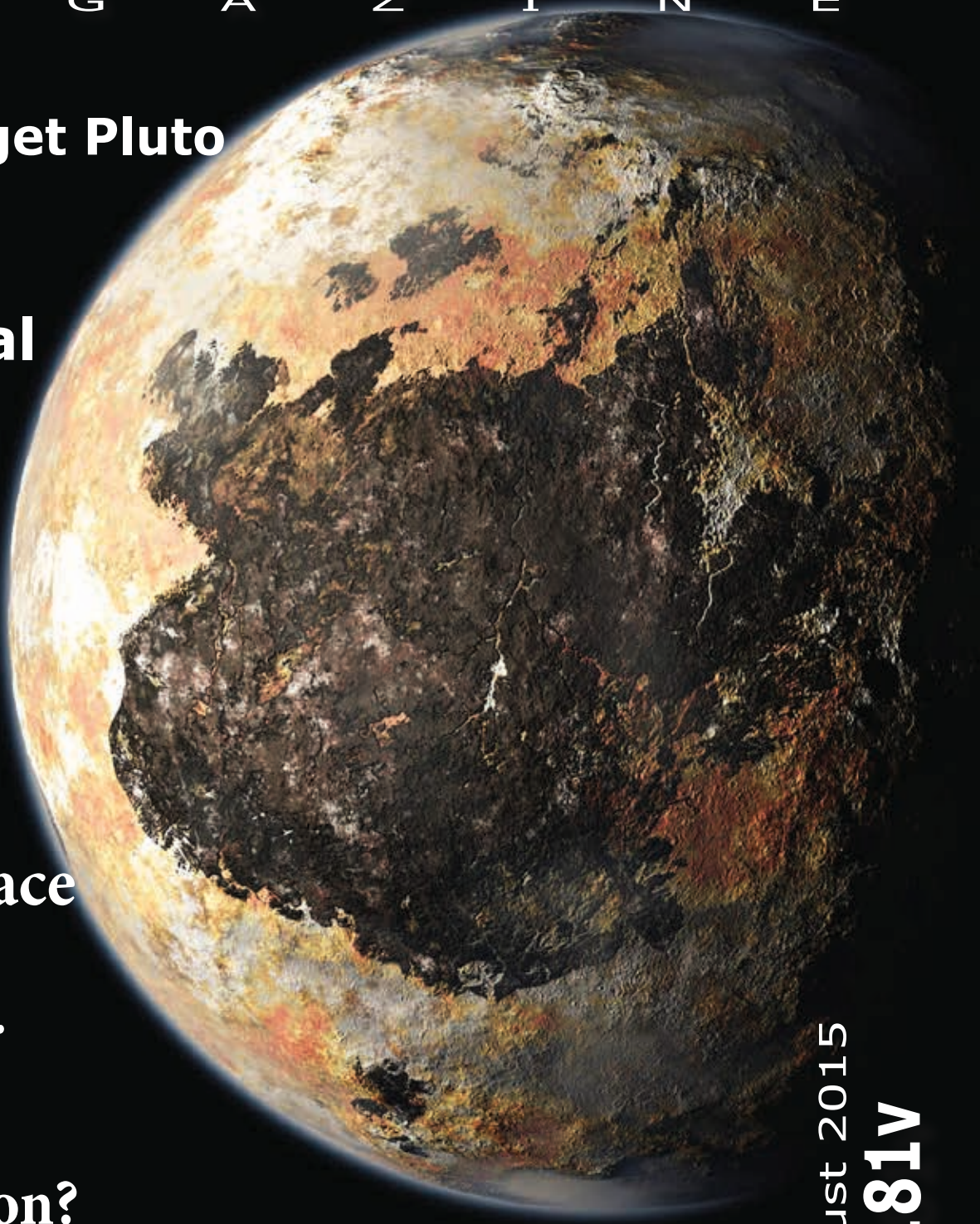
S.T.E.M.

MAGAZINE



Don't Forget Pluto so *fast*

Emotional I.Q.

Pat Kozyra

STEM FEST

Public Space Telescope *Continued...*

Math Person?

August 2015
\\181v

STEM Innovations

A Math and Science Partnership Initiative in Northwest Indiana

Dear Educators,

We are looking forward to the 2015 MSP STEM Innovations Summer Institute August 3-7 at Merrillville High School. The week's activities offer educators sustained opportunities to design learning sequences across the math and science disciplines by focusing on Indiana's Academic Standards and Process Standards for Mathematics while integrating the Indiana Science Standards and the Next Generation Science Standards. Additionally, a focus on college and career readiness and STEM career options incorporates the Science and Engineering Process Standards and the development of STEM units of instruction.Objectives of the institute are to help teachers:

- Know and understand the features of an integrated STEM Lesson
- Learn how to incorporate student-centered strategies for teaching STEM content
- Understand the processes of design as an iterative process that supports student learning
- Understand strategies for supporting students as independent STEM thinkers
- Recognize the importance of becoming intentional about the use of standards-based content in learning activities
- Prepare integrated STEM lessons/units using the features of an integrated STEM lesson
- Learn how to incorporate engaging context strategies for STEM lessons

Check in next month for a look back at the week's activities.

CALL FOR PRESENTERS! Your work through the MSP grant is truly innovative and should be shared across the state. The classroom successes associated with the STEM Innovations program are new and relevant to several statewide education associations that have conferences taking place during the 2015-2016 school year. Please contact Dr. Marion Hoyda at mirj1950@yahoo.com to discuss presenting at one of the following state conferences (or to suggest other relevant presentation opportunities):

- Indiana Council of Teachers of Mathematics (ICTM) - October 4, 2015 in Indianapolis
- Indiana Association of Public School Superintendents (IAPSS) Meetings- October 2015
- Hoosier Association of Science Teachers, Inc. (HASTI): Feb 2016 (exact dates TBA)

We hope you are excited to implement what you learned over the summer as you head back to the classroom this month. Have a wonderful final few days of summer vacation and good luck with the new school year!

Your STEM Innovations Team

MERRILLVILLE COMMUNITY SCHOOL CORPORATION

Guest Presenters at the 2nd International Conference on STEM Education and Innovation 2015 (STEMcon)

Mr Etienne Clement
UNESCO, Samoa

Dr Suhaidah Tahir
South East Asian Ministers of Education Organisation

Datuk Hj LenTalif Salleh
Minister for Advanced Education SWK, Malaysia

Mr David Goncalves
Global STEM States, Australia

Dr James Kaufman
Laboratory Safety Institute, USA

Dr Cindy Moss
Discovery Education, USA

Dr Som Naidu
Open and Distance Learning Association of Australia

Ms Kate Edwards
International Game Developers Association, USA

Ms Rosa Walker
Indigenous Leadership and Development Institute, Canada

Dr Joe Schwarcz
McGill University Office for Science and Society, Canada

Ms Maria Teresa Ruiz and John Holanda
Purple i am, Canada

Dr Lauren Birney
Pace University, USA

Mark Jennings-Bates
Businessman/ Adventurer

Dr Tony Wagner
Harvard University, USA

Khairuddin Abdul Kadir
Global STEM States National Secretary, Malaysia

Dr Stephen Smith
St Mary's University, Canada

Prof Rajiv Uttamchandani
New York Film Academy/ International STEM Society for Human Rights, USA

Joshua Fouts
Bioneers USA

Dr Johanne Patry
Science on Stage Canada

Mr Kim Allen
Engineers Canada

August 2015

Pat Kozyra / Hong Kong

Christian Wiederer / Public Space Telescope / Munich

Wayne Carley

Brian Regent / Electrician

Victoria Juarez

Chrystian Tejedor

Global STEM States

STEM FEST

S.T.E.M. Magazine is excited to announce a partnership with - **Global STEM STATES** - for the remainder of 2015. To learn more about Global STEM States visit:

www.stemstates.org

GLOBAL STEM STATES

STEM Magazine is a non-profit monthly education publication for teachers, students, their parents and anyone interested in STEM education, career development, work-force development and the global economy. CEO Wayne Carley is the publisher and senior editor for all content in S.T.E.M. Magazine.

S.T.E.M. Magazine believes that the key to success in seeing higher graduation rates, improved testing results, student inspiration and a strong work-force rests in the hands of the teacher. The example and inspiration of individual educators carries tremendous weight on a daily basis, greatly impacting the quality and effectiveness of the classroom environment.

Curiosity is the beginning of all things STEM.

Wayne Carley
Publisher

S.T.E.M. Magazine

S.T.E.M. Magazine is provided to individual schools, districts, states, counties and countries world-wide.

S.T.E.M. Magazine Inc.

wayne@stemmagazine.com

How Important is Your Child's *Emotional Intelligence* to Success in School and in Life?

Pat Kozyra
Educator / Author
Hong Kong

The following definition, description and explanation are all based on the work of Daniel Goleman, a psychologist with a PhD from Harvard University. He is a journalist for the New York Times and has written many books on this topic. There is a video which all students should see to understand why emotional intelligence might be even more important than I.Q.

"Emotional Intelligence" refers to the capacity for recognizing our own feelings and those of others for motivating ourselves, and for managing emotions well in ourselves and in our relationships. Many people who are book smart, says Goleman, but lack emotional intelligence end up working for people who have lower I.Q's than they but who excel in emotional intelligence skills.

It is not surprising then, that Daniel Goleman wrote a book called 'Emotional Intelligence: Why It Can Matter More Than I.Q.'

This is an area that I highly recommend you delve into if you have never heard of it. Goleman says: "Rule Your feelings lest your feelings rule you." Goleman says our view of human intelligence is far too narrow. Emotional intelligence includes a crucial range of abilities (a different way of being smart).

These are: self awareness, impulse control, persistence, zeal and self-motivation, empathy (reading emotions in others) and social deftness.

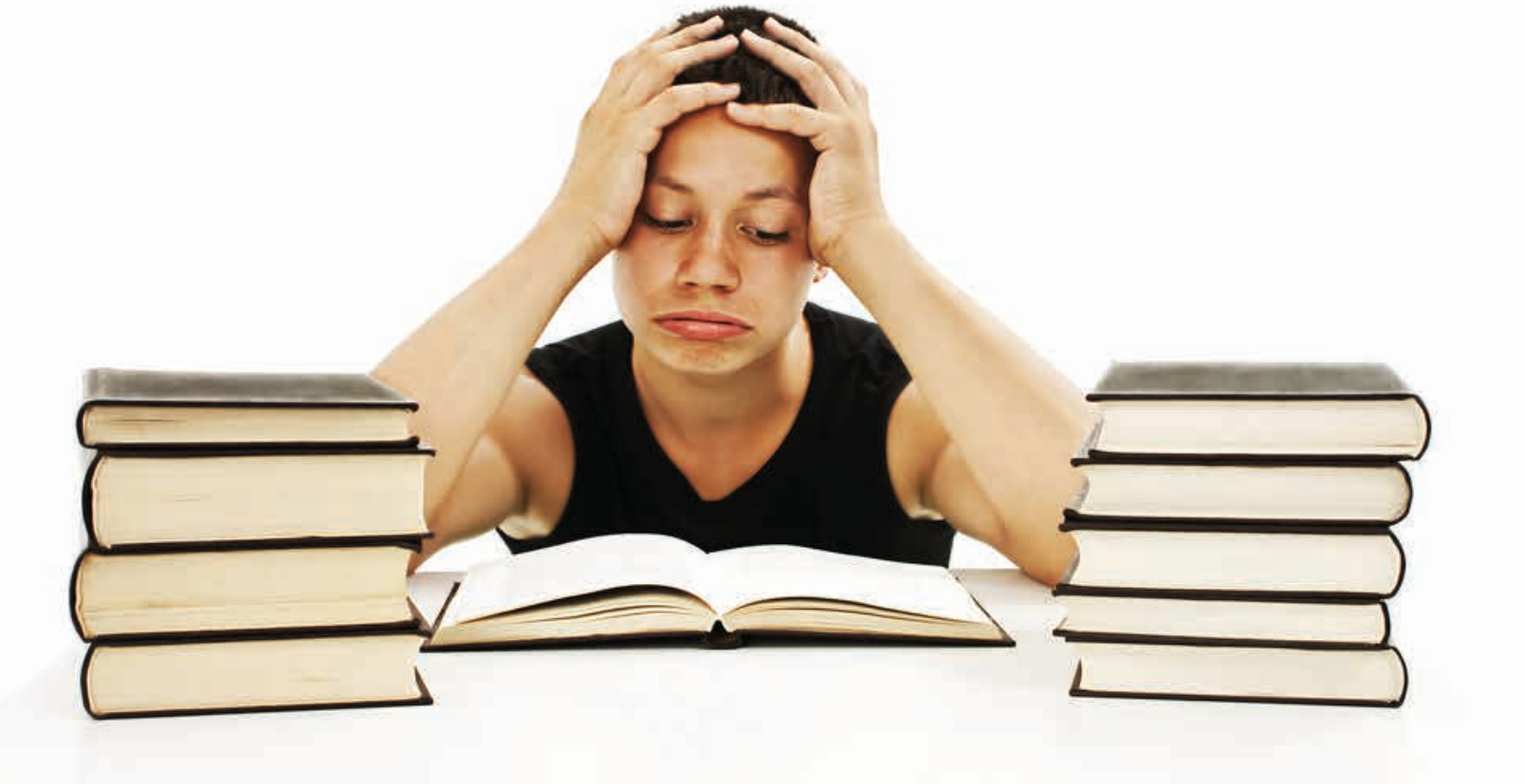
Emotional Intelligence is not fixed at birth. It can be nurtured and strengthened in all of us unlike I.Q. which it is said, is a genetic given that is fixed and cannot be changed.

When people of high I.Q. flounder and those of modest I.Q do surprisingly well, what are the factors at play? Goleman argues that the difference quite often lies in the ability called “Emotional Intelligence”.

The five basic emotional and social competencies are listed here with more explanatory detail.

1. Self-awareness: Knowing what we are feeling in the moment and using those preferences to guide our decision making; having a realistic assessment of our own abilities and a well grounded sense of self- confidence.

2. Self-regulation: Handling our emotions so that they facilitate rather than interfere with the task at hand; being conscientious and delaying gratification to pursue goals; recovering well from emotional distress.



3. Motivation: Using our deepest preference to move and guide us toward our goals, to help us take initiative and strive to improve and to persevere in the face of setbacks and frustrations.

4. Empathy: Sensing what people are feeling, being able to take their perspective, and cultivating rapport and a connection with a broad diversity of people.

5. Social Skills: Handling emotions in relationships well and accurately reading social situations and networks; interacting smoothly; using these skills to persuade and lead, negotiate and settle disputes, for cooperation and teamwork.

Most disturbing in Goleman's book, is data from a massive survey of parents and teachers which shows a world- wide trend for the present generation of children to be more troubled emotionally than those of the last generation, more lonely and depressed, more angry and unruly, more nervous and prone to worry and more impulsive and aggressive.

The remedy, Goleman feels, lies in preparing our young, for life. How can we bring together mind and heart in the classroom?

How can we bring intelligence to our emotions, civility to our streets and caring to our communal life?

Education will have to include inculcating essential human competencies such as self-esteem, self-control, empathy, the art of good listening, resolving conflicts (Creative Problem Solving) and cooperation. Two of the most important moral stances that our times call for, are self-restraint (controlling impulses) and compassion (showing empathy by understanding other's feelings).

With each emotion , the body manifests itself in physiological details preparing for its response.

A few emotions (there are hundreds) are:

1. Anger –
blood flow to hands ready to fight

2. Happiness –
brain inhibits negative feelings

3. Fear –
blood flows to legs ready to run

4. Love –
tender feelings relaxed and calm

5. Surprise –
lifting of the eyebrows to see it

6. Disgust –
upper lip curled, nose wrinkled

7. Sadness/grief – drop in energy

8. Shame –
withdrawal, no eye contact

9. Enjoyment

We have two minds – one that thinks and one that feels – heart and head – the emotional and the rational – the feeling versus the reasoning.

Stoplight Poster for Impulse Control: (six steps)

This is taught in Emotional Literacy classes to 5th and 6th grades in some schools and you may wish to use this with your child at home when he or she is about to strike out in anger, withdraws into a huff at some slight, or bursts into tears at being teased.

Red Light:

1. Stop, calm down, and think before you act.

Yellow Light:

2. Say or state the problem and how you feel.

3. Set a positive goal.

4. Think of lots of solutions

5. Think ahead to the consequences

Green Light:

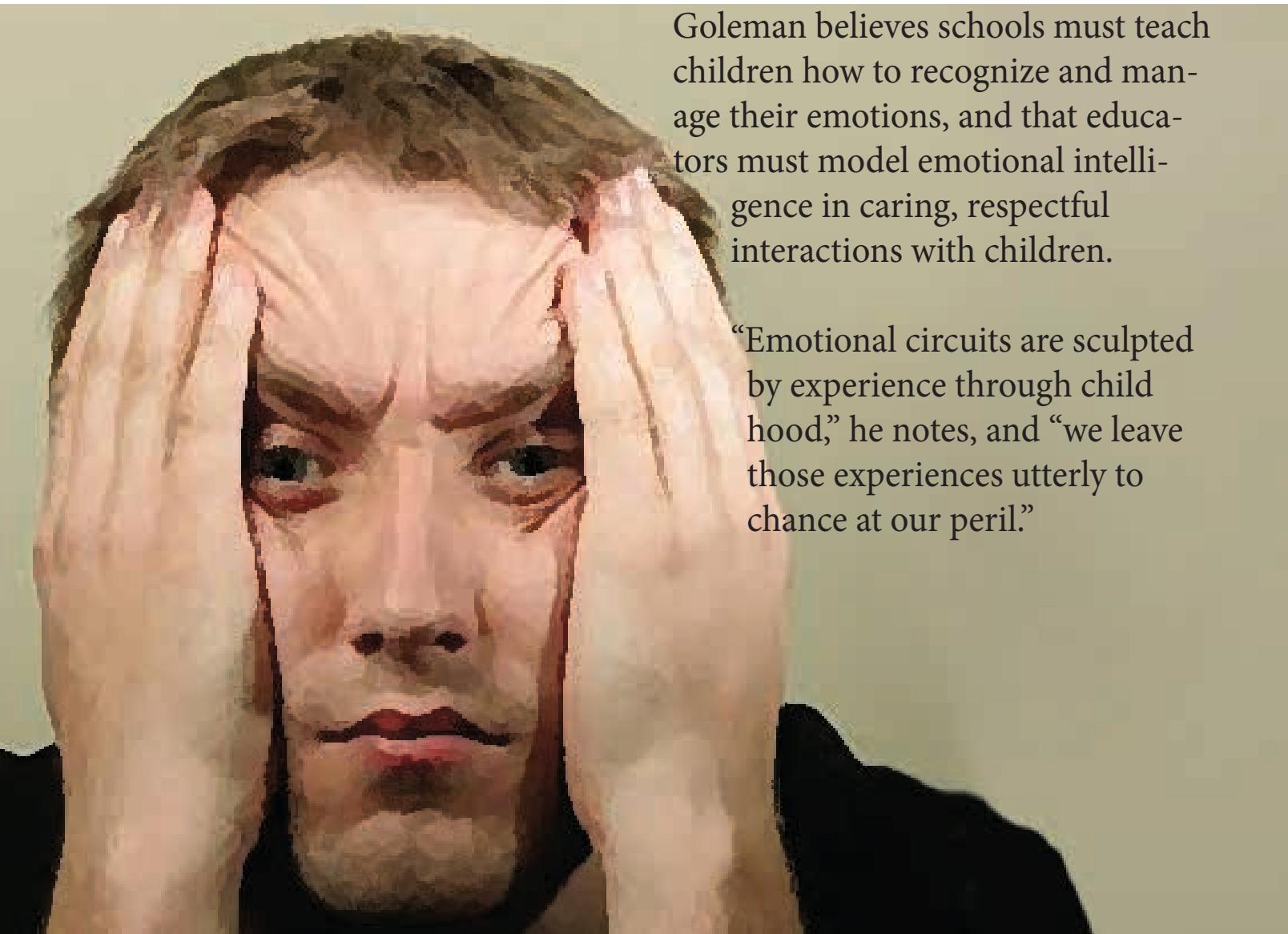
6. Go ahead and try the best plan.

The following rather shocking information comes from a book review of Daniel Goleman's book 'Emotional

Intelligence: Why It Can Matter More Than I.Q'. by Launa Ellison, Clara Barton School, Minneapolis, Minnesota. She writes:

The research studies that Goleman cites indicate that emotional intelligence is the bedrock upon which to build other intelligences, and that it is more closely linked to lifelong success than I.Q. "Impulsivity in 10 year old boys" for example, "is almost three times a powerful a predictor of their later delinquency than is their I.Q."

Goleman warns of the dramatic drop in "emotional competence" over the past two decades. As evidence, he cites soaring juvenile arrest rates for violent crimes; younger teenage girls getting pregnant; more children being withdrawn, anxious, and depressed, and more attention or thinking problems. "Educators, long disturbed by school children's lagging scores in math and reading are realizing that there is a different and more alarming deficiency: emotional illiteracy."



Goleman believes schools must teach children how to recognize and manage their emotions, and that educators must model emotional intelligence in caring, respectful interactions with children.

"Emotional circuits are sculpted by experience through child hood," he notes, and "we leave those experiences utterly to chance at our peril."

Electrician

is a **great** **STE(A)M** career.

In the modern age electricity is a necessity for every type of building and to perform numerous functions like providing light, climate-control, security systems, heat, and many other functions. The work of electricians is to connect, assess, and repair systems that use electronics in both residences and commercial structures. The majority of electricians work in the construction industry or in maintaining and repairing.

School? Apprenticeships.....

Electricians put in electrical systems by first reading the specifications (language arts) for hospitals, residences, schools, and other structures. The specifications or blueprints show where circuit boards, power outlets, and load centers need to be. There are numerous guidelines that electricians need to adhere to.

These are set forth by local government, state governments, and the National Electric Code. In commercial buildings they begin by installing pipe or tubes inside walls and install circuit boxes (engineering). Next they complete the circuits by dragging the insulated wires through the conduit. For certain types of jobs electricians might use wire that is covered in plastic rather than conduit.

Whatever type of wire electricians use, they need to attach the wires to circuit breakers or transformers and connect the wires by using special connectors that are designed for the purpose. Finally they examine their work for any flaws like improper connections, incompatibility with other systems, and safety issues. They do this using tools like ohmmeters, oscilloscopes, or voltmeters (technology).

Aside from installing a structure's entire electrical system, workers might also be involved in the installation of low voltage systems, which consists of video, information, and audio systems like telephones, internet connections, intercoms, and alarm systems (science).

Being an electrician can be physically demanding.

They might also put in fiber optic cable or coaxial cable which are used with computers and operating controls for machinery.

Electricians are also involved in the repair and upkeep of electrical systems. This work can be very different based on the type of facility the electrician works at. Some workers focus on performing maintenance for homes, where they might update an older house's electrical system or replace circuit breakers when new appliances are installed.

Workers who are employed at large industrial facilities might repair machinery, transformers, electrical generators, or the operational controls on equipment or robots. Workers who are involved in offices or smaller industrial facilities might be called upon to perform all of these tasks.

The work electricians perform also depends on the type of electrician they are. Maintenance electricians do a lot of work that prevents problems from happening. They make regular assessments of equipment and electrical systems, identify potential problems, and then take steps to correct them. Workers might also work in a consulting capacity and make recommendations concerning the type of system a company might want to install and whether they should update their systems to increase safety or efficiency (engineering method).

Then, when problems do occur, they are called in to efficiently and effectively get the system up and running again. This work might involve replacing wires, fuses, circuit breakers, or connections (math).

Then, when problems do occur, they are called in to efficiently and effectively get the system up and running again. This work might involve replacing wires, fuses, circuit breakers, or connections.

Electricians sometimes have to work with extremely intricate systems or equipment, and so they often have to collaborate with other specialists like engineers or people who work with other machinery.

Being an electrician can be physically demanding. They have to manipulate heavy conduit, be on their feet for a lot of the day, and they have to work in difficult places like on ladders or in small spaces. They could work in a variety of conditions, from outside, where they're exposed to the elements, or in cramped places.

Their work is potentially hazardous as well, as they are exposed to electrical shocks, falling from scaffolding, or cutting themselves with sharp tools. They have to adhere to strict safety guidelines and be alert. Also, some electricians have to be willing to relocate when construction sites are in remote locations.

"Independence....if you want it."

The majority of electricians work normal hours, though they may be called upon to work overtime to complete a project. Maintenance jobs often have to be performed during evenings or weekends when commercial facilities are closed. Many electricians also have to be on-call in case problems arise.

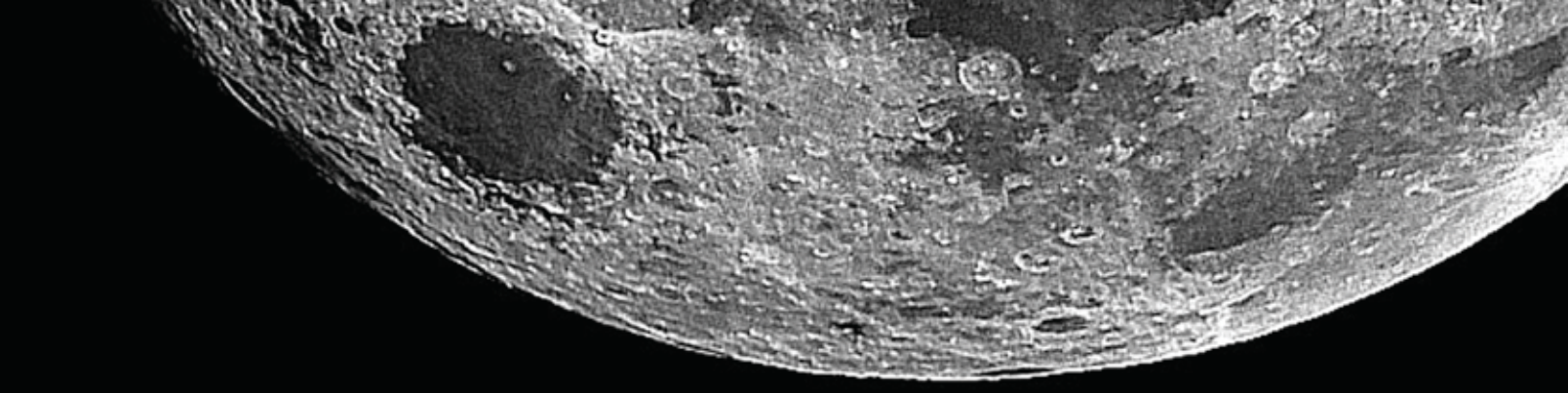
Some corporations that are open around the clock have three different shifts of electricians so there is always someone present.

The majority of workers enter the profession through an ***apprenticeship program***. These programs provide comprehensive training of many different electrical tasks so apprentices are more likely to be hired. Most apprenticeships last from three to five years.

However, not everyone completes an apprenticeship. Some workers learn by observing and being taught (arts) by more experienced electricians. Other workers complete three year programs that train them to be residential (homes) electricians.

Generally apprenticeships involve both coursework and practical experience. Programs usually require a minimum of 144 hours of coursework, where trainees learn how to read blueprints, theory, math, building code guidelines, electronics, and safety procedures.

- All STE(A)M....all the time.
- Great career with great pay.
- Limited education and cost.



"Student thesis: Sponsoring of Public Telescope education projects"

Christian Wiederer interview with Michael Weymans

Founder of astrofactum	Christian Wiederer	cw@astrofactum.com
Fresenius Student	Michael Weymans	Michael.Weymans@start-one.de

About Fresenius University-
On 9 campuses around the world, the Fresenius University of Applied Sciences stands for over 165 years of tradition in teaching science.

About 25-year-old German student Michael Weymans

Weymans: Fresenius University had exactly what I was looking for; a modern campus in my hometown of Cologne (Koeln), international expertise, and the chance to study abroad. They also offered the field of study I was interested in; media and communication management. I found it fascinating to study the various effects of new media e.g., internet communication around the world. After getting familiar with media basics I decided to focus on international management and on-line management.

Shortly after finishing my study this November I'm going to start my own business and help other people start theirs. There are many obstacles to overcome when you try to convert a business idea into a company with sustainable growth. This is what I want to help others achieve.

PUBLIC TELESCOPE

Wiederer: What gave you the idea to commit to this project?

Weymans: I went for it because it's an exciting topic. There are many mysteries to be solved in the universe. Stars and space seem to be so hard to reach… I was curious about the technology behind Public Telescope; how to launch a space telescope and control it from Earth, then make it publicly accessible… It's something I see as a true challenge, something truly extraordinary. Very, very exciting!

The space mission was explained to us in much detail, and we were given good answers to the questions we had. We were also provided with interesting editorials, background information about astronomy, about space, and about the technical details and technologies in bringing a telescope to space and operating it, which I have a personal interest in. I was able to develop a good understanding of the main objectives and this great challenges. I'm definitely convinced by the idea.

Wiederer: How did things go while working on your research paper? Did you have a chance to develop a few ideas or discover something new?

Weymans: We were given two main objectives; one was to find suitable sponsors to finance the education part of this project, the other was to develop a convincing strategy. We gathered and bundled information on how to attract sponsors, then took a closer look at companies that could identify themselves with the Public Telescope mission concept.

We also looked into other possibilities of funding eg., crowd funding. One of the new key ideas that came up during the process was, to put focus on a modern online appearance to increase the range of attention and to attract other sponsors. This can be promoted in several ways: by a consistent corporate identity, modern, simple web design with best online technologies, full integration of social media channels, and by using video clips and animations to illustrate the mission and opportunities for education in an easy, accessible way.

Wiederer: What was the time frame you were given?

Weymans: We started out in late November 2014 and finished in January 2015. We had approximately 2 months for research, brainstorming and to complete our task.

Wiederer: What makes Public Telescope important for education? Are there any special outlooks and possibilities connected to it?

Weymans: There are, most definitely! Public Telescope has a lot to offer for pupils and students interested in astronomy and space technology. It´s a great benefit for education - we can experiment, observe and learn with the first space telescope. We can learn more about our universe, solar system, star formation, changes and – space technology. Everybody will be able to take high-definition pictures from space, right from their computer. There won't be any need for outdated, low quality earth's atmosphere re-diced data made from earthbound telescopes in classes or lectures.

It's a new, personalized, interactive way of learning. Giving students the chance to experience space first-hand can substantially boost their personal interest in physics and astronomy, and it will also have an effect on everybody's motivation to learn more about the universe.

By bringing the first public telescope to space, all the chronic problems of earthbound telescopes have are solved; things like weather, clouds, daylight, light pollution … with Public Telescope from the astrofactum all these things will no longer be issues. And let's not forget that a space telescope can save a lot of time and money in the long run.

Wiederer: What are the challenges in establishing the project in education?

Weymans: I think there are several steps to be taken. First and foremost you need to find sponsors. Many companies are willing to sponsor educational projects to improve their reputation to begin with, and there can hardly be any doubt that the innovative character of Public Telescope will make finding support a lot easier.

The next step is to find suitable products and services for different school categories. Students should be provided with current and relevant activities in space so they can work on meaningful topics. In my opinion this is a major point. I can remember all to well that we were sometimes taught outdated topics in school. What's the point in learning outdated material?

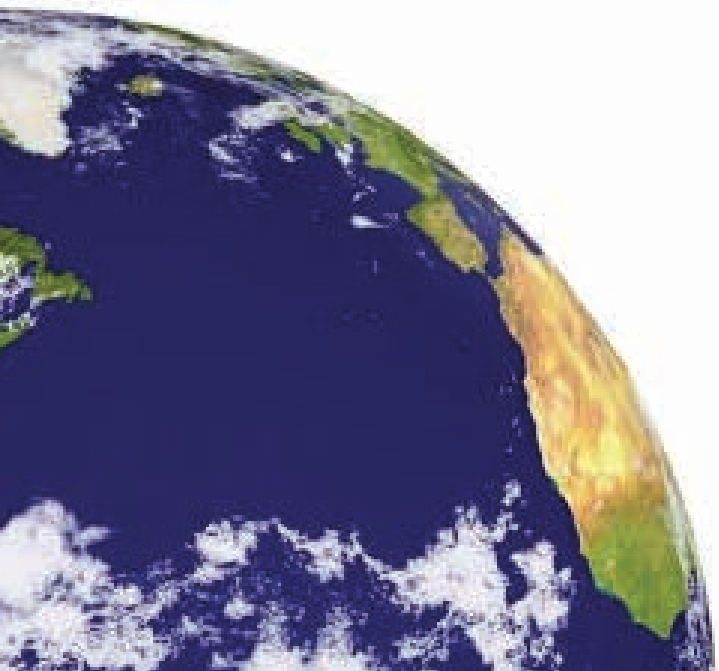
To give an educational project international reach, material should be professionally translated to the language of the country it's being taught in. Also, it's important to consider different educational systems around the world, and to adapt the material accordingly.

In Germany there are various schools with different requirements, and in other countries the situation should be similar.

Wiederer: Public Telescope in education: How can this look like in the field?

Weymans: You can, for example, separate projects in theoretical and practical tasks. Theory tasks can include calculation of distances between objects in space, or teaching fundamental knowledge about the Milky Way.

Practical experience can be observation time with the space telescope, building small models of our solar system, or using online software to visualize different scenarios. I think it's important to have a certain range of theoretical and practical material for students. This gives you the opportunity to choose a specific topic to work and specialize on.



Wiederer: Cooperation between astrofactum and education: How will it works?

Weymans: astrofactum will publish and distribute relevant educational material to schools and educational institutions. This can happen either by print or via the internet. Students or teachers who learn about Public Telescope and are interested in the material can sign up on the homepage.

They can leave their personal information and get in touch with the education team of astrofactum. Documents and info material for schools and other educational facilities will be provided for free. Observation projects and educational materials will be financed by third party.

More about the space project Public Telescope:

www.publictelescope.org

Rule #2

"It doesn't matter how much money you make……

…..if you *hate* your job".

Become curious about something and chase your dreams.

Opportunities in Asia

What does the rise of Asia's STEM sector mean for North American Universities and education suppliers and how can you be part of it. This is just one of the hot topics being explored as part of the 2nd International Festival of Science, Technology, Engineering and mathematics.

STEM FEST

www.stemstates.org

September 27th to October 3rd 2015
Saskatoon, Canada

Don't forget about Pluto so fast....

The recent flyby photos provided by the Horizons Probe caught the imagination of many as we finally reached the edge of our solar system photography. As with so many exciting space events over the last 30 years, is this mission doomed to be quickly forgotten like a recent birthday party? I've actually spoken with friends who had no idea it happened or when it was launched in 2006.

We have a real challenge on our hands as we attempt to capture the imaginations of our youth while they consider possible career paths. ***Could the real problem be "keeping" that imagination?***

Getting it is easy, but hanging on to it long enough to explore career options, take necessary classes or develop a broad skill set to pursue those careers takes time.....even years.

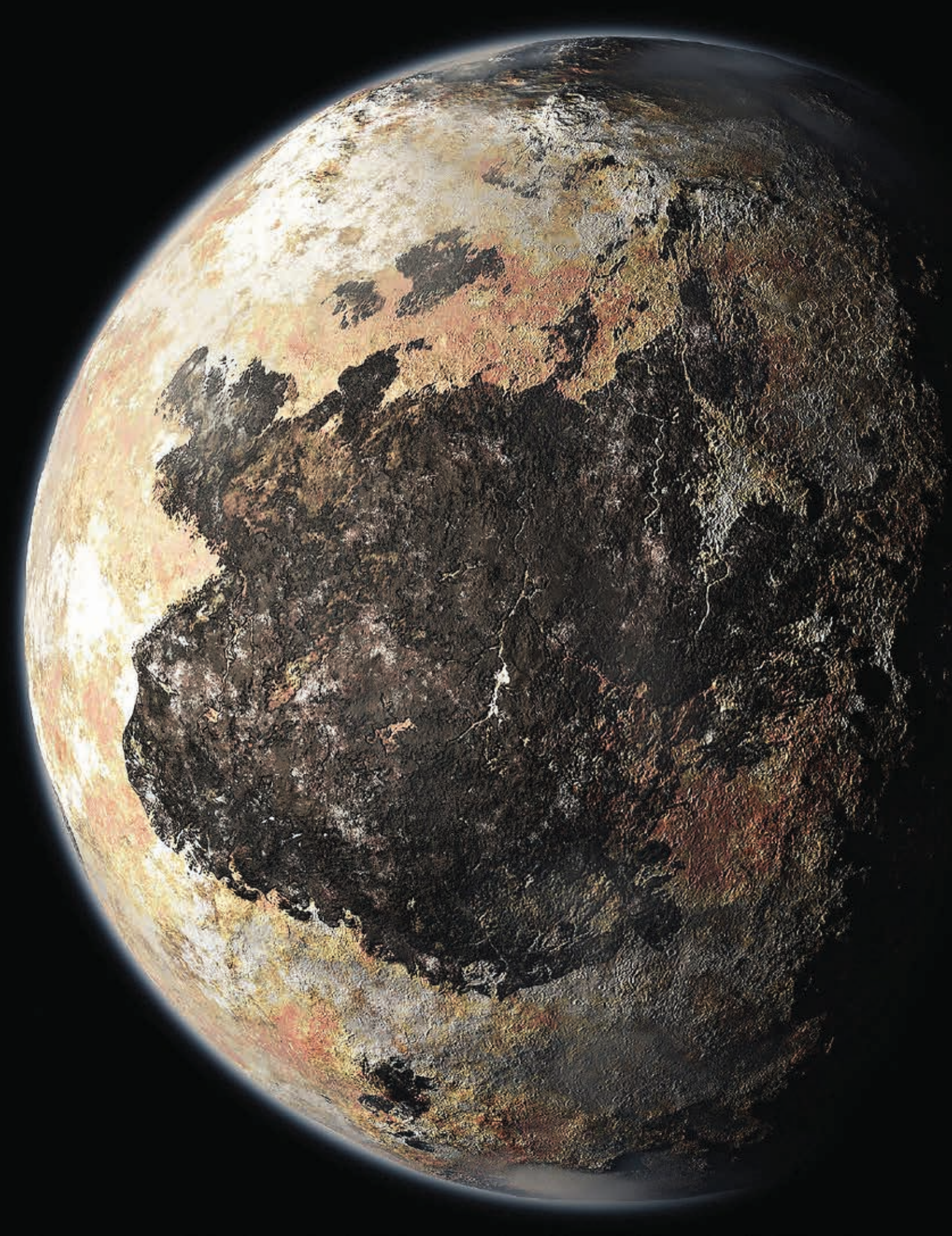
There was a time when the eyes of the world were focused on the moon and the men walking on it. The mystery and spectacular accomplishments of the Apollo missions were awe inspiring and edge of your seat excitement. Within just a few years, the public was choosing to watch their favorite TV show rather than view live coverage of the Apollo 14 moon landing.

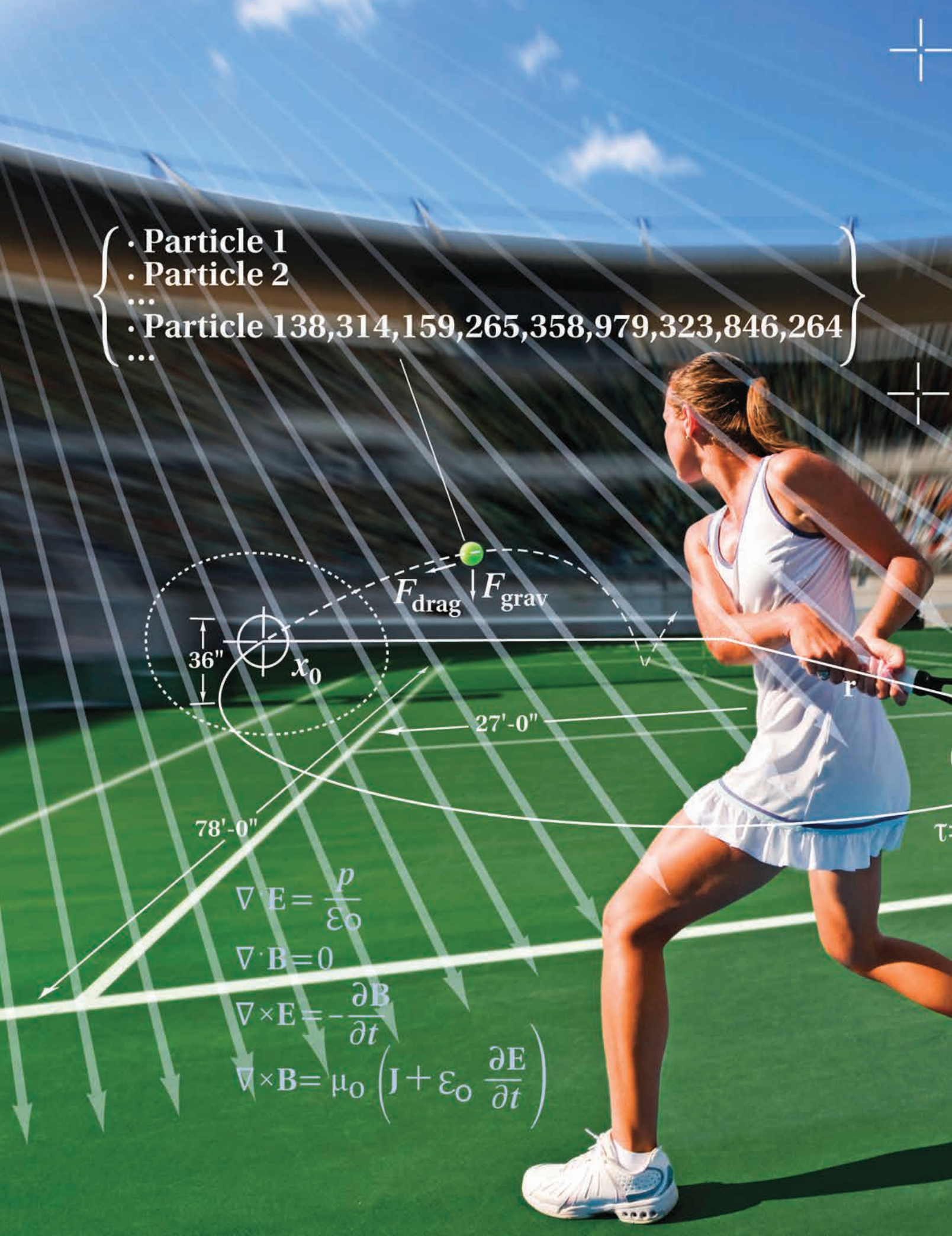
As STEM grows at light speed, could we be facing too many stimulating choices that take too long to realize? By the time we graduate, our field of interest has completely changed or even become obsolete.

All we can really do is develop the curiosity of our students by first being curious ourselves.....about anything. Statistics suggest that this generation of students will have at least 4 different careers during their lifetime, so an on-going lifestyle of "curiosity" becomes very important.

Let's remain curious about about our futures, our present and our past, all of which are interconnected in ways we may not understand at the moment.

Stay curious.....about what makes you curious. Don't forget Pluto so fast.

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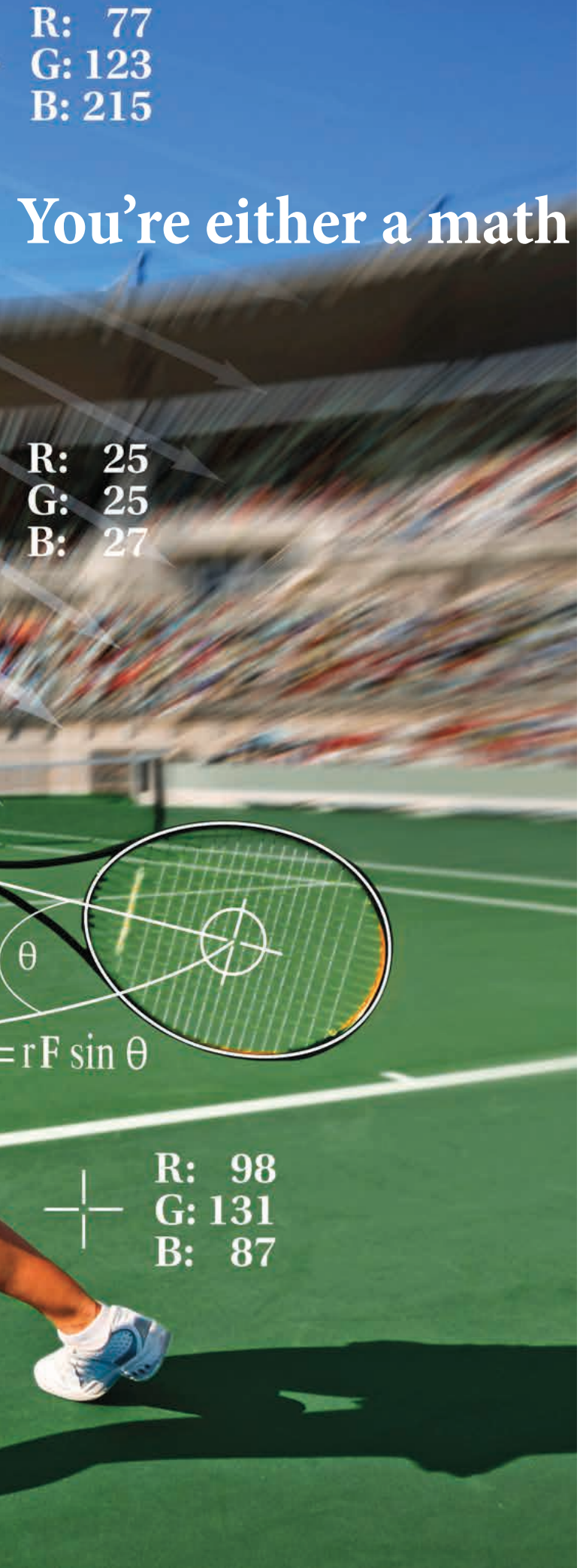


You're either a math person or you're not – WRONG

by Chrystian Tejedor

That's what we've always heard, but now the National Science Foundation-funded research conducted by Florida International University Professor Zahra Hazari shows that's not really the case.

"Much of becoming a math person and pursuing a related STEM (science, technology, engineering or math) career has to do with being recognized and becoming interested – not just being able to do it," said Hazari, who specializes in STEM Education at FIU's College of Education and STEM Transformation Institute.

"This is important for promoting math education for everyone since it is not just about confidence and performance, or even career choice."

Hazari worked with colleagues Jennifer D. Cribbs from Western Kentucky University, and Philip M. Sadler and Gerhard Sonnert, both from Harvard University. Their research, published recently in the journal Child Development, suggests that interest and recognition are key factors that can help students become "math persons," while confidence in one's abilities is not enough.

To arrive at their conclusions, the team surveyed more than 9,000 college calculus students from across the country. Data analysis revealed that while belief in one's competence and performance is indeed a factor to seeing oneself as a math person, it is secondary to the individual's interest in the subject and the recognition received from teachers, parents, relatives or friends.

"It is surprising that a student who becomes confident in their math abilities, will not necessarily develop a math identity," Hazari said. "We really have to engage students in more meaningful ways through their own interests and help them overcome challenges and recognize them for doing so. If we want to empower students and provide access to STEM careers, it can't just be about confidence and performance. Attitudes and personal motivation matters immensely."

All teachers and parents can help their students become math people with these simple tips from Hazari:

- Have your child teach or help a younger sibling or friend with a math problem.

- Help your child connect math to something they're interested in (figuring out Lebron James' shooting percentage in the NBA Finals or the proportion of water to Kool-Aid that makes the best Popsicle).

- Shower your child with encouragement and public kudos if they solve a challenging math problem.

- And don't forget to hold your child to high expectations in math.

Believing they can do challenging math is another way of recognizing them.

Help them ***"make the connection"*** between math and everything in daily life.

If I hear one more teachers tell their students how much they hate math....

I'm going to **EXPLODE.**

Every sport is a STEM sport.

GLOBAL STEM STATES

The Global STEM States Inc. is a not for profit association, incorporated in Australia, which aims to act as a forum through which industry, associations, academia and government can come together to discuss Science, Technology, Engineering and Mathematics (STEM) education and innovation, and the role it plays in the needs of industry, export, trade and development.

The background to the 'Global STEM States' is as a grassroots movement, with a medley of not for profit, academic, industry and government organizations entering into dialogue over the role STEM education plays in a State's future human resource needs, and how this should be implemented.

www.stemstates.org

Engineering Girls' *Passion for STEM*

Victoria Juarez
Girls Inc.

Nobel Peace Prize winner and education activist Malala Yousafzai is quoted with saying, "Every girl deserves to take part in creating the technology that will change our world and change who runs it."

Yes! The question is, how can we help instill passion in our girls to take on tech? Because the average young girl isn't exactly jumping at the chance to learn how to code or take apart a computer. ***But why is that?***

By now we've all seen the groundbreaking "Like a Girl" ad that stole the show during this year's Super Bowl. It asked participants to illustrate what it means to do something "like a girl" and showed the effect it has on young females when people use the phrase as an insult.

What made the ad particularly powerful was the way it highlighted the differences in how young women, boys and young girls perceive the phrase. And it changed the conversation of what it means -- to run like a girl, fight like a girl, throw like a girl, and so on -- in an effort to champion girls' confidence.

But the barriers and biases that women and girls face (outside the doors of our organization and others like ours) continue to cause too many of them to disregard science, technology, engineering, and math (STEM) fields. Far too often, girls and women and our institutions second guess their talents and we -- our economy, academic institutions, and society -- lose out.

While girls and boys as young as third grade start identifying math as "for boys" and not "for girls," it is middle school age when girls typically start to lose interest in STEM. What happens next? They do not add that AP Physics class to their schedule, select an engineering major, or pursue a chemistry- focused career.

According to a recent study conducted by Tel Aviv University researchers, teachers at the elementary level still harbor unconscious biases that dissuade girls from going into math and science fields. The researchers found a gender bias in math grades given to girls and boys, suggesting a gender gap in the teachers' perceptions of their students.

The results were striking: when teachers knew the children's identities, they graded the girls lower in math than the outside grader, while scoring the boys higher. And the bias was not appearing in other school subjects -- just math. The study followed the children all the way through high school, and found that girls who had been downgraded in elementary school were less likely to sign up for advanced math and science courses in high school.

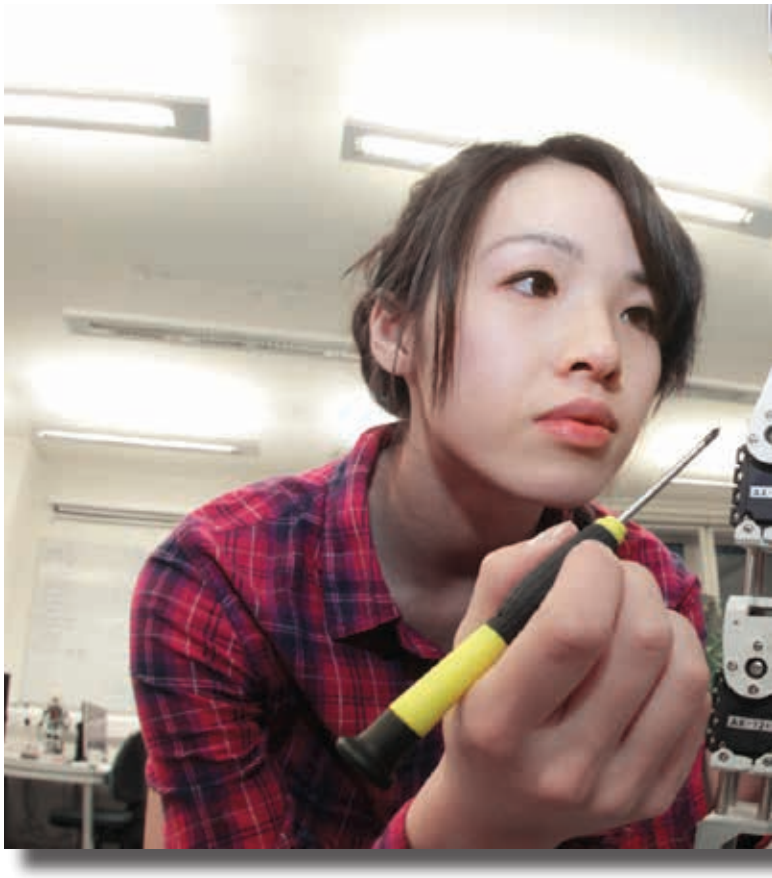
An article in the New York Times Magazine also examined why this gap persists, particularly at the university level. Often women cite a lack of encouragement from peers and professors, which they took to mean they did not have what it takes.

Women also discussed how, with fewer women in STEM, there were fewer female role models and mentors available. The piece married this qualitative evidence with research from Yale University showing a disturbing bias towards viewing male candidates as more competent and worthy of a higher salary by both men and women when hiring.

Meanwhile, the need for qualified STEM workers is growing. By 2018, the bulk of STEM jobs will be in computing (statistics, software, robotics...) followed by engineering. Today, only about one in seven engineers is a woman in the US. And, while women hold half of all jobs in the U.S., less than 25% are in traditional STEM fields.

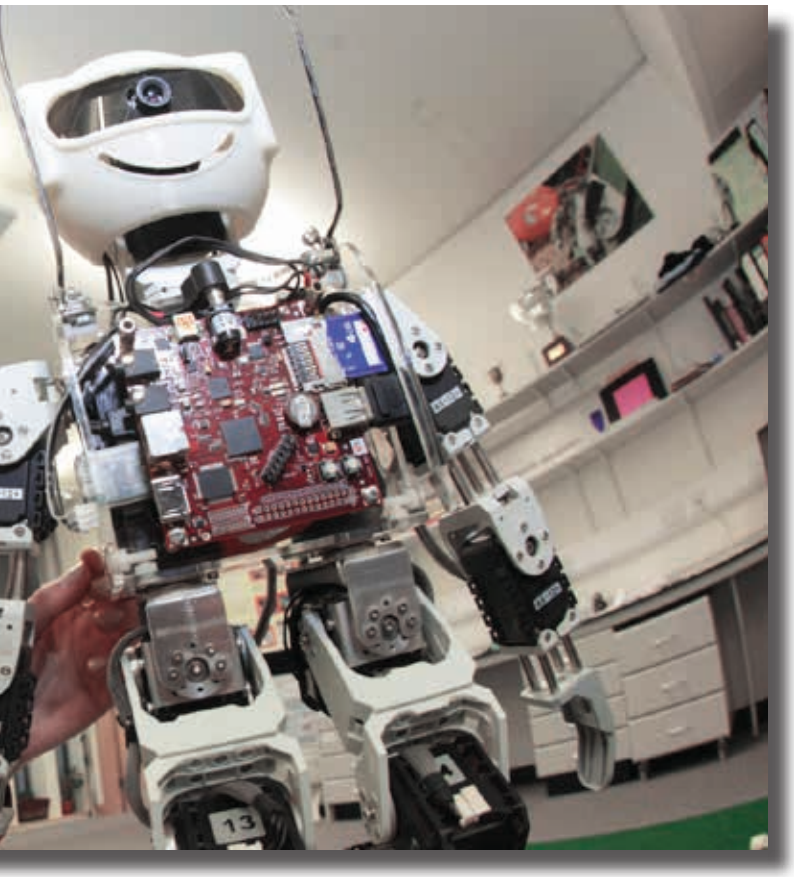
Meeting these needs tomorrow requires bringing more girls into the STEM picture today. It means expecting girls to do well in math and science at an early age, and shattering stereotypes that science is unfeminine or geeky or not "for a girl." It's about letting girls make mistakes and learn from them. It involves **showing how STEM is already a part of their everyday lives.**

For 30 years, Girls Inc. of Carpinteria has provided innovative, hands-on, minds-on STEM education to girls and their families in Carpinteria and Ventura County, building leaders and a path for a successful future. Our Eureka! Program for college-bound girls is designed to break gender stereotypes and inspire girls to consider STEM fields, through engaging activities in which they are able to discover and explore different career paths.



We recently hosted coding workshops for our members and through our Juvenile Justice Program in Ventura County, which taught teenage girls how to code and to see coding as a means to pursue their dream careers. Fifteen of our girls will be traveling to the nation's capital to meet with senators, representatives, and even tour Google's offices in

D.C. - giving them a taste of various career opportunities.
These are just a few examples, from one organization.



For girls to truly succeed in STEM, they need a support system: adults who believe in their abilities; women who are in these fields to act as role models; and other girls who share their interests. For girls who do not have this advantage, that's what Girls Inc. is here to provide.

We introduce our members to other women who have gone on to succeed in STEM roles, surround them with peers who have similar backgrounds and goals, and every day we advocate and demonstrate our confidence in their abilities to reach higher heights. Thankfully, there is growing recognition among schools, companies, nonprofits, and government to understand the causes and create real solutions.

Together, we can continue to create homes, classrooms, afterschool programs, and a workforce that pave the way for encouraging young girls to discover STEM as fields full of opportunity and enrichment, and to solve problems by creating the technology that can change our world.... LIKE A GIRL!

What will your future cell phone look like?

In November 2002, designers at the Royal College of Art in London made headlines after coming up with the world's first cell-phone implant. Their design involved a small chip that housed a receiver and a transducer. The receiver could pick up mobile phone signals, and the transducer could translate them into vibrations.

Once implanted in a person's molar, the transducer caused the tooth to vibrate in response to radio signals.

The physical structure of the jaw carried the tooth's vibrations to the inner ear, where the user, and no one else, could perceive them as sound. The implants designers held dramatic demonstrations of this principle using a vibrating wand. Participants confirmed that they could hear crystal clear voices through their teeth.

Fact or fiction?

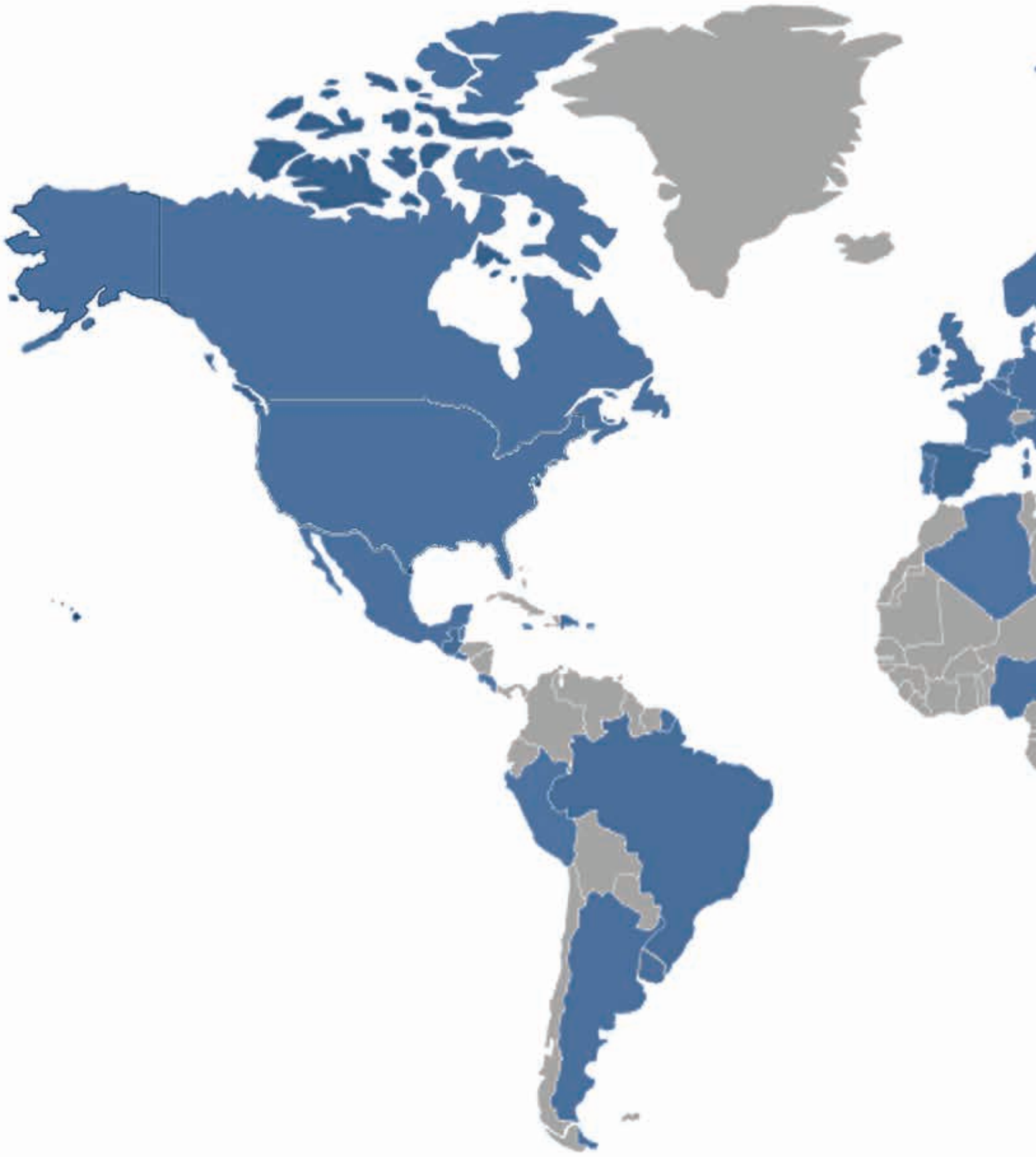
The recent preponderance of tiny, functional Bluetooth earpieces has also made the idea of a discreet, permanent implant seem viable to a lot of people.

But even though they're a lot smaller than they used to be, modern cell phones are still far too big to fit inside your body. Even the smallest Bluetooth earpieces are really too big to fit anywhere other than your abdomen or chest....but think about current body implants that not too long ago were science fiction:

- heart pace-makers
- inner ear hearing implants
- artificial eye lens
- electronic muscle stimulator's
- brain implants to control seizures
- bio-mechanical limbs

Only your imagination is your limit.
Never say never.

STEM is Global



You are Global