

Expand Your Mind Change Your World

INELECTRONICS

magazine

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QUOTES

“Minds are like parachutes; they work best when open”

— T. Dewar

“Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. The greatest thing in life is to keep your mind young”

— Henry Ford

“If you always do what you always did, you will always get what you always got.”

— Albert Einstein

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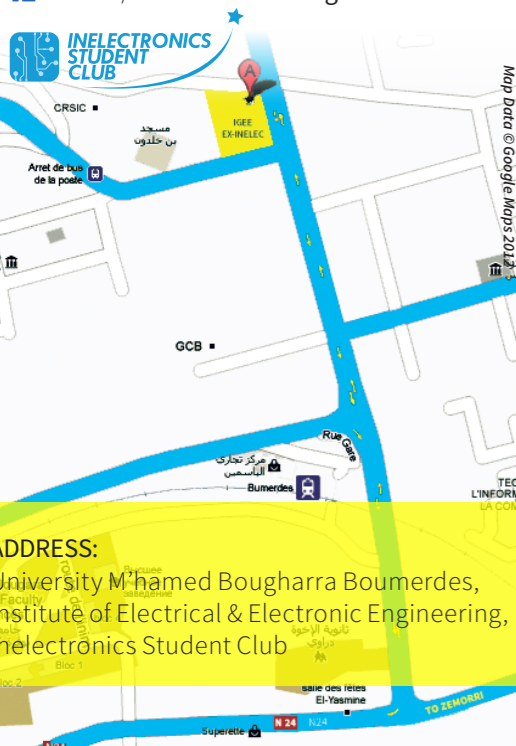
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EDITORIAL

INELECTRONICS Magazine is a non-profit student run magazine that is published bimonthly. The first issue was released on May 2010 followed by 6 other issues published over the last 4 years. Our magazine is the result of the effort made by the student writers and editors of ISC who simply attempt to be of use to their university, community, and country in general.

In the midst of the information flood of the media, students' initiatives and achievements are no longer highlighted or given enough recognition that is why the magazine offers them the opportunity to express and share their creativity, passion, and enthusiasm.

We have tried to capture the club's excitements and activities. We hope that the magazine encourages more students to use it as a platform to express their creativity. This issue enhances our knowledge about the world's tech actualities in addition to the club activities. Tech, social, entertaining and more. We sincerely hope that this month's edition makes for an interesting read. So let's begin our journey!

IM Team



Seif Eddine EL AHOUEL (L03/04)

The Mobile World Congress is the largest exhibition, conference and networking event for mobile networks operators and device manufacturers from all over the world, held every year in Barcelona, Spain.

The 2014 edition, started from the 24th till the 27th of February, and marked the entrance of new manufacturers, innovative technologies, new concepts, and new changes of some companies' strategies as well as new products that had been able to catch the admiration of the attendees while others just proved their disappointment. So let's check out

the best and most popular items from the event.

Smart Watches, Smart Wearable and a Smart Toothbrush!

Samsung's new and improved Tizen OS powered Gear smart watch came with a new home button for easier on/off, better battery life, and a camera on the body of the watch (on the Gear 2 only) and has made many noticeable improvements such as dust and water resistance rating, more support for fitness functionality, and the ability to listen to music through a Bluetooth headset with music stored on the watch, a heart rate sensor and infrared

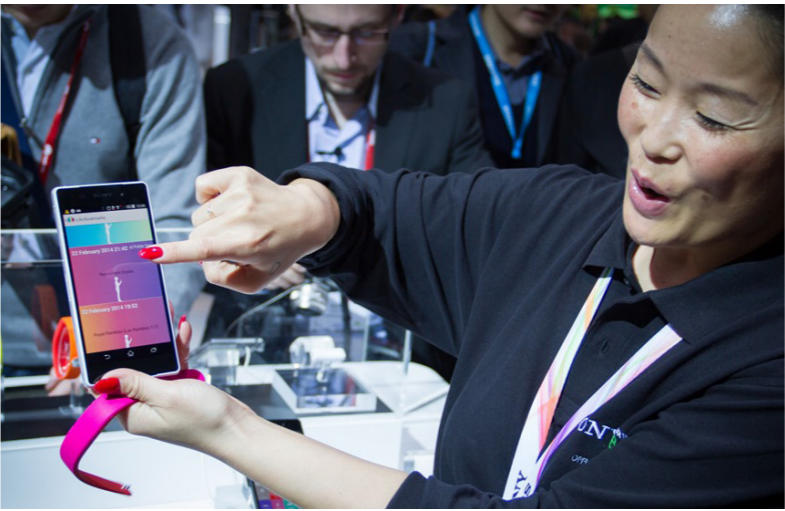
remote control capability.

Sony which was the first to come up with a smart watch back in 2006 had a different approach this year.

Smart Wear encompasses smart watches, activity trackers, and everything that helps users log their lives. The SmartBand is an activity and sleep tracker, also a life companion intended for users to log everything in their lives, with a button that helps creating a "life bookmark" and sync it with your PlayStation or any other Sony device so you can keep track of your gaming scores as well as your exercise achievements.

Sony also showed off a life-logging camera concept that snaps pictures at time intervals. The camera is small and looks fashion-friendly, intended to keep track and log everything digitally with pictures.

Creoir is asking with all these Smart Watches, how many out there are we really willing to wear? The Ibis concept changes completely from the other watches that some may find boring. The Ibis is designed primarily as a watch with the "smart" part added to it and not the other way around, giving it the look of a metal watch



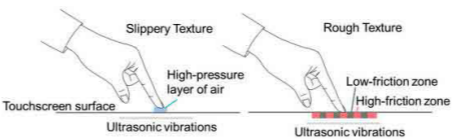
with a small screen for notifications and calendar entries, having android as its OS. The watch would include WiFi, Bluetooth, accelerometer and even USB connectivity. But the world has to wait much longer to see this watch in shelves as it's still a concept.

Oral-B unveiled their smart series electric toothbrush that connects via Bluetooth with iOS or Android devices giving advanced settings and details about the brushing habits, like pressure applied and time taken. In addition to 6 customizable cleaning modes, the app has also tips, news and even weather updates.



Realistic Tactile Sensations on Fujitsu's

Screens using ultrasonic inducers to make the screen vibrate at different levels based on the images displayed on the screen, Fujitsu introduced a prototype tablet to showcase this new technology that is considered a big development for the touch screens. The ultrasonic inducer also buzzes and clicks faintly at different pitches based on the type of surface you are touching. Fujitsu states "this technology enables tactile sensations — either smooth or rough, which had until now been difficult to



This technology is still immature and not yet ready for markets, as the screen still works on one contact point in addition to the power consumption of the ultrasonic inducers, but Fujitsu is counting on making it available for commercialization by the end of 2015.

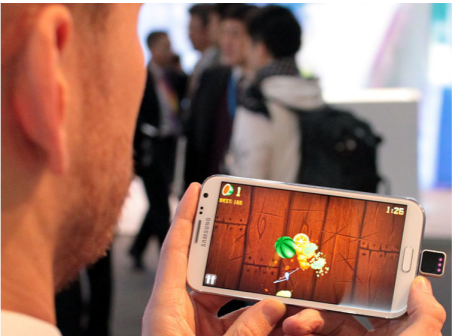
Play Fruit Ninja with your eyes

The Danish company eye tribe caught the curious eyes at the event with their eye tracking control device demo at their booth, allowing the visitors to play Fruit Ninja with nothing but their eyeballs.

The eye tracker uses infrared light on the eyes and tracks its reflection from the user's eyes, it is accurate enough to track an area the size of a fingerprint. It can be used to play games or even to control the OS. The demo demonstrated a micro USB device attached to Android devices and the company says that currently Windows is supported for consumers and another version for Mac OS X is expected soon.

Blackphone: the secure smartphone

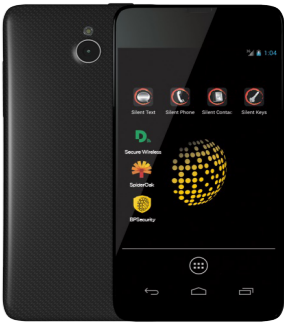
The Android phones flagship certainly does not lack powerful and rich-featured phones, however; this phone is offering something unique none of the other



achieve — right on the touch-screen display. Users can enjoy realistic tactile sensations as they are applied to images of objects displayed on the screen."

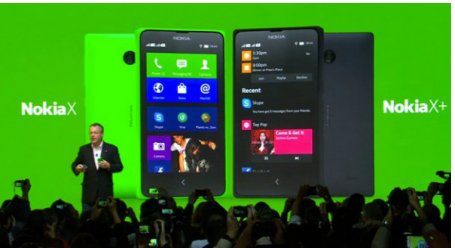
competitors have: Privacy and security.

Through its "silent" apps, the Blackphone by Silent Circle and Geeksphone offers fully encrypted peer-to-peer calls through Silent Call app as well as encrypted text messages with silent text, and adds an extra level of encryption when calling non Blackphone users. In addition to Silent Contacts designed to stop malware from accessing the contacts book and 5 GB of ultrasecure cloud storage SpiderOak, private browsing and VPN in the disconnect apps. In addition to more efficient and clear security settings.



What's new in the mobile phones world?

The Mobile World Congress is also an occasion for the companies to showcase their latest phones, tablets and even new mobiles, with Samsung showing off Tizen OS in phones and in their Gears, Mozilla Firefox



OS introduced new phones and tablets promising the world smartphones with the lowest prices. Ubuntu also had some demo phones as they showed the new interface and announced partnership with the Chinese Meizu and european Bq to deliver the first Ubuntu phones.

Android flagship had new arrivals, with Nokia setting its feet in the market with 3 phones that doesn't seem to be cutting edge hoping their customized Android phones will bring even more customers towards Windows Phone.

We are also about to witness the birth of phones with dual lens cameras bringing a revolution to the mobile phone cameras. ■



Nabil BOUARROUDJ (M01)

The seats had been taken and the belts had been tightened during the INELECTRONICS Air-Show. AirShow is an event related to the field of aeromodelling, it is organized by the collaboration of the two clubs (Inelectronics and AeroPassion). The goal from the event was to widen the knowledge of students about the world of Aircraft modeling and give a chance for airplane hobbyists to interact with the first Drone makers in Algeria.

Aero Passion is the first aeromodelling club having as main activities:

- Building small sized replica of an existing or imaginary aircraft.
- Research and development in the field of Modeling (electronic, composite, embedded systems, navigation and remote computing).

During the event, a conference had been delivered by Aero Passion representatives, starting with the process of modeling the different drones followed by an Introduction to multirotors like the

quadcopter, hexacopter and octocopter which are used to refer to the 4-, 6- and 8-rotor helicopters.

The conference covered also the development of multicopters' fabrication and the existing models that are frequently used.

In the conference room an indoor simulation took place with their hexacopter having a camera attached in it, and used for aerial photography of sites and buildings. The multirotor had been flying over the room to film the attendance with almost all of them unaware of the camera presence.

After having it landed, the video was broadcasted in the conference room to the audience which was totally astonished.

Right after the presentation, an exhibition of different drones took place at the hall of the Institute. Although we had some weather inconveniences, but it did not prevent us from insuring the last and main part of our event which is "Make it Fly"; during this part, our guests made some drones fly in the club's room and ensured an entertaining Air-Show to our visitors.

The present students had been able to

watch a quadcopter flying using "Fatshark Predator V2 system" which is a package used for video piloting also known as, First-person view (FPV). It includes the Fatshark Predator video goggles and a video transmitter. This system transmits videos over 5.8GHz, so it will not interfere with the 2.4 GHz transmitter, having a range up to 1km as had been claimed by Fatshark.

A simulation has been shown using Open-Pilot in a tablet, this software is a next-generation Open Source UAV autopilot. It is a highly capable platform for multi-rotor craft, helicopters, as well as fixed wing

aircraft. The Open-Pilot software can be combined with hardware such as an inertial navigation system board, a main control board, a GPS receiver, and a 2.4 GHz serial communications link with the ground station as has been reported by **OpenPilot.com**.

It was an unforgettable day and an amazing experience we lived with Aero-Passion Club, hoping that the event has reached one of its main objectives which only could be proved by having us, INELEC students, building multicopters of our own. ■

“ Religion is not suitable to govern a country ”

Proposition Team

Rached Zeglache
American University of Cairo

Lyes Khacef
IGEE (ex-INELEC)

Abdelhak Benali
IGEE (ex-INELEC)

Tuesday 11:20

March 11th
IGEE (ex-INELEC)
Conference Room

Opposition Team

Taki Eddine Bouyoucef
IGEE (ex-INELEC)

Hafidha Amrane
IGEE (ex-INELEC)

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IGEE (ex-INELEC)



ENGLISH SECTION

DEBATES

Amongst the many activities the English section has organized so far, Debates were the most appealing and had the lion's share of attendance and participation both by students professors and even on an occasion by a foreign student who joined via video.

One of the most applauded debates took place the 11th of March of the ongoing year over a classical yet ever heated topic; RELIGION & POLITICS. The motion was put forward in a firm wording: "Religion is not suitable to govern the country" referring to the lately political instabilities that shook some Arab countries as well as controversial ethical and religious issues that are galvanizing the public opinion throughout the world.

Intrigued by the daring motion introduced by the proposition team, a massive influx of students into the conference room marked the day of March 11th. Six students, one of whom a business administration student, American university of Cairo, animated the debate by imparting their knowledge and staunchly advocating their ideas in a language increasingly invading international stages.

For an hour and half, the two sides seemed to find no common ground and views grew even further apart. Nearing the end of the debate, the tensions heightened a bit more when the audience was given the opportunity to criticize, question the debaters of both teams and challenge their arguments as well as their eloquence and ability to extemporize and sell ideas.

It was indeed a compelling experience intended to heighten the youth awareness of their crucially important role in the decision making process by engaging in forums and public discussions wherein ideologies are being reshaped and oriented. ■

INELECTRONICS SECTIONS' ACTIVITIES



Programming can be fun" is an event organized by the Open Code section to break the stereotypes about how tedious programming could be considered by some people. The members went through a dynamic presentation and a thematic workshop in order to introduce the participants to the concepts of programming.

The presentation comported three major parts, a brief introduction to the theme picked for the workshop: a game about pirates, and few concepts about the language "Java" which was going to be used.

An HTML/CSS presentation took place and it was delivered by Katia Ameziane and Lynda Dib. The two members have presented an entire website they had been able to build and which was related to the theme chosen for the workshop.

After the presentation, a new application called "Scratch" was introduced to the members, an app that allows you to easily create a basic game using algorithms.

However, without waiting any longer, Mr. Amine Chigara, a solution engineer at Maghreb Positioning Service delivered a session about android apps programming, and announced the start of a training in Android Apps development for the OpenCode team.

After some explanations about how to go from an idea stage to a working program, and how to represent an object from a game into a piece of oriented object code, the workshop started by having the members divided in sub-groups, each team wrote a part of the code which has taken along time. Although the program was not completed, however, the sub-groups managed to "create" the main characters of the game.

Last but not least, I can say that the workshop fulfilled its goals by getting the members in touch with a new programming language and above all by having fun. ■

OPEN CODE SECTION

PROGRAMMING CAN BE FUN

GRAPHENE

THE FUTURE OF TECHNOLOGY AROUND THE WORLD

Yazid LARABA (L03/04)

With technological enhancements coming at the speed of light, the electronics industry continues to evolve and create newer products with higher optimized performances. Yet, few years back, none would have predicted the existence of a wonder material such as graphene that would revolutionize the future of electronics.

Graphene is a form of carbon, as a material it is completely new; not only the thinnest ever but also the strongest. Few students from IGEE were asked about its existence, and almost all of them replied: "Don't you mean Graphite?" However, the students who have heard about it had no clue about its properties or why it is considered as a revolution.

Graphene is a crystalline allotrope of carbon with 2-dimensional properties. The sp² hybridized carbon atoms of graphene are arranged in hexagonal fashion in 2-dimensional layer. Graphene can be described as a one-atom thick layer of graphite. It is the basic structural element of other allotropes, including graphite, charcoal, carbon nanotubes and fullerenes. Now a question that comes to one's mind is where this material had been hiding all these years? And why research on the substance started only from 2004? The answer to this question is actually quite hilarious since the discovery was due to a



▲ Image credit - Scientific American (graphene with elephant on pencil grid. Source: Own work)

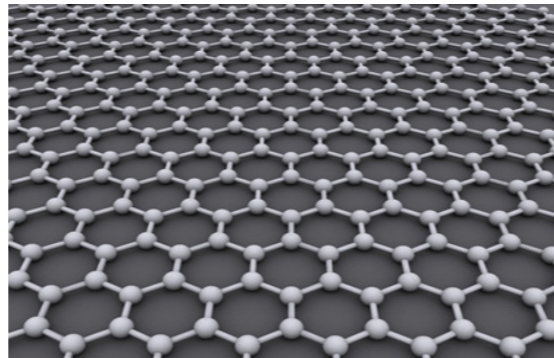
game that two Russian-émigré scientists named Andrei Geim and Kostyg Novoselov were playing during their work in a lab at the university of Manchester, in fact they were testing the electrical properties of some flakes of carbon graphite until they got annoyed and started trying to make thinner flakes with the help of sketchy tape. They repeatedly peeled off layers of graphite from the tape's black until they managed to get to a flake with only few atoms thick. They soon realized that by repeatedly sticking and peeling back the Scotch tape they could get down to the thinnest of all possible layers, one atom thick – a material with unique and immensely interesting properties. This inventive step enabled Prof. Andre Geim and Prof. Konstantin Novoselov to be awarded The Nobel Prize in Physics 2010. In the past few years many fascinating properties were discovered through the investigation of pristine Graphene, although just one atom thick, graphene possesses outstanding mechanical, electronic, optical, thermal and chemical properties making it a unique material existing on earth. So what makes Graphene better than other semiconductors?

Columbia University mechanical engineering professor James Hone once said it is "so strong it would take an elephant, balanced on a pencil, to break through a sheet of graphene the thickness of Saran Wrap," according to the university.

It was found that Graphene is harder than diamond and about 200 times harder than Steel. Even though it is so robust but also very stretchable, it can be stretched up to 20% of its initial length. It is expected that Graphene's mechanical properties will find applications into making a new generation of super strong composite materials and along combined with its optical properties, making flexible displays as had been reported in the Cambridge University Press.

Graphene is a great conductor; electrons

▼ The ideal crystalline structure of graphene is a hexagonal grid. Source: Own work



are able to flow through it more easily than through even copper. It conducts heat better than any other known substance. This would probably mean the end of all the heating problems. Moreover, the combined optical and electrical properties of Graphene have opened new avenues for various



▲ "Nokia Morph" model which uses combination of Graphene & nanotechnology

applications in photonics and optoelectronics. Numerous applications have been suggested, which includes photo detectors, touch screens, light emitting devices, photovoltaic, transparent conductors, terahertz devices, optical limiters and ultra-capacitors.

The possible practical applications for Graphene have received much attention. So far, most of them exist only in our fantasies, but many are already being tested, also by Geim and Novoselov themselves. However, Graphene as a new material still faces many challenges ranging from synthesis and characterization to the final device fabrication. The exceptional properties were observed in the defect free pristine Graphene prepared by graphite exfoliation using scotch tape method which is not appropriate for any large scale device manufacturing.

IBM has revealed that Graphene can't yet fully replace silicon inside CPUs, as a Graphene transistor can't actually be completely switched off. Although IBM demonstrated a Graphene transistor running at 100GHz which is 10 times the speed of a common silicon transistor.

All of the above makes Graphene a good contender for yet another record: the material with the most records. The material made it to be the most important for scientists today; it is now supposed to replace most of nowadays used materials in the fabrication of the different technologies. It will not only be used to make a progress in our daily life but it is also waited from this material to make such products more effective and give them much more high performance. ■

THE FUTURE GAME ARTIFICIAL INTELLIGENCE VS. HUMANS



Walid BOURICHE (M02)

What does it mean to be human? Is it all in the DNA? Or is it related to the social and psychological behavior? And what if we replace someone's body parts with robotic ones, will he still be a human or will he become a robot?

Even though the above questions seem out of reach now, as a consequence of the accelerating evolution of computer technology and bio-medicine; we all, will have to find answers for them sooner or later.

"Transhumanism" is a cultural movement with a purpose of developing human capacities using advanced technology to eliminate certain qualities like stupidity and sickness. In other words a way to cheat death, but this will lead to major problems in the future, since it will lead to a substantial growth in the earth's population. And what if we indeed realized this project, which category is eligible to benefit from it?

Technology has always been a source of worry for a lot of science-fiction writers. But the need to look for its consequences is relatively new. One of the most active establishments in this domain is The Fu-

ture Human Institute (FHI) from Oxford University.

Their main objective is to evaluate the impact of Nano-technology and robotic science on human reality. In other words, what are the human technologies that we can achieve, and will lead to the «Human extinction»? The researchers are trying to prevent the technology from reaching a reality where we excel ourselves, and produce machines that are able to build other machines. This will create a serious threat to the human race because they will be clean of all our imperfections. This whole case is not new; in 1965 the British mathematician Irving Good published an article titled "The hyper-smart machine", in which he wrote that this machine will be the last thing the human being will ever build. Indeed other scientists are talking about the "singularity" point, in which technology will be able to produce other technologies by its own. And reaching this point the American philosopher Mark Bdaw confirms that we will have "Living technology" not because it is organic and has the properties of biological life but because it will have all the properties of living beings (like having senses, being able to navigate through the world independently, being able to reproduce and being able to learn and adapt).

All this present to us a new riddle, how are we going to deal with these semi-living beings? And do we have to worry about the future? It is clear that it is difficult to deal with robots as humans who have the same rights and duties as people! But scientists think that this will be the result of the current advancement of technology. And back to the above supposition, human who will have robotics parts are they robots of humans?

On the other side of the coin; Of course we should be concerned about the human future because advanced machines will reach a point where Artificial Intelligence will be able to form thoughts and opinions. And that is exactly what modern astrologers predicted in science-fiction novels. And what the head of Future Human Institute "FHI", the philosopher Nick Bostrom, confirms saying that these novels are pushing us toward giving robots human characteristics and encouraging us to imagine a reality where we live side by side with superior machines. Bostrom says also that: "even though we always brag about how smart we are, in reality we are not! But most likely we are the most stupid living kind who is able to have technological culture. Our technological culture was created as soon as we reached the required intelligent level for it to exist, in other words any technology will be able to outsmart us as soon as it will be able to think independently".

Saying all that we arrive at a cross path, should we stop the development in robotics field to avoid the above riddle? Or should we proceed forward? After all, there had always been people in history who refused the advancement and who pushed toward the past not the future where the causes could be due to a fear of something new. We have all seen similar responses at the introduction of television, and Internet, but even if there is a side who wants to shut down the robotics field, it would not be able to stop the wheel of development; that is a lesson we have all learnt from history. ■

PLANTING IS THE BEST MEDICINE TO SAVE OUR PLANET FROM ITS FEVER

Hamza Anis AMAZIGH (L03/04)

Since time immemorial, earth has warmed and cooled over time due to natural causes, in other words Earth has experienced climate changes without the intervention of human beings, but what happened after the industrial revolution was terrible! Since that time earth is getting warmer: Earth's average temperature has risen by roughly 1.53°F (0.85°C). Although this number may seem small its consequences are significant, our planet is made in perfect conditions of life such that any small changes of these conditions will have fatal effects.

What is global warming?

Global warming is one of the major problems which is not divided by the boundaries of various countries. It is the unusually rapid growth of Earth's average surface temperature. For a better understanding of this problem, we must define some important phenomena like the greenhouse gases which are found in the atmosphere, these gases have the ability of trapping heat; so when the sun gives off rays of heat that reach the Earth, the heat from Earth travels back into the atmosphere where the greenhouse gases stop some of the heat from escaping into space; this process is called the greenhouse effect. Although there is no question that this process must not be upsetting, however; man's activities have increased its danger by producing more greenhouse gases.

What are the consequences of the Global warming?

It is important to understand that the



consequences of global warming are very significant. It cannot escape our attention that catastrophes like tsunami, avalanches, floods, desertification and many other disasters are direct results of Global warming. In addition Warming modifies rainfall patterns, amplifies coastal erosion, melts icecaps and glaciers, increases the ozone hole which causes skin cancer, spreads the range of some infectious diseases and kills many living species causing their extinction. Briefly if the increase of temperature carries on this rate, life will not be possible on our planet anymore.

What are the causes of Global warming?

Mainly, there are two types of causes natural and human actions, I will focus only on human actions because they are more influential. Most of human's activities produce greenhouse gases: burning fossil fuels, industries and manufacturing companies, aircrafts and many other pollution sources. Actually it has been found that this activities produce a new type of gases called chlorofluorocarbons or CFCs which are more dangerous than the natural greenhouse gases, based on the fact that small amount of them can trap large amount of heat.

As had been mentioned before the major cause of global warming is the increasing number of industries poles in developing countries. It is better to stop blaming and start working together in order to fight against Global warming to save our planet.

How can we fight global warming?

After recognizing the problem and its causes the treatment is a step down easier. As a start, decreasing the emission of carbon dioxide and CFCs production should be taken under consideration, since they are the most dangerous greenhouse gases, there are many ways to begin this process. Key actions include: not building any new coal-burning power plants, initiating a phased shutdown of coal plants starting with the oldest and dirtiest ones, capturing and storing carbon emissions



underground which is a technology that is used nowadays. Secondly, Revving up renewable energies and the final step is Greening transportation and deploying new low-carbon and zero-carbon technologies.

However; there are many solutions available, but in my opinion, the most suitable to heal earth's fever is planting!

Why planting as the best solution?

It is well known that the ozone hole occurs in the south pole, since it is caused due to the increase of carbon dioxide, normally it should occur in the north where most of developing countries responsible of producing huge amounts of CO2 are located, the only thing that can explain this fact is that due to plants (which absorb CO2) the amount of CO2 is balanced in the north whereas due to their absence in the south pole the amount of CO2 coming from the north keeps increasing. Plants and trees have many benefits; average size tree creates sufficient O2 for a family of four, one acre of trees can remove up to 2.6 tons of CO2 each year. Furthermore, planting is the best medicine for Global warming, since it is the most available solution where anyone can participate, it is effective, its result is assured, and more importantly it does not cost much money or effort. ■

BLOOD DONATION CAMPAIGN AT IGEE

Tassiana CHELAH (M02)



Until now, no artificial blood exists and there is no substitute for it, only donors can help maintain an adequate supply of blood to save the lives of those in need. Giving blood will not decrease your strength, but it may actually reduce the risk of heart disease and simulate the production of new blood cells which refreshes the body.

By donating blood you can help mothers having labor complications, fathers needing heart surgery, teenagers who have been in accidents, grandparents undergoing chemotherapy, or premature babies trying to breath with tiny lungs!

One does not know who will be in need of blood; it could be your friend, a member of your family and who knows, it could be even YOU!

Blood Donation Campaign at IGEE:

INELECTRONICS student club hosted the second edition of the blood donation campaign, which completed its two days (10th and 11th of March) with more than 150 donors. The blood van was held at the institute of Electrical and Electronics Engineering in a very cheerful and friendly atmosphere. It was so simple to organize such an event and so amazing to see its results.

Our goal is to encourage blood donation among our students and staff at the

institute in order to gain regular donors who can be a vital source to people in need. We often hear some people making excuses about the long waiting list at the hospital, unavailability of time or even about risks claimed from the donation process. However; in the following facts, we will be clarifying the donation process and erase any ambiguity that may come up to the donor's mind.

“It's easy to become a blood donor it's easy to become a hero!”

Blood donation FAQs:

Q. Who can donate?

Healthy people over 18 who weigh at least 50kg and do not take any medical treatment are encouraged to donate regularly.

Q. How often can a person donate?

Healthy men can donate blood every 56 days or 3 months. However, women can donate every 4 months.

Q. Is there any danger in donating blood?

Only sterile needles are used to collect blood. There is absolutely no chance of catching any infections disease by donating blood.

Q. What does the screening process involve?

Potential donors will answer a series of

question about their health and then they will have their blood pressure measured.

Q. How long does it take to donate blood?

It all takes only 8 up to 10 minutes! How simple the entire process is!

Q. Should we eat before the donation?

YES! It is MANDATORY to eat and to drink fluids before donating, and to get a good night's sleep.

Q. How will a donor feel after giving blood?

Donors will be monitored for a short period after donating. They will be given a candy and a drink.

Donors should eat well and avoid strenuous activities for the next two hours.

Q. How much blood is collected?

The adult human contains approximately 5 liters of blood, less than 10% is collected (400 ml). This blood is completely regenerated in the next 24hours.

Q. What happens to the blood after the donation?

In laboratory, adding to the determination of blood type, the blood is tested for 4 major diseases: hepatitis B and C, HIV and syphilis. Can we obtain the results of the blood test? Each donor has a number of registration which can be used to obtain his blooding results. ■



MOOCs...

EDUCATION FOR EVERYONE

Houssam MENHOUR (L03/04)

Few years back, when you wanted to learn about something, you either ask someone, buy a book, try to figure it out on your own or you could enroll in a course offered by a school. Nowadays, you can also take a MOOC. What is a MOOC?

A MOOC or Massive Open Online Course is a course founded on the theory of connectivism and an open pedagogy based on networked learning. In few words, it is a course, open, participatory, distributed and supports life-long learning with facilitators, course material, homework, exams, a start and an end date with participants. It is neither an ordinary school course, nor just an online course, it is more like an event where you join people with the same interest to discuss, collaborate and learn together; And at the same time maintaining the experience of being a student.

The openness lies in the sense that it is accessible for everyone with a computer and Internet access, in the sense that you do not need to pay a penny to take it, except maybe when you seek some form of accreditation, in the sense that the work done in the course is shared with all the people taking it.

MOOCs are participatory, although you are not asked to complete specific assignments, you take a part in the course by engaging with the material, with each other and with the content that you may find on the web, and you build a network between all of that.

One of the advantages is distribution, all the blog posts, articles, discussions, videos, tweets, tags and any related content dispersed across the web are connected together, and there is no right way to do the course, you can follow any path you want through this network which allows for new ideas to develop and for different points of view to co-exist.

Another one is that it supports lifelong learning, by promoting independence among learners, encourage them to work in their own spaces and create authentic networks that they can maintain after the course finishes, in other words, a MOOC is just a starting point of a continuous process of learning, and for a massive amount of content to be produced in different places online.

History behind MOOCs

The term MOOC was coined for the first time in 2008 by Dave Cormier and Bryan Alexander. And was



▲ Photo of Matunduzi School, Girls Education Support Initiative, Malawi 2012

adopted and applied later that year by George Siemens and Stephen Downes. The course was called "Connectivism and Connective Knowledge" and was presented to 25 tuition-paying students at the University of Manitoba in addition to 2,300 other students from the general public who took the online class free of charge. But the idea for such an educational outlet has a rather extensive background, one that in fact predates the Digital Age. Ideas for such an educational tool as the MOOC can be accurately traced as far back as the early 1962 when Douglas Engelbart proposed a research agenda titled "Augmenting Human Intellect: A Conceptual Framework" to the Stanford Research Institute in which he emphasizes the possibilities of utilizing the computer as a collaborative tool for intellectual accession. And then presented it during what is called "The Mother of All Demos" in 1968.

Do we really need MOOCs?

Personally, I think the right question is why not? Because in a MOOC: You can acquire high quality education for free. With a PC and Internet access, you may come up with the next big idea.

There is no strict curriculum, you can choose what to do, how to participate and even when, according to your time availability. You may benefit of preparatory courses that some other students do not need, or from a particular enrichment topic that you want to pursue individually. You will not be forced to attend long useless lectures with boring weird teachers whom you do not like. There is no awkward situations, like when a teacher asks you "what didn't you understand?", or when you ask about something you should have

learned 2 or 3 years ago. All work, thoughts and instructions can be shared, critiqued and viewed by all participants.

“College is a place where a professor’s lecture notes go straight to the students’ lecture notes, without passing through the brains of either.”

— Mark Twain
(American author and humorist)

You can build a professional network with people taking the same course as you. If you want to go further, you can pay for a certificate or any available form of accreditation which is sometimes for free.

When used by teachers to help their students, it provides them with detailed statistics about each student abilities, improvement and faced difficulties ... and thus can allow him to focus on each student and help him the way which is more suitable and efficient for him.

When & Where to start?

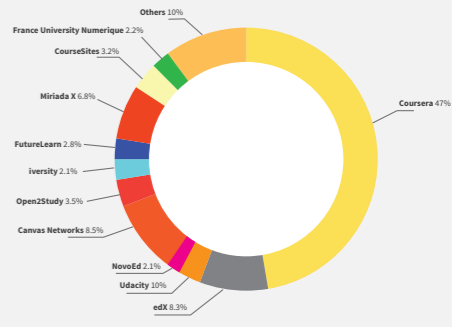
If you are thinking about joining a MOOC in order to enhance your performance in your school classes, to refresh your knowledge or simply for curiosity and having fun, you can start **right now** by searching online, where all the

information about MOOCs being offered or going to be are spread, some of those courses may be offered by individuals as well as by institutions, the best and largest MOOC platforms are: edx.org, coursera.org, khanacademy.org and udacity.com. The first was launched by MIT and Harvard University and then extended to include many other universities, the second was formed by Daphne Koller and Andrew Ng the third was started by an individual effort of Salman Khan to help his cousins and then grew up quickly. class-central.com and mooc-list.com are good sources of information and news.■

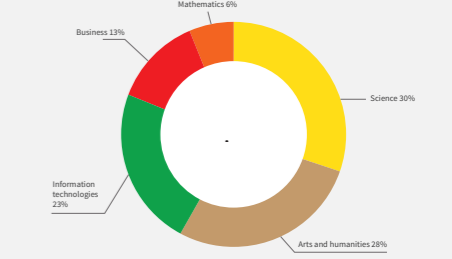
SOME FACTS & STATISTICS:

- There was a rise of **600%** in high education tuition & fees since 1985 as had been claimed by (Bureau of Labor Statistics, USA).
- In USA, only **55.6%** of graduates work in a job that requires a college degree reported by New York Times.
- Coursera has **6M** students taking **608 courses** from **108** different partners.
- Khan Academy has a video library with over **2,700 videos** in various topic areas and over **90 million** lessons delivered.

MOOC Provider Distribution



Courses Offered



WHAT IS WRONG WITH THE BATTERIES?

Issam LABIDI (L05/06)

Certainly, the battery is a wonderful invention. It provides a portable means of electrical energy storage on which rely most of our daily used devices. However, there happen times when the battery lets its user down or die short after its very first use. In fact, the battery's lifetime and efficiency depend on the way it is being used . A good good treatment can make it last longer

There are several reasons for which a battery's life can be reduced, probably the most important one happens when charging it for the first time, all new batteries come half charged, and as we all know, their inside is composed of chemicals with electrons exchange ability like Lithium and Nickel batteries, these elements remain stable until the battery is first used, *it is recommended to fully charge the battery to its maximum level before using it.* At the first charging cycle, the current will flow through the chemicals, causing the molecules to gain electrons gradually, if the charging operation is interrupted, most, but not all, of these molecules will be stimulated, while the rest will keep their initial state, the non-stimulated molecules will no longer belong to the battery's storage elements and cannot be charged at the next charging cycle, thus, resulting in a limited number of active gained and released electrons, which is known as "the memory effect".

One might say that the device in which the battery is used displays 100% even though the above instruction is not respected, well; this is true, because the sensors on the device evaluate only the state of the active elements in the battery (i.e. the element affected during the first charging cycle).

The amount of time for a battery to fully charge depends on its size and rated voltage, a typical phone battery may require up to six hours of continuous charging to maximize its energy holding capacity.

Another aspect of the memory effect appears when repeatedly charging a

partially discharged battery. For instance, a battery that is never used below the quarter of its maximum charge will deliver energy at a normal rate until it reaches the last quarter, wherein the drop speeds up. Fortunately, there is a way to recover the holding capacity by deeply using up the battery's energy, then fully recharging it for at least three consecutive cycles. The discharging can be performed by turning on the device until it automatically switches off, or by means of a "discharger" for better results. Another pitfall to avoid is overcharging the battery (although, it is recommended to do so for a short period of time not exceeding 15 minutes) , because that would ,remarkably, decrease its power storage ability. Furthermore, a battery which is not used for a long time is subjected to self-discharging, and if it is made up of several cells (6 to 9 in most laptop batteries), the cells will not self-discharge at the same rate, and the deeply discharged cells will receive a reversed current from the partially discharged ones which may cause an irreparable damage.

The temperature as well is an important factor in determining a battery's life duration. With laptops for examples, the system's temperature increases considerably when running graphical applications or playing games. However, it's preferable to maintain an ambient temperature during the charging process (25° C), that's why a place with good aeration is important and the use of laptop's cooler pad is recommended.

FULLY CHARGED
10 ~ 15 min

MEMORY EFFECT

FULLY-DISCHARGE CAN HELP
RECOVER HOLDING CAPACITY

Finally, it's obvious that you can make a battery last for a long time but not forever. Because everything is eventually to come to an end no matter good care and fastidious treatment. With that in mind, one must consider replacing the battery if this last can no longer supply power the way it used to. Again this opens the doors for another challenge and further discussion, as practically there is no way to test a battery and check its performance in its package. For Now, make sure you buy your new batteries directly from the manufacturer to ensure genuineness of product. ■



INTERVIEW WITH

DR. NOUREDDINE MELIKECHI

Zahra RABIA (L01/02)

Dr. Nouredine Melikechi received his graduate degree in physics at the University of Science and Technology Houari Boumediene in Algiers, and a Doctorate of Philosophy (D.Phil) in Physics at the University of Sussex in England. He is a Professor of Physics, the Dean of the College of Mathematics, Natural Sciences and Technology, and the Founding Director of the Optical Science Center for Applied Research, at Delaware State University. Dr. Melikechi is a member of the Mars Science Laboratory team, NASA's largest Mars exploration effort to date, also known as "Curiosity". In a visit of Dr. Melikechi to Algeria, the magazine team went to the home where he spent his childhood and asked him a few questions about his education and exceptional scientific career.

Q. After some years studying in Algeria then moving to UK and USA, how was the journey that led you to Delaware University?

I completed my high school years in Abane Ramdane high school in Algiers where I have obtained my Baccalaureate degree in Mathematics, at that time, there were no high schools in Thenia, so I had to leave home when I was a teenager (14 to 15 years old). I graduated from the University of Science and Technology Houari Boumediene, and I must admit that I spent tough years and good moments at the same time. The academic programs were excellent, and thanks to the support of my teachers there, I obtained a good degree and a scholarship to England.

The years I spent in England were not easy, especially the courses followed at the University of Sussex. I realized that

“the mission we are currently working on is the largest with one ton of equipment including 10 instruments.”

it was not hard due to the complexity of the courses taught there, but actually it was about the difficulty of the method that approached problems. It was more about learning by doing experiments. I



▲ The interviewer Zahra Rabia with Dr. Noureddine Melikechi



▲ Gale Crater rim and floor as viewed by the Curiosity rover (August 9, 2012).

had great advisers in England and thanks to them I worked very hard to get my PhD. It was a great experience because as I have mentioned before, it is a very difficult way of doing science. When I came back to Algeria, I taught in Bab Ezzouar for almost two years, then I left to the United States and from there I moved through some universities.

Q. Dr. Melikechi is a member of Mars science laboratory team known as "Curiosity Rover". What makes this mission particular compared to the previous ones and what are the goals from it?

The previous missions to Mars were relatively small missions in terms of what had been taken as instruments to the red planet. However the mission we are currently working on is the largest with one ton of equipment including 10 instruments. It is only today that we can actually study

the red planet, the way it had never been studied before. But it was very complex since a huge robot "curiosity" had to land at specific spot within a very specific area of that spot.

To answer the second part of your question, I can say that the goals from curiosity mission (the Mars science laboratory) are to look for the presence of elements of life. Because the important question we are asking ourselves is: "was Mars or is Mars habitable?" Habitability is a rather complex concept but let's say that one of the criteria necessary to livability is the presence of the elements of life, and as you know water is one of them, so we are mainly looking for water. We are also looking for carbon, hydrogen, nitrogen, phosphor and sulfur; if we find these elements on Mars then there is a possibility of life. Since we have been there, we found that those elements do exist; all the elements necessary for life exist on Mars, even water. The Gale Grater, the place where we are in Mars, is about 2% consisted of water, and there is water vapor in the dust. But does that mean there is life? No, it only implies that it is possibly habitable; having said that there are problems as well. Radiation is huge, and it will kill any life in the surface but in the depth of the rocks which absorb radiation, there might be life and that is the next mission "Mars 2020" NASA is planning. NASA is planning the next mission to Mars in 2020 aiming to look for life; this time we know that the necessary elements exists, now we are going find whether there is a possibility of living there.

Q. We would like to know what is your role in this mission?

I am currently involved in one of the 10

instruments that are in the planet Mars, and being an atomic optical scientist, I am more oriented towards instruments that are related to lasers. One of the instruments in planet Mars has a laser used for shooting rocks, when the laser shoots, there is a lot of power which is being released and light is being emitted which targets very small points in the rocks, my work is to study the interaction between the laser and the rocks

“...have a dream, do not dream small and never be afraid to dream big, you can do it just like any other successful person has done it before”

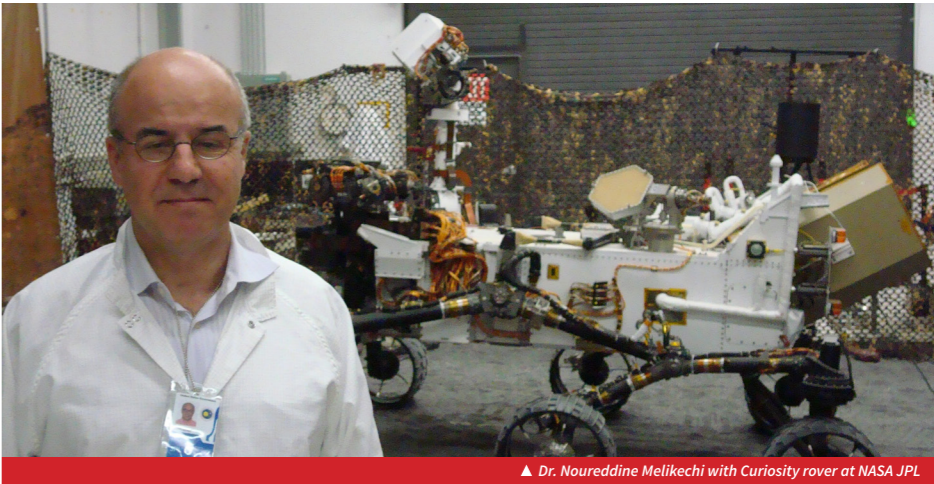
in order to understand the constitution of rocks on Mars.

Q. What was the most inspiring factor that helped you reach your successful achievements?

As you know, I was born in Thenia, I had some wonderful teachers and community like my neighborhood, parents, and other people. At that time, education was very important for us because Algeria just became independent and the country had very few educated people, those people were actually an inspiration to me. I was always interested in science and literature, and as a result I decided to pursue a scientific career by the help and support of my teachers and community.

Q. How could we develop science in Algeria, especially inside our universities; and do scientists living abroad play a role in the development of the country?

To answer the first part of your question, of course they can take part the country's development, but the problem is how they are going to help? Algerian universities have enough motivated students having the required potential and whom are interested in science, of course this is certainly a good point, however; the problem is how to use this potential in order to ensure a sustainable growth of the country. For this reason, we need a strategy allowing us to reach the required goals. We have also to understand that science is universal and



▲ Dr. Noureddine Melikechi with Curiosity rover at NASA JPL

our universities need to open up to the world; and bring speakers from all over the globe in order to let the students hear about what people had been able to reach and get inspired from them.

Q. You have participated in "Fikra" event, how did you find the youth there and how events like "Fikra" could help them?

I have participated in both editions of the Fikra conference; I found "Fikra" an extremely good opportunity for students, youth, entrepreneurs, engineers, decision makers and university managers. The conference was not focused only in science, but it is a mixed bag with people from different disciplines and backgrounds like art, culture, business and science which is a good combination that is currently needed in Algeria. I hope we will see other events having the same concept in order to exchange ideas all together.

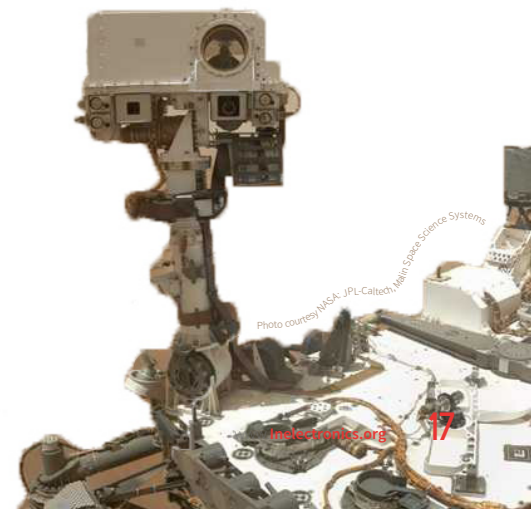
Q. You said during "Fikra" event: "You young people, you can do it if you start thinking outside of the box". What would you say about the Algerian youth?

The Algerian youth is full of energy, there is a lot of passion, and I think what they need to understand is that we, as a nation, are depending on them. The future belongs to them and they need to understand that it is their duty to build their own future; nobody can decide for them, they only need to believe in themselves, decide what kind of future they want and just work hard to reach it.

Q. What is your advice to Algerian students generally and INELECERS particularly?

As an advice to all Algerian students is to have a dream, do not dream small and never be afraid to dream big, you can do it just like any other successful person has done it before. However, for INELEC students, you have an important tool not everybody has in Algeria, which is your chance to study in English. As you may know, English is the language of science and technology which is an opportunity to open up to the world and a chance to exchange with people. The second important factor at INELEC is your field of study which includes electronics and computer science, those are two major fields and my advice is to open your mind, read and learn from what people are doing all over the world in order to ensure the development of technology, and decide what you would like to achieve in the future in order to contribute to the growth of this field.

I say the following everywhere I have the chance to say it, and will repeat it here: "It's time for us to develop the technology we need instead of buying it all the time". ■



Badreddine ZEBBICHE



Badreddine Zebbiche is an idea stage winner in the GIST Tech-I Competition with his project "GuideMe". It is a technology for the blind, to help with navigation in uncharted territory. Although blind people are generally adept at navigating places they are familiar with, these places can change with construction, or with the amount of people on the sidewalk.

People with full sight often get disoriented in new places and these places are all that much more challenging for someone who cannot see them. The technology, however, exists to help change that. and GuideMe is excited to get it into people's hands as soon as possible.

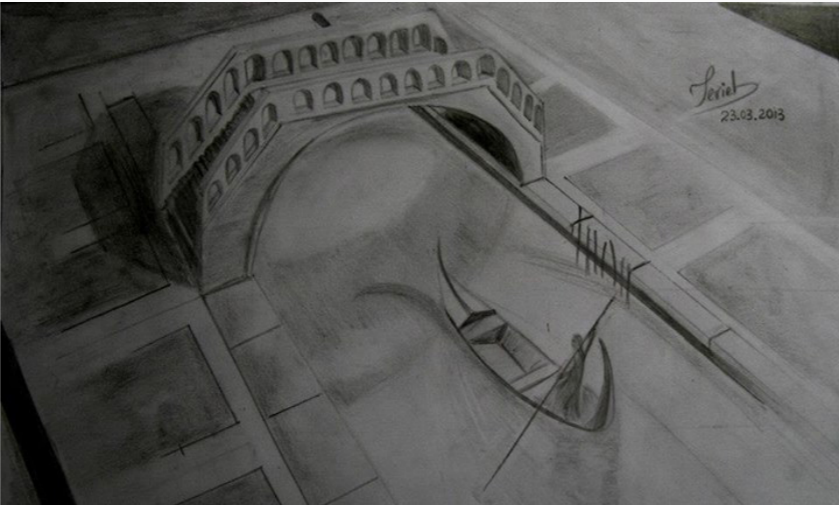
GuideMe is an obstacles detection device designed for visually impaired Individuals. It is integrated within the shoes and talks to the user through a smartphone app to provide navigation. It uses 3D Sensors on all sides of the shoe and relays those to the smartphone, which turns those signals into communication, telling the user where the obstacles are and which direction is best to move in.



Feriel AIMEUR

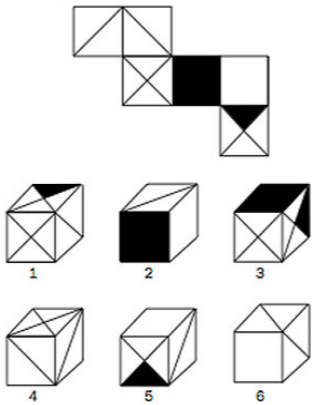
We are all born with a talent, a divine gift. Yet, it starts with a seed deeply sown within us ,hungrily lying in wait for cultivation and unstinting care. The need for leisure and a source of entertainment was what made her restore connection to what made her happiness before.

Feriel Aimeur started painting and drawing as a hobby which then grew to become a passion. Unable to turn a deaf ear to the urges of creation getting more and more louder, she took the leap and got devotedly involved in painting courses trying to master the techniques and even developing her own. When asked about this particular point, she said: *"Everyone has his own favorite painting techniques, I started using acrylic paint in 2012, and it remains my favorite painting technique used until now. However it is a fast-drying paint which is considered as an inconvenience, but it is an advantage for me especially when it comes to be quick in drawing the different layers."* Feriel, however, relates to the pencil in a beautifully particular way where she declared: *"Pencil remains the simplest tool used in my drawings, and it is the one I use the most since it offers a very wide range of possibilities."*



Brain Games

- 1. Which of the six cubes below cannot be made form the unfolded cube at the top?
- 3. Reese likes 361 but not 360; she likes 900 but not 800; and she likes 576 but not 575. Does she like 1,600 or 1,700?



- 2. Each of the following contains the letters NOV. Using the definition, complete the words.

A cosmic incident: ____NOV_
Still a mystery: _N_O_V_
Teller of tales: NOV_____

- 4. If six puzzel makers can compose nine puzzles in a day and a half, how many puzzel makers does it take to compose 270 puzzle in 30 days?

- 5. Replace each letter below with a number so that the addition will be correct. (Hint: K=9.)

MOM
MOM
+ NO

BOOK

Answers

- 1. Cube 5
- 2. SUPERNOVA, UNSOLVED, NOVELIST
- 3. 1,600. (Reese likes perfect squares.)
- 4. Nine. (Each puzzler can compose one puzzle a day.)
- 5. B=1, N=4, O=5, M=7, K=9.

Did You Know?

- 1. 160 billion emails are sent daily, 97% of which are spam. Spam generates 33bn KWh-hours of energy every year, enough to power 2.4 million homes, producing 17 million tons of CO2. 9 out of every 1,000 computers are infected with spam. Spammer get 1 response to every 12 million emails they send (yet it still makes them a small profit).
- 2. The median score for college-bound seniors on the math section of the SAT in 2011 is about 510 out of 800. So right there is proof that there are lots of unsolved math problems. And the oddest bits of math often turn out to be useful. Quaternions, which can describe the rotation of 3-D objects, were discovered in 1843. They were considered beautiful but useless until 1985, when computer scientists applied them to rendering digital animation.
- 3. The snowboard was invented by an engineer? With some engineering twists and turns along the way, the snowboard has become a marvel of geometry, chemistry, and biomechanics. Since the snowboard allows deft turns, ski manufacturers have quickly adopted some of the snowboard innovations, enabling skiers to turn with less effort.
- 4. The inventor of telephone was not Alexnder Graham Bell. In 16 June, 2002 the US Congress recognized the Italian immigrant mechanical genius, Antonio Meucci as the inventor of the telephone.

English Idioms

An **idiom** is a phrase where the words together have a meaning that is different from the dictionary definitions of the individual words; they are commonly used in every day conversation by native speakers, which makes idioms essential knowledge, to better understand and communicate in English.

- 1- **cap in hand:** if you do something *cap in hand*, you ask for something in a very respectful manner. They went to the teacher, *cap in hand*, and asked for more time to complete their project.
- 2- **one's best bet:** the action most likely to succeed is called one's *best bet*. Your *best bet* would be to try calling him at home.
- 3- **chance one's arm:** if you *chance your arm*, you decide to do something even though there is little hope of success. Tony knew there was little hope of getting into Harvard but he decided to *chance his arm* anyway.

EDUCATION vs. SCHOOLING



Gaya HACIANE (M01)

Albert Einstein, who is very well reputed to be one of his generation's greatest scientists once said: ***“education is what remains after one has forgotten what he has learned in school”***; when analyzing this quote, one can see that it infers a difference between education and schooling; it actually highlights the fact that educating people does not necessarily mean having them spending most of their youth in school, and more importantly avoid making them believe that it makes them smarter and will get them a better life.



What is the difference between the two?

According to the most common definition, school is the place where we spend most of our time from childhood to adulthood, in order to acquire what is needed either intellectually, technically, scientifically or in any other discipline to build a generation of people who are good in what they are doing and can bring prosperity to their respective fields of expertise. It is often there where we learn to speak, write, count, do mathematics, biology, physics and we actually learn a lot of things we have never thought we could learn before.

The school also contributes to preparing the students' minds to think about coming up with solutions to complex problems, but all in an abstract environment that is really different from real life.

Now, is this really what education is about? To answer this question; education is in fact not entirely about what had been already mentioned. In actual fact, It deals more with shaping people's characters, and cares less about things learnt in

order to have people passing their final exams, In other words, education is more concerned with shaping the mentalities by teaching the values and moral codes such as commitment and discipline people need to coexist and succeed in their lives. It makes them understand what commitment is about and shapes their very own personality.

“ Education consists mainly in what we have unlearned ”

From Mark twain's definition of education: "education consists mainly in what we have unlearned". This definition is my favorite, because it clearly affirms that education is the total opposite of instruction, a thing that usually takes place in schools, and then, and also because it states that education is what one gains after one has had lots of experiences, pushed his creative and innovative abilities to the limits and spent a fair amount of his time thinking deeply and critically about how he can be a positive element in the hierarchy of the society he is taking part of.

Am I saying that we should all dropout school in order to be as successful as Bill gates?

Well, of course not. I am just saying that success is not necessarily related to being a school graduate, no matter how highly it is recommended to be one, and I guess that. The idea i am trying to convey is that in school we are taught practical things that are very useful when answering the question: How to do a certain thing? Whereas education is concerned with the question: What thing to do? Therefore; I think that what is most needed for a society to see the light is constituents who is the



awareness of its individuals of their abilities accompanied with effective trainings to sustain, develop and make productive use of them. Only then, this driving force will bring positive changes in the environment they are living in, and trained well enough to know the positive impact that could be brought into existence; All that could be translated to having a generation of people that makes the best use of reasons rather than obedient task-performers, a workforce able to fully exploit the resources_ human be them or natural_ to build the country will emerge. Finally, I hope that students and schools will be oriented more towards making people learn through innovation and experience. ■

HEAR IT FROM ALBERT!

SERIOUSLY, DO YOU THINK YOU CAN AFFECT THE FUTURE SIMPLY BY WORRYING?

Takieddine BOUYOUCEF (L03/04)

Human beings, the only combination of atoms in the universe that has the ability to think, or so we believe, have realized amazing breakthroughs in terms of studying the elements around them through sciences, and making good use of those via technology. We managed to ease and sophisticate our daily lives, creating a new lifestyle which is fueled by excitement, thrill, and **expectations.**

We all want to succeed and achieve our goals, and we all have set plans for that purpose, yet the outcome of these plans is not always what we predict. Sometimes a plan just does not work, no matter how seemingly perfect it is on paper, like, you do not perform well in an exam no matter how perfectly prepared you think you were. The fact that we do not control the aftermath of our work is devastating to some people, those who **worry about the future.**

It is always good to plan for your life, work hard to realize your dreams, and be anxious about the results of your efforts, but some people take it a bit too far. A type of people just, carelessly, live their lives not worrying, almost about anything, whilst others get depression and even mental diseases because of worrying too much about the future. Somewhere between these two pillars lies a famous, yet mind blowing reality, which is:

“Your worrying about the future doesn’t change anything about it.”

This last sentence tends to be so classic, theoretical, and somewhat philosophical, but surprisingly, it is the very core and essence of Einstein's special relativity theory, which served as an introduction to the "timeless universe" theory.

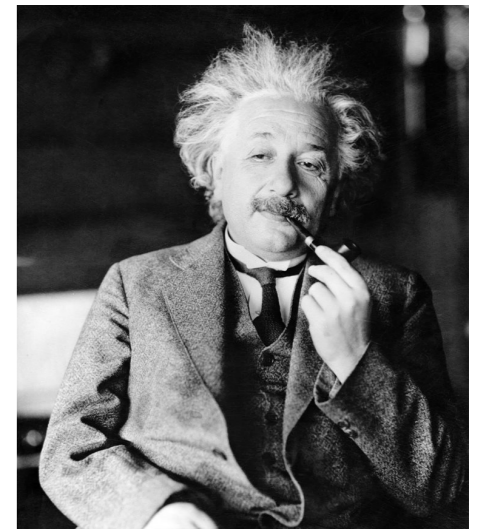
Prior to Einstein, classical physics regarded time to be absolute, constant, and universal (“God-Like”), and all objects anywhere experience time in a similar manner. It also stated that time is kept separate from space,

and is flowing through it in one direction,
from past to future like water in a river,
water is time and river is space.

All these views were proven wrong by the theory of relativity that Einstein came up with, based on the work of Lorentz, a theory which states that time and space are combined and form **space-time**: a four dimensional continuum in which all events, from the big bang till the end of existence -if any- are included, and within which everyone measures his or her own experience of time differently, relatively. What is close to the point is that, instead of looking at the cosmos, from super galactic to subatomic scales, as an evolution of a three dimensional physical reality, for example, a child who is born and aging as a function of time, instead, it is only a constant four dimensional space-time in which all exists simultaneously, meaning that the past, present, and future of this child all exist at the same time, not as concepts, but as pur physical realities.

Think of it this way: you have an axis of integer numbers (whole numbers) in which all these numbers are marked; having said this, we know that all these numbers exist simultaneously on that axis, and it would be insensible to say that the number 1 exists before the number 32, why? Because both of them exist at the same time, It is just that we chose to move from minus infinity to plus infinity (future), and on our way there, we encountered the number 1 and THEN the number 32. When we reach the number 1, it doesn't mean that 32 does not exist, it just means that we did not reach it yet, but it is always there not as a concept, but as a reality.

This is the principle of space-time. All events of your lives starting from the day you were born until the day of your death exist. Our destiny is fixed and all the past time did not fade into oblivion. In other words, whether you succeed in an exam or win a competition, it is already decided, whether you get your dream job or not, it



is already decided, and whether you will marry the girl you love or not, it is set and done the moment of the big bang, which by the way, is still there.

The distinction between past, present, and future, is only a delusion and has nothing to do with what reality is, or in Einstein's own words: "... for us physicists, belief in the separation between past, present, and future is only a stubbornly persistent illusion, although a convincing one."

We cannot travel to the past and change it, nor break to the future, we're stuck in the present time, and are moving relatively to the future. This theory was proven by many successful experiments as the 1962, and the 70's atomic clocks, and the 2004 Saudi Arabia financed Gravity Probe experiment. Yes, this means that everything is already decided which is for some people sad. But it is also thrilling. The fact that you do not know what has been decided for you and nobody else does makes your life a beautiful journey, and a real adventure to the unknown that you have to enjoy to the maximum.

What we can draw from what has been said is that, although we think we control the situation, we simply don't. We do our best to achieve our goals, but the result is, truly beyond our reach. ■

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Expand Your Mind Change Your World