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**HOLLYWOOD  
AND  
HIGHER  
EDUCATION**

**TALKING  
EDUCATION  
COUNSELLING**

**MR TRUMP,  
CAN WE TALK?**

**OPEN  
SOURCE  
HARDWARE  
& EDUCATION**

**LITERATURE'S  
ABILITY TO  
EVOKE EMPATHY**

**STRATEGIES FOR  
STRUGGLING READERS**



## The Cedar Rapids Community School District Welcomes You!

### A FEW OF OUR POINTS OF PRIDE

- ★ District students consistently score above the state average on ACT College Readiness Indicators. Our five-year average composite score is 24.
- ★ We celebrate diversity! Over 30 languages are spoken in our schools and we provide English Language Learner programming for students at all levels.
- ★ Over 166 athletic programs and diverse activities are offered in the middle or high schools. From archery to zumba, there is an opportunity for every student to showcase their talents.
- ★ Students looking for the challenge of AP (Advanced Placement) courses, can choose from more than 28 AP courses.
- ★ Innovative learning environments include one-to-one initiatives and other student-centered, technology-enriched learning environments. All classrooms include access to digital resources and whiteboard technology.
- ★ Our outstanding fine arts programs are nationally recognized and celebrated.
- ★ Student teams have brought home some 20 state titles in Academic Decathlon, a competition matching intellect in Art, Economics, Essay, Interview, Language Arts, Mathematics, Music, Science, Social Science, and Speech.
- ★ The District recognizes nearly 1200 students annually for distinguished academic achievements.
- ★ We embrace world cultures, welcoming numerous foreign exchange students to our high school communities each year.



"I extend a heartfelt invitation to students, parents, and educators from around the world to visit our Cedar Rapids schools and city and to experience the programs offered here. I have been involved with the Student Enrichment Program from the start and I am thrilled about the possibilities and opportunities it provides students to learn and reflect; this is the core focus on any enrichment program.

My team and I are committed to supporting the program and those involved with it."

-Dr. Brad Buck, Superintendent,  
Cedar Rapids Community School District

"Participating students have the opportunity to study in one of the top high schools in Iowa as part of this experience. We're proud to have high schools named in the Washington Post's list of "America's Most Challenging High Schools." We also offer an innovative project-based learning opportunity - known as Iowa BIG - which provides students opportunities to engage in authentic business, entrepreneurial, and community projects to earn academic credit. Our teachers and administrators are some of the best in Iowa and nationally."

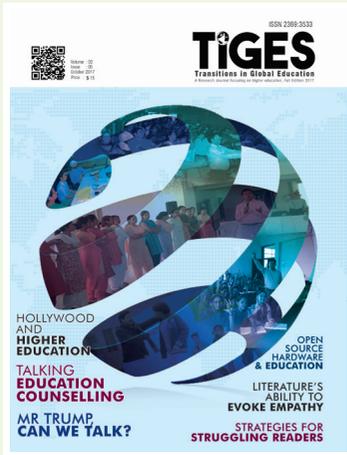


-John Laverty, Board of Education President  
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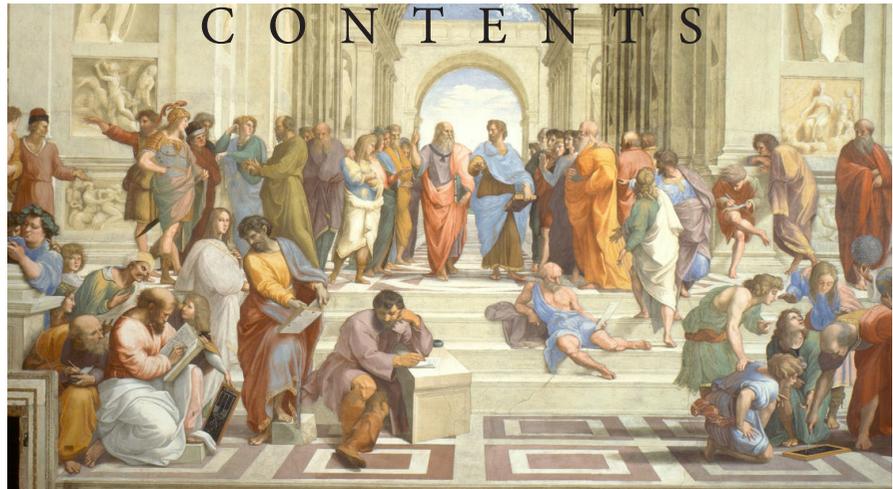
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C O N T E N T S

- 04** From the editorial board
- 05** Talking Education Counselling
- 08** A History of Education
- 14** Mr Trump, Can We Talk? demanding equality, craving stability
- 17** Visa Balaji?
- 19** Hollywood and Higher Education
- 22** American math contests from maa and other exams in honours programme
- 24** Poverty and education
- 28** Literature's Ability to Evoke Empathy; An analysis of Suheir Hammad's Poem "First Writing Since"



**34** Literature's Ability to Evoke Empathy; An analysis of Suheir Hammad's Poem "First Writing Since"

**39** Strategies for Struggling Readers

**43** The Reverberations of Legally Sanctioned Death

**44** The Train of Thoughts...



## FROM THE EDITORIAL BOARD

**T**ransitions in Global Education (TiGEs) is research journal that publishes a compilation of thoughts, analysis, and ideas on the impact of current trends and events on the global education landscape both at micro and macro levels. Conversely, this journal also publishes content on the impact of global education on current trends and events. TiGEs hopes to capture many and diverse perspectives. The sections: Student's Voice, Teacher's Voice, and Parent's Voice present first person insights from those directly affected by current issues. Meanwhile interviews of various movers and shakers of the education landscape deliver a policy perspective. Commentaries and peer reviewed articles supply additional perspectives as well as critical analysis. With a lean toward practice, TiGEs aims to deliver content of practical and contemporary import, thereby valuably informing policy makers, academics, parents, teachers, students, and all with an interest in global education. TiGEs is an affiliate of Trans Lab University Preparatory School and Trans Web Global, an education consultancy practice based in North America.

### **Editorial Board**

# TALKING EDUCATION COUNSELLING

With the number of Indian students seeking higher education increasing rapidly, students feel a greater need for guidance when it comes to choosing the right path for them. As a result, the education counselling market is booming. Independent education counsellors have become ubiquitous in metropolitan cities and as an increasing number of students seek an education abroad, the profession is unlikely to go away anytime soon. So what exactly is it that an education counsellor does? The answer of course varies from individual to individual. While some may only help a student figure out the logistics of admissions to a university, others may offer full blown personal and career advice. Since education counsellors have become a crucial part of a student's experience, we at TiGEs decided to sit down with a famous counsellor in New Delhi to discuss what the field is all about.

Our correspondent Sapan Taneja spoke to Mr Jitin Chawla, a renowned career counsellor from New Delhi. Mr Chawla runs the Centre for Career Development and has conducted more than 16,500 workshops and 250 career fairs in schools and colleges over a period of fourteen years. Their conversation involved discussions about the role of a counsellor, the Indian education system, attitudes towards career paths among other topics.

**ST. Why did you personally decide to enter this field?**

JC. Growing up I went through a very conventional career path. I took up science because that opens



up your career options. Did medicine because engineering didn't interest me and did Physics honours. Did not enjoy that so did an MBA because I was advised to do so and landed up with an unsatisfying corporate job. I was dissatisfied and unhappy with my own journey and realised that was the case for a number of people I know. At the same time I knew I wanted to do something in education because I was conducting in management schools and enjoying those. Even-



*Independent education counsellors have become ubiquitous in metropolitan cities and as an increasing number of students seek an education abroad, the profession is unlikely to go away anytime soon. So what exactly is it that an education counsellor does? The answer of course varies from individual to individual. While some may only help a student figure out the logistics of admissions to a university, others may offer full blown personal and career advice. Since education counsellors have become a crucial part of a student's experience, we at TiGEs decided to sit down with a famous counsellor in New Delhi to discuss what the field is all about.*



tually, I met a psychologist who introduced me to things like aptitude testing, workshops and education counselling. So that combined with my dissatisfaction with my own education journey led me to what I do today.

**ST. What is your main role as a career counsellor?**

JC. So I happen to work with a lot of young people and have a misconception about which stream or field is good for them but honestly they haven't really thought about it. They are usually going by the wishes of their parents. So they need someone who understands them, understands career options and who can help them figure out what is ideal for them. That is my main responsibility. Helping them understand what they want to do and how they can go about it.

**ST. So when a student comes to you what is your first advice to them?**

JC. When a student comes to us we do our best to understand what they want to pursue. A lot of people may be in a certain field but are interested in something else. I have engineers who are now doing social work, science students who are now doing management and so on. So the key is to understand what the child wants and then advising them to pursue that

**ST. What is the biggest challenge a student faces when trying to make decisions about their education path?**

JC. The biggest challenge is definitely the conventional ideas of parents. A majority of people have a conventional upbringing in India. There are a number of students who have ideas about doing something different and interesting but these are usually shot down by parents who do not have an understanding of these career paths. Even teachers push the conventional agenda. Students taking humanities in schools are questioned. In fact there are a



*We were being swamped by news of drastic changes to come and there was a lot of noise. I realised basically that if people go to good universities and do well, there will always be space in the market place for them. They might not get a job in a large MNC abroad, but due to the skills they develop they may find some other path that works for them.*



number of schools in India which do not even have an option of studying Humanities after 10th.

The second challenge is the lack of understanding regarding institutions. In India we have a culture of relying on other people. Sharma ji speaks to Gupta ji who speaks to someone else and so on. Indian parents also have a lot of misconceptions surrounding the nature of certain careers. They believe the more you study the more successful you will be. However, there are certain paths such as event management, sports management, hotel management etc., which involve a very different form of learning and

are good careers.

**ST. Have you ever had disagreements with parents?**

JC. Sometimes, based on a student's aptitude, we may suggest them to take up Humanities or Arts but parents don't necessarily like that. Once I counselled the daughter of a school principal and suggested that she take Humanities. Her parents strongly objected. Her dad wanted her to do law because he himself is a lawyer. The girl eventually went to Mumbai and then to Germany and now she is a freelance event coordinator and is doing really well for herself. The parents have also turned around on their views and are happy with what she is doing.

**ST. Why do you think it is that Indian parents have such a bias towards science and engineering fields and look down upon arts and humanities?**

JC. I feel Indian parents are very insecure. In the Western world, parents do not have such a strong sense of ownership of their children. In India, parents want to guide everything from the way you talk to the career you choose. Of course this arises from a sense of love for the child and they are willing to make huge sacrifices for their children. They feel that they give so much so the child should

reciprocate that and be willing to listen to them. School counsellors and teachers also push the traditional narrative and do not know how to push children towards unconventional careers. A lot of children get dissuaded from certain careers because their environment doesn't support them.

**ST. Just to shift the focus a little bit, do you advise students to pursue an education abroad over continuing in India?**

JC. Increasingly I am. 15 years back I didn't really understand much about the whole process. I would give them the standard advice of doing an undergraduate in India and maybe a postgraduate abroad. But now I realise that were certain career paths, Indian universities do not provide the right foundation. Indian universities have also failed to evolve with time and do not offer new and interesting courses for students. You have more options for specialisations and flexibility in certain countries that Indian institutes just do not offer. So yes, increasingly we are recommending an education outside the country keeping in mind the parent's financial situation.

**ST. How are recent political developments (Brexit, Trump) affecting your advice to students when it comes to going abroad?**

JC. Initially it did. We were being swamped by news of drastic changes to come and there was a lot of noise. I realised basically that if people go to good universities and do well, there will always be space in the market place for them. They might not get a job in a large MNC abroad, but due to the skills they develop they may find some other path that works for them. You may get a job in a start-up that offers you equity which may payoff in the future. So yes, if it suits the student and parents can afford it, I would still recommend universities outside India. There may be an initial frustration after college where



*Going back a generation or two, children grew up with no TV no Internet and not too many distractions. There was more of a tendency to follow the norm. There is a lot of impatience with today's youth in a good way too because that is how innovation happens. And when you work at a large cor*



you may not get the satisfaction with your work or pay but eventually you will overcome that.

**ST. For the students, what do you think is the biggest challenge that they face when they go abroad?**

JC. First of all Indian students are not ready for the rigour and difficulty of a University education. They are often spoon-fed through their high school years and sometimes lack independent thought. Further, translating academic knowledge into practical work is not always easy for them. I also feel that additionally they can be very overwhelmed with what they see in Western countries. That is particularly the case when students come from smaller towns and aren't exposed to certain ideas and cultures. They are also sometimes not prepared to handle living on their own because we tend to pamper our kids in our homes.

**ST. Do you think in terms of preparing students for an international education, how good a job are our local schools doing? Following on from that, do you think it's fair for students to be asked to choose streams in tenth grade?**

JC. Our students in general don't seem very prepared. Indian schools

need to experiment a bit with the system so students get more exposure. We run a career resource centre in some schools right from the ninth grade and want to start doing those even earlier. But most schools are not willing to invest in such things and even teachers don't see much value in it. They believe we are there to market something and not to actually help children towards becoming more goal-oriented.

And as for the second part of your question, asking to choose streams is absolutely unfair. CBSE, ICSE and other boards need to tweak their options so students get a chance to choose from a more varied selection. In eleventh, students should be allowed to experiment for three months and attend any class that piques their interest before they have to make a decision. Or to be honest if someone wants to do Biology and not Physics and Chemistry but History then why should there be any restriction on that?

**ST. With today's students we see a general dissatisfaction with traditional career paths. A lot of them choose to reject the 9 to 5 work norm. Why do you think that is?**

JC. Well there's a lot of impact of media on today's kids. Going back a generation or two, children grew up with no TV no Internet and not too many distractions. There was more of a tendency to follow the norm. There is a lot of impatience with today's youth in a good way too because that is how innovation happens. And when you work at a large corporation they expect you to follow a lot of norms and rules and there is a certain lack of flexibility. However, if you work at a start-up they are a lot more dynamic and the work structure is more in-line with what young people may want. I mean it's just natural progression. Every generation has their own way of figuring out things for themselves and that's just how society works.



ACHYUTH CHANDRA

*Achyuth Syamchandra is currently pursuing a PhD in Clinical Psychology at the University of McGill, Montreal, Canada, having already completed a Bachelors in Cognitive Science and a Masters in Clinical Psychology. He has extensive experience in the field of academic research and applied statistics, having worked in a number of psychology labs, including the Behavioural Research Laboratory of the Lydia Davis Institute, from 2012 to present. His work focuses on psychosomatic disorders, particularly in patients afflicted with chronic illnesses such as cancer and systemic sclerosis.*

## A HISTORY OF EDUCATION

### *Part Two: The Beginning of History*

The air is grimy and humid, and a young man fans himself to stop sweat from sticking to his fine uniform. His name is Kushim, and he has recently earned the privileged role of accountant, an opportunity that requires an extensive education his parents worked hard to provide him with. For the better part of several days now, he has sat at a table, poring over ledgers and tallying up figures, in order to confirm to his manager that the appropriate amount of payment and goods has been transferred to a business partner.

This might be an accurate snapshot into the lives of hundreds of

thousands of modern workers, who even today live lives and complete tasks like these, but it is not. In reality, I'm describing a day in the life of an actual man who lived more than 5000 years ago, and for whom we not only have proof of his name and job, we have evidence of the final tally!

In the above tablet, you can see the archaic Sumerian cuneiform (read from right to left), representing that 134,813 litres of barley had been delivered over 37 months to a local temple, as confirmed by the government official 'Kushim'.

In the first part of this series, I talked about education in pre-his-

tory, in the time of cavemen and woolly mammoths, and how the development of oral language was crucial to the passing down of skills and knowledge. In many ways, the next stage of education is also related to language, only this time, it's the written word that becomes crucial. There are many advantages writing has over conventional speech, but the primary one is its ability to retain an accurate representation of the original idea being expressed for long periods of time. Simply consider the fact that we know details about Kushim's delivery of barley, 5000 years later! This is a characteristic not shared by oral traditions, in which the relevant information can become quickly muddled and unclear over each repetition. In the previous article, we used the analogy of education as evolution and ideas as genes to underline the revolution of education that the discovery or invention of language caused. To extend that analogy, the development of written script increased the speed and half-life of 'idea' transmission, while decreasing the error rate.



*! However, from the restriction of good schooling to the wealthy and powerful to the discouraging of women from obtaining an education, many of the problems we continue to face today in the realm of education can be seen reflected in the mirror of history.*



It was in the cities of the empire of Sumer that writing first developed, which makes a lot of sense as it was the first region to develop the urban life we typically associate with education. Settled between the two great rivers of the Middle East, the Euphrates and the Tigris, the Sumerians invented writing for a very practical reason: to communicate the long distances that were often required for trade. With the rise of a collection of cities scattered along Mesopotamia, a necessity to share resources quickly arose, and with it the need to talk across large regions. Another civilization that independently developed writing was nestled along the banks of the Yangtze river; these were the ancient and formidable Chinese dynasties. For them, writing arose primarily as a means of communicating with religious entities by the use of 'oracle bones'. These ranged in type, from the shoulder blades of cattle to the shells of large turtles. The bones were cleaned of the animal's remains and carved with runes for divination. The ancient



Chinese were very concerned with knowing the future and would go to mediums for guidance on making decisions. The psychic would carve the person's question into the bone and then place it near a fire. When the bone would crack from the heat, the lines formed would be interpreted to answer the person's question.

Whether it be to communicate with the heavens or for more worldly matters, the written script developed along familiar lines across a range of civilizations (from Mayan, to Egyptian to Indian). In all these early empires, the earliest form of writing found are pictographs – symbols which directly represented objects, like hieroglyphs. These served to aid in remembering such things as which parcels of grain had gone to which destination or how many sheep were needed for events like sacrifices in the temples. In Mesopotamia for example, these pictographs were impressed onto wet clay which was then dried, and these became official records of commerce. However, more complicated forms of written script quickly developed to match the accelerating complexity of urban life. Simple picture-languages evolved into complex and abstract scripts, in which a whole range of ideas, emotions and concepts could be efficiently sketched out in a few strokes. This rise in complexity, however, necessitated a dedicated group of people that practiced the art of literacy; it was to train these scribes that the first schools were started.

To illustrate this, it took almost a dozen years to learn Sumerian cuneiform marks, alongside the general skills of scribes. Religious centers were the first to establish schools in which to educate boys as scribes and priests, though slowly this transitioned as independent scribes opened schools and charged costly tuitions to pass on their skills. This ensured that only boys of upper class families could afford to be literate. Learning to be a



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*“Teachers punished students who spoke out of turn, spoke without permission, dressed inappropriately, or got up and left without permission. They expected students to be obedient as well as hard working.” Does any of this sound familiar?*

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scribe was very demanding. School teachers were harsh with their discipline; mistakes were often punished by whipping. “Teachers punished students who spoke out of turn, spoke without permission, dressed inappropriately, or got up and left without permission. They expected students to be obedient as well as hard working.” Does any of this sound familiar?

The characteristics of Sumerian education are found across a range of the earliest civilizations. In ancient Judah for example, the Torah (the fundamental religious text of Judaism) commands the Jewish people to read, learn, teach and write the scriptures, thus requiring literacy and study. Here, the emphasis was



placed on memory skills in addition to comprehension, along with oral repetition. Although girls were not provided with this form of formal education, they were required to know a parts of the subjects being taught in order to prepare them to maintain the household after marriage. Despite this general emphasis on education, it would seem that many children did not grow up with these skills, because it has been estimated that at least ninety percent of the Jewish population of Roman Judeah could only write their own name or were not literate at all.

In the Indian subcontinent, a proper education consisted of the correct pronunciation and recitation of



*To Confucius, the primary role of education was not to engender functionally specific skills but rather to produce morally enlightened and cultivated generalists, which subsequent Chinese education placed an emphasis on.*



the Vedas, which was a large body of theology and knowledge written in Sanskrit. With it, students learnt the rules of ritual sacrifice, grammar, composition, and meter, along with conventional subjects such as natural philosophy, logic, and various vocational skills. Education, at first freely available in Vedic society, became over time more rigid and restricted as the social systems grew to be delineated along a caste system, in which only a privileged few were able to gain access to a higher education, with the Brahmins being the most privileged of the castes. The Gurukul system of education also supported traditional Hindu residential schools of learning; typically the teacher's



house or a monastery. Education was nominally free, but students from rich backgrounds paid a voluntary donation after the end of their schooling.

Looking now further East, during the Zhou dynasty-period of China (1045 BC to 256 BC), there were five national schools in the capital city. Students attending these schools were primarily taught the 'Six Arts': which included archery, calligraphy, and mathematics. At age twelve, boys also learned music and dance and when older, they learned to drive a chariot. Girls were disallowed from many of these subjects, however independent schooltaught them ritual, correct behaviour, and how to weave

clothes. It was during the Zhou dynasty that the origins of Chinese philosophy also developed. Confucius, the founder of Confucianism, was a Chinese philosopher who made a great impact on later generations of Chinese, and on the curriculum of the Chinese educational system for much of the following 2000 years. To Confucius, the primary role of education was not to engender functionally specific skills but rather to produce morally enlightened and cultivated generalists, which subsequent Chinese education placed an emphasis on.

In Ancient Greece, education was mainly a private affair; in Athens for example, aside from the basic military training that every citizen

had to undergo, the government barely intervened in the schooling of children. Anybody could open a school, and parents could choose a school that offered the curriculum they wanted their kids to undergo (and one whose monthly fee they could afford). Many parents, even the poor and lower class, sent their sons to schools for a few years. If they could afford it however, students were tutored from around the age of seven until fourteen, learning gymnastics (which included various forms of athletic and martial exercise), music (including theatre and history) and literacy. Girls rarely received formal education. Additionally, the youngest students learned the alphabet by song, then later by



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*There are many advantages writing has over conventional speech, but the primary one is its ability to retain an accurate representation for the original idea being expressed for long periods of time. Simply consider the fact that we know details about Kushim's delivery of barley, 5000 years later! This is a characteristic not shared by oral traditions, in which the relevant information can become quickly muddled and unclear over each repetition.*

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transcribing shapes of letters with a stylus on a wooden tablet. After a few years of schooling, the sons of poor or middle-class families



dropped out to focus on vocational skills through an apprenticeship. The richest students on the other hand, continued their education by studying with philosophers, from whom they could learn subjects such as rhetoric, mathematics, geography, natural history, politics, and logic. Some of Greece's greatest schools of higher education included the Lyceum (founded by Aristotle) and the Platonic Academy (founded by Plato).

The common features of an ancient education is easily seen; the core skill of literacy, the emphasis of a central text from which to study, the building of pre-dominantly private institutions of learning, the intermingled subjects of science, philosophy and art, and the foundation of religious study that lay at the bottom of every education. Note that these are features not only of the ancient world, but of the modern one as well! However, from the restriction of good schooling to the wealthy and powerful to the discouraging of women from obtaining an education, many of the problems we continue to face today in the realm of education can be seen reflected in the mirror of history.

So far in this series of articles, we've covered the development of language and its use in primitive survival, and now the invention of writing and the subsequent necessity that developed for 'education' as we know it today. In the next part of 'History of Education', we'll examine in great detail the refinement of that education as it was taught in the medieval ages around the world. To do so, we'll be diving into the contents of a 1000 year old Islamic textbook, examining the struggles of a powerful king to transition from barbarian to scholar, and spending a day in the shoes of a practicing student at Nalanda, which at its peak rivaled the Ivy Leagues of today in global acclaim.



# MR TRUMP, CAN WE TALK?

DEMANDING  
EQUALITY,  
CRAVING  
STABILITY



DAN SHEFFIELD

*Professor Dan Sheffield is a Canadian intercultural relations educator with life and work experience in Egypt and South Africa. For a number of years he has worked with Indian students seeking to study in North America. He has a passion to see students develop a global mindset during the course of their university studies in North America. Having lived in Egypt and South Africa, and regularly coaching multicultural workteams in Mexico, Ghana, Sri Lanka and The Philippines, he brings extensive international experience to his role as an intercultural educator.*

**I**n his one-man, head-long, crusade to “Make America Great Again” US President Donald Trump seems about to usher in a nuclear war with North Korea. And there is a whole sector of the American populace – those who voted for him – who think he’s doing the right thing. That’s the scary part.

This summer millions of Americans will watch the Hollywood movie, “Dunkirk,” a sobering film about the Allied defeat and retreat across the English Channel at the beginning of World War II. One wonders if Trump will get the message? That the posturing of Empire and Reich for power, territory and honour led to untold deaths of sons, husbands and fathers, and to generations of deeply scarred men trying to recover their humanity.

Sitting with a group of immigrants to Canada I listened to the story of a high school age young man who was recently arrived from Syria. A question was asked of all, “what is something that you brought with you to remind you of your homeland?” One woman from Latin America spoke of a piece of clothing, traditional in her country, that her mother had made for her. A man from South Asia had brought a picture of his parents to hang on the wall of his new home. An African young woman had a wrinkled and folded postcard of the Eiffel Tower in Paris; she had hung onto that card along the refugee highway as a symbol of hope for a different kind of future. A very old woman from Eastern Europe had managed to hang onto a Bible that had a record of the genealogy of her family for many generations. The high

school student from Syria said, “I have nothing – we fled so fast in the face of bombings all around us. I only have my memories.” And he began to weep.

We are living in the midst of one of the largest mass migrations in human history. People are moving “from everywhere to everywhere.” For many reasons, of course. Some for education or job opportunities. Some to join family who have already moved. Some for differences of political opinion. Many for reasons of displacement because of ongoing conflict or outright war. All of this moving and shifting, for whatever reasons, has an impact on the human psyche and the development of healthy self-understanding. Children and young people who are shifting and moving with family members, whether for economic reasons or the outcome of war, are impacted. Most often negatively. And there are millions of them.



*That was the recipe in America that produced Trump as president, and look out, it's a perspective that is circling the globe. White, heartland Americans who felt like outsiders or strangers in their own country because of prevailing ideas about who was welcome and who wasn't.*



A year ago, four months before Trump's election, political essayist and noted author Pankaj Mishra wrote an article for The New Yorker entitled, “How Rousseau Predicted Trump.” In the article Mishra discusses the life of Jean-Jacques Rousseau, a French social philosopher in the mid-1700s who was born the son of a craftsman, lost his mother shortly after his birth, was never formally educated, and left abandoned by his father at age 10. From these humble beginnings, Rousseau rose to challenge and frustrate the social and political elite of his day. In his years of mature reflection, he also had a closeup view of the European global powers in conflict during the Seven Years War.

Mishra's point is that Rousseau's life and writings reflect the worldview of common people who feel slighted, even condescended to, by the ruling elites and who have been





courtesy : Daily Express

profoundly impacted by changing societal conditions. Mishra concludes his essay by making a direct application to America and, by extension, to the globalizing world in which we live: “It is uprooted people with Rousseau’s complex wounds who have periodically made and unmade the modern world with their demands for radical equality and cravings for stability. There will be many more of them, it is safe to say, as billions of young people in Asia and Africa negotiate the maelstrom of progress.”

That was the recipe in America that produced Trump as president, and look out, it’s a perspective that is circling the globe. White, heartland Americans who felt like outsiders or strangers in their own country because of prevailing ideas about who was welcome and who wasn’t. Hispanic peoples, who make up almost one third of the American population, likewise feeling like outsiders and not welcomed. Muslims, from Europe, the Middle East and Asia, who were once welcomed, now since 9/11, seen as strangers and outsiders.

But it’s also true of Afghans and



*The purpose of the gathering was to listen to one another and hear each other’s stories. There is something about listening to another human being describe their own authentic experience that enables walls to be broken down. That removes the façade of outsider and stranger. That challenges indifference.*



Turks in Germany. Of Nigerians in South Africa. Of tribal groupings in Kenya who see themselves on the wrong side of the political divide. Of Christians in Egypt, Syria and Iraq whose ancestors predate the emergence of Islam in those countries. Of well-educated village migrants in urban Mumbai or Delhi.

Uprooted people with complex wounds, demanding equality and craving stability.

The group of immigrants I sat in a room with near Toronto, Canada some months ago, were surrounded by an equal number of Canadian-born, mostly Euro-background, friends. The purpose of the gathering was to listen to one another and hear each other’s stories. There is something about listening to another human being describe their own authentic experience that enables walls to be broken down. That removes the façade of outsider and stranger. That challenges indifference.

People in the American heartland who voted for Donald Trump need to sit and listen, to learn to empathize with the outsiders and strangers around them. They are afraid the strangers are “taking over America,” when really, just like them, the “strangers” are seeking a stable place to get a job, raise a family, and be treated as an equal.

Maybe Donald Trump needs to sit down with Kim Jong-Un and listen to the story of the little country with complex wounds, that feels threatened and unwelcome.



## VISA BALAJI?

Millions of Indians visit temples and religious sites for various reasons, some for marriage, jobs and some even for the hope of kids. However, the Chilkur Balaji temple is famous for granting visas for people who would like to work in United States. For decades, people all across South India have flocked to this 500 year old temple and with the sheer size of the crowd one can only say that Lord Vishnu grants wishes at a rate which is anything but average.

In the era of Donald Trump's ideology of 'Make America Great Again', as immigrants we see hardships in visa restrictions and a sense of uncertainty. On a Sunday morning, you will find a group of men and women who are praying and chanting the Hindu deity Balaji's name. As you walk in you will observe pink slips of paper with 108 numbered boxes in people's hand which are used to count the number of pradakshina or rounds that they make. It is believed that if

you complete 11 orbits around the inner shrine, Lord Balaji will fulfil your wishes. If Lord Balaji fulfils your wishes then you must come back and make 108 rounds.

On any given time you will find 2000-3000 devotees performing paradakshinas. According to the temple's website, Lord Balaji used to visit Tirupati every year. However once, when an illness prevented him from making his pilgrimage it is said that God appeared to him in a dream and said, "I am right here in the jungle nearby. You don't have to worry." The devotee then went to the spot in the jungle indicated in the dream and when he dug the spot, it yielded a Swayambhu idol of Lord Balaji with Sridevi and Bhoodevi (a rare combination). He then built a temple to house his finds. The current version of the temple dates back to the late 1600s. The ritual of 108 pradakshinas also dates back to the founding of the temple, according to Rangarajan, who tells us the



**SOHOMBHOWMICK**

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Ph: Worshipping God, courtesy : Zee News

‘voice’ of Lord Balaji told the devotee to stop after his 108th round.

Sandeep Kumar, software engineer working for Nexage Technologies who arrived in the US a month ago, says that “Visa Balaji is very powerful.” With a sense of triumph in his voice he tells me that his work visa was delayed by three months due to minor paper work issue. After his visit, within a week his visa was approved. This is just one story, of the power of Visa Balaji. There are temples in Gujarat and Punjab where people pray for their visas to get approved.

During my college days, I travelled multiple times to Hyderabad for work and helping students, and I always sensed fear amongst the parents when it came to obtaining visas. Hyderabad in my opinion is an epicentre for students who want to travel abroad. In the past, students have fallen for scams



*During my college days, I travelled multiple times to Hyderabad for work and helping students, and I always sensed fear amongst the parents when it came to obtaining visas. Hyderabad in my opinion is an epicentre for students who want to travel abroad. In the past, students have fallen for scams when it comes to universities and studying in United States.*



when it comes to universities and studying in United States. In 2016, the U.S. consulate in Hyderabad issued 169,071 non-immigrant visas, which grant foreign students and workers temporary stay in the United States. The number rose by more than 15,000 from the previous year.

The idea of hope is what makes these places so powerful. The American Dream curated by Dale Carnegie talks about working hard and achieving success. Same goes for any immigrant who is motivated to work in the United States. He/She wants to work hard and achieve a successful life for themselves and their family. Donald Trump may be tightening the entry of foreign workers but he cannot break the spirits of pilgrims who attend these temple in the hope of living in a developed country and attaining the American dream.

# HOLLYWOOD AND HIGHER EDUCATION



SAPAN TANEJA

*Sapan Taneja is a graduate of the University of Warwick where he completed his BSc degree in Economics, Politics and International Education. He has previously headed the Warwick India Forum and maintains a keen interest in global socio-economic trends. Apart from this he has also done prior work as a videographer and is currently working as a freelance writer, editor and a film maker.*

The United States today is home to over a million international students. Being the world's largest hub of the world's international students brings with it an estimated 20 billion dollars into the economy each year. The US is clearly the most attractive destination for students seeking an education abroad. This is largely due in part to the quality of its higher education institutions which offer a wide variety of education paths. However, going beyond university rankings and standards of education, there could be other factors that attract individuals to the US. One such entity that may influence a student's choice is the medium of film.

## **The soft power of Hollywood**

With its power to transform and share ideas, culture and experiences, film is a powerful medium of communication with an audience. While a person from Nigeria and a person from South Korea may not share a common cultural heritage, they both may be able to recognise cinematic icons like Indiana Jones or Harry Potter. The words "Luke, I am your father" resonate with people around the world. The American film industry dominates

the global market and provides an avenue for the proliferation of American ideals. Hollywood has proliferated the international film market and has brought America to the world as described by Powdermaker (1950) in Sigismondi (2012) "Hollywood is a unique American phenomenon with a symbolism not limited to this country. It means many things to many people."

The propensity of Hollywood films coerces people to the United States and makes the country seem like an attractive destination. It contributes to what International Relations scholars label as soft power. "What is soft power? It is the ability to get what you want through attraction rather than coercion or payments" writes Joseph Nye, "It arises from the attractiveness from a country's culture, political ideals and policies." Cinema contributes significantly to a country's soft power. According to Andrew Ibbi (2013) "Hollywood movies are key cultural artefacts that offer a window into American cultural and social history." American films sell the idea of the American dream to people around the world. The infamous ethos of the United States life can be better for anyone and opportunities are given to you based on merit

and not based on social class or the accident of birth. These beliefs of course are attractive to everyone regardless of where they may be in the world. Ideas of individualism, liberty and personal freedoms that are often core themes of many Hollywood films appeal to young minds that lean towards non-conformism and autonomy. Thus, by selling the American dream and individualism to the world, Hollywood serves to attract many to the United States.

### The effect on students

Films are the medium of a choice for a number of youths who have multiple avenues to consume American films and television. Contemporary college students are deeply surrounded by and immersed in popular culture (Bourke, 2013). The impact on students is rather prominent. Perception of students of foreign places are predominantly shaped by exposure to media especially Hollywood films. Arjun Appadurai describe the “relationship between mass-mediated events and migratory audiences” as “the core of the link between



*Films are the medium of a choice for a number of youths who have multiple avenues to consume American films and television. Contemporary college students are deeply surrounded by and immersed in popular culture (Bourke, 2013). The impact on students is rather prominent.*



globalization and the modern.” For students, international education is not just about the course they choose or the degree they will receive at the end of it. It also has a lot to do with experiencing a different culture and a chance to build a new life. A kind of life they envisage based on what they see in film and television.

Not only does it affect the country a student chooses to travel to for education, it also affects their choice of university. Sir Anthony Seldon, vice chancellor of Buckingham University and former headmaster of Wellington College, says: “Television and film portrayals of schools and universities are far more important in opinion formation I think than generally realised.” A survey of South Korean and Chinese students showed that almost two-thirds of students were influenced by the depiction of American universities and colleges in films (Tucciarone). Films such as *The Social Network*, *A Beautiful Mind* and *Legally Blonde* which are set in American universities can create a certain perception about a school. *The Social Network*, based





on the events surrounding the creation of Facebook, borders on glamorizing the life of students in Harvard. It creates an almost fantastical image of a real place in the mind of a student.

Universities are also reacting to the effect films have on potential incoming students. The University of Leicester for example, has been the location for a number of Bollywood films. “This has helped to create a narrative for the university and definitely raised awareness of us in India” says University spokesperson Ather Mirza. With universities trying to attract students in an increasingly globalised international student market, film represents a unique avenue for them to explore. This further reinstates the impact it can have on a student’s choice of higher education.

### College and counsellors

Not only do films have an impact on student’s perceptions and deci-



*The US is clearly the most attractive destination for students seeking an education abroad. This is largely due in part to the quality of its higher education institutions which offer a wide variety of education paths.*



sion making. They are also crucial in helping them understand American culture. For students travelling to the US, being accustomed to certain Hollywood films can go a long way in them learning about America. The aforementioned Star Wars, Pulp Fiction and The Godfather are iconic and have entered the American imagination. If even a small number of the above movie moments are familiar to you, then you are already familiar with a big piece of American culture. Movies are a universal commonality. They are a way to bond with people. Movies lay bare everything from our technological breakthroughs to our hopes, wishes, nightmares, and dreams. Collectively, they represent the vivid imagination and potential of any culture. Thus, they become crucial to understanding America.

“Film has served as a means of cultural exchange between countries”

# AMERICAN MATH CONTESTS FROM MAA AND OTHER EXAMS IN HONOURS PROGRAMME



RAGHU S RAJAN

*Raghu S Rajan has been working as a trainer for the last few decades and he is an advocate of thinking out of the box. As per his thoughts this is the only way the world can move forwards and hence the students of all streams needs to be trained on how to do this. In his own words there is no other medium other than Maths to help students learn this art and make them effective problem solvers which is the prime requirement in the world. Now he is working under Pro. NNS Chandra in promoting AMC and Honors Programme Exam.*



SANTHOSH KUMAR K.P

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Mathematical Association of America to hold American Math Competition (AMC) for school students across the world, including India

- Competitions to be held in Nov. 2017 and Feb 2018
- AMC a series of exams culminating in International Mathematical Olympiad

New Delhi, Aug...: Transitions Lab Preparatory School brings to you the best of world MATH Competition. It is our endeavor to help the Indian students get exposure to the world of Maths in a way that is done outside India enabling them to flag off their preparation for higher studies in prestigious Universities across the world.

The Mathematical Association of America (MAA) will hold the American Math Competition (AMC) for middle and high school students across major centres of the world, including India, during November 2017-February 2018, to test their math-solving competencies and help them develop the analytical skills needed for future careers in an innovative society.

The AMC examinations, considered as the world's leading mathematics competition for students ranging from grade 8 to 12, are a series of tests and curriculum materials that culminate with the International Mathematical Olympiad (IMO).

Students who take the AMC competitions have the opportunity to develop creative quantitative thinking and problem-solving skills, which prepare them to succeed in high school math classes.

The contest dates are November 14, 2017 for AMC 8; February 7, 2018 for AMC 10 and 12A; and February 15, 2018 for AMC 10 and 12B. The cost of participation is Rs 750 plus taxes. Those students, who perform exceptionally well in the AMC 10/12, can continue to participate in the AMC contests.

Both the A and the B versions of the AMC 10 and the AMC 12 have the same number of questions, the same scoring and the same rules for administration. The only differences are the competition dates and that each version has a distinct set of questions, although the two examinations are designed to be equal in difficulty and distribution of topics.

Transitions Lab Preparatory School is an exclusive international partner of the MAA to conduct AMC exams throughout India. It is our desire to bring the best in the world of Maths to the students of India enabling them to become true global citizens in terms of developing their problem solving skills. It provides students with AMC Resources which consist of material to help with mathematical problem solving and to prepare for the AMC competitions. Limited

OTHER HONORS PROGRAMME - 2017-18	
<b>ASMA</b>	
Contest #1 -	October 12, 2017
Contest #2 -	November 9, 2017
Contest #3 -	December 14, 2017
Contest #4 -	January 11, 2018
Contest #5 -	February 8, 2018
Contest #6 -	March 8, 2018
<b>CMEC - University of Waterloo</b>	
Canadian Competition Computing	February 15, 2018
Pascal(Grade 9), Cayley(Grade10), Fermat(Grade11)	February 28, 2018
Euclid Contest	April 12, 2018
Fryer(Grade9), Galois(Grade10), Hypatia(Grade11)	April 13, 2018
Gauss Contest (Grade 7 and 8)	May 17, 2018
Beaver Computing Challenge	Between Nov 6 - Nov 13 2017

scholarships are available for top math performers recommended by school math teachers.

Students can enroll with Transitions Lab Preparatory School for the AMC 8, 10 and 12 contests on email [amc@tlups.com](mailto:amc@tlups.com).

Over 350,000 students participate in this competition annually in over 6,000 schools worldwide. Last year more than 1,500 students participated in the contest from different schools in India. Twelve Indian students got invitation to participate in AIME (American Invitational Mathematics Examination) contest, which is the first in this series.

The MAA, the largest professional society with a focus on undergraduate mathematics education, has a mission “to advance the mathematical sciences, especially at the



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collegiate level.” The AMC programme is intended to strengthen the mathematical capabilities of

the next generation of problem-solvers.

The AMC 8 is a multiple choice examination in middle school mathematics designed to promote the development of problem-solving skills. The AMC 10 is for students in 10th grade and below, and those under 17.5 years of age on the day of the contest can take this test. Students in grade 12 or below and under 19.5 years of age on the day of the contest, can take the AMC 12.

### OTHER HONORS PROGRAMME EXAM

American Scholastic Math Association (ASMA) is a first examination to start the journey of your Honors Program. The contest has many interesting questions that increase the students thinking power. Students also sharpen their skills to answer math section of standardized tests like The ACT and the SAT. Every year students from around 40 countries participate in these contests. Every participant receives a participatory certificate and students with the highest cumulative score receive the highest-scoring student certificate.

CEMC – University of Waterloo is Canada’s largest and most recognized organization for promoting and creating activities in mathematics and computer science. Their math contests for grades IX to XII are contests like Pascal, Cayley, and Fermat which have multiple-choice questions and Fryer, Galois, Euclid and Hypatia where questions are answered showing full working. They also have a Physics and Chemistry contests called Sir Isaac Newton (SIN) and Avogadro and a computing challenge called Beaver Challenge.

There are several other exams and competitions to consider and our students participate, like Biology Olympiad (Toronto), Essay competitions for students interested History, English and Psychology.



# RESEARCH ARTICLES



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DR. LAILA RICHMAN

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## POVERTY AND EDUCATION

### EXAMINING PRESERVICE TEACHERS' ATTITUDES AND INSIGHTS REGARDING POVERTY AND EDUCATION

#### **Abstract**

This article discusses a study conducted to evaluate the perceptions of preservice teachers concerning poverty. The purpose of this research was to determine how one educator preparation provider could improve how it prepares preservice teachers to work with students from impoverished conditions, as well as to examine opinions and attitudes of education majors toward those living in poverty. Participants consisted of sophomore, junior, and senior education majors. Those who participated were surveyed about their beliefs about poverty, thoughts on teaching children of poverty, and the extent of information they had received from their education courses concerning poverty. Learning about the attitudes and perceptions of preservice teachers concerning poverty, as well as the perceived time being spent addressing the needs of children of poverty in education courses, are key components in strengthening course curricula and

enhancing understanding of diversity in P-12 environments.

#### ***A Review of the Literature***

According to the Children's Defense Fund (2014), the United States has one of the highest rates of child poverty among industrialized nations, and the percentage of children living in or near poverty has been steadily increasing (Jiang, Ekono, & Skinner, 2016). Children are now the poorest age group in the nation (Children's Defense Fund, 2014). There is consistent research to show the academic difficulties that students from poverty often face; in his work, Allington (2012) found that there is a large gap in the abilities of children from low-income families and those living in middle class families, and Gargiulo and Metcalf (2010) believe that poverty is a "significant factor placing children at risk for school failure" (p. 115). Poverty can be an opposition in every stage of learning and can hinder later

success in life, as children who live in impoverished conditions are more likely to drop out of high school (Gollnick & Chinn, 2009).

However, classroom teachers, as well as preservice teachers enrolled in educator preparation programs, are most commonly from middle class backgrounds (Parameswaran, 2007). Educators often have difficulty relating to students from impoverished environments, making it more difficult for them to understand how to best meet the unique needs of these children and their families. Mulvihill and Swaminathan (2006) believe that educators are often ill-equipped to understand social, emotional, and academic components associated with poverty and emphasize that “[u]nderstanding the discourses of poverty is crucial for teachers (p. 97). Because many novice teachers enter the classroom unprepared to work with a population of low-income students, those working to prepare teachers for the field must be explicit in addressing the needs of children from impoverished situations (Hughes, 2010). This is critical in order to retain teachers within the field; greater preparation can lead to greater gains in student improvement and can decrease the attrition rates in school environments.

### ***Rationale for the Study***

This study was completed at a public institution in the eastern United States. This university is located in an urban setting, and due to the degree of poverty within the surrounding community, preservice teachers in the education program are primarily placed in Title I school settings when completing practicums, field placements, and clinical practices. This study was developed to gauge preservice teachers’ attitudes toward poverty and to determine if the topic of poverty itself was consistently being interwoven into multiple education courses. It was important to examine whether preservice

teachers grew in their knowledge, understanding, and perceptions of poverty while enrolled in the education program. After reviewing the survey created by Mulvihill and Swaminathan (2006), a survey instrument, geared specifically for the student population of the education program, was designed. This device was used as a measure to determine changes that could be made to improve the instructional practices and to determine ways in which faculty members could enhance teaching and learning within education courses.

### ***Participants***

Participants were comprised of education majors who volunteered to take part in the study. The survey instrument was given to three separate, distinct groups: sophomores, juniors, and seniors. The sophomore volunteers had declared education as their major but had not yet been admitted into the education program. This group of participants had little exposure to education-related coursework; no sophomore had taken more than three education courses, and approximately 35% of the sophomore participants had taken only one education course. There were 6 male and 15 female sophomores who completed the survey (n=21) and participated in the study.

In the junior group, there were 4 male and 26 female participants (n=30). These preservice teachers had completed all essential pre-education courses, had been admitted into the education program, and were enrolled in education courses applicable to their major. (Education courses refer to those that must be taken to fulfill all requirements for a degree in education; these include methods courses, content courses (literacy, math, social studies, and science), development and theory, and special education courses.) In addition to taking education courses, these juniors were also completing field placement requirements in local el-

ementary schools. The final group consisted of forty-two seniors (3 males and 39 females). While these individuals were enrolled in education courses, they were simultaneously spending a large percentage of time in elementary schools completing their clinical practices (student teaching).

The total number of participants for this study=93; 21 sophomores, 30 juniors, and 42 seniors. Over half of the participants (n=48) were between the ages of 18 and 22, while approximately 19% (n=18) were between the ages of 23-26. The remaining participants were between the ages of 27-30 (n=5), 31-34 (n=10), 35-38 (n=4), and 39 years of age or older (n=8). The majority (70%) of all participants identified themselves as having been raised in middle class or upper middle class households; only seven participants stated that he/she had been reared in a low socio-economic environment.

### ***Survey Results and Themes***

Once all three groups had completed the survey, the data collected was analyzed and various critical themes emerged. This qualitative evidence helped to highlight areas in which preservice teachers may have underdeveloped or even inappropriate perceptions of poverty and may need additional support and guidance to meet the needs of all students within their own classrooms. Analyzing the data also showed areas which could be improved within the educator preparation program in order to inform decision-making and adjust the practices being used. The following themes were found to be critical in the study:

#### ***1. The Number of Education Courses in which Poverty was Discussed***

Perhaps one of the most interesting findings in this study concerned the number of education courses in which poverty was deliberately and systematically ad-

dressed. In the survey, participants were asked to recall the number of education courses in which the topic of poverty had been a focal point of conversation and a topic of learning. In the sophomore group, eight participants stated that they had not taken any courses in which poverty was discussed, while 13 participants had taken one or two courses in which conversations concerning poverty occurred. This in itself was not surprising, as the sophomores had not yet been formally accepted into the teacher education program and due to requisites, had taken only a few education courses.

However, the responses of the junior- and senior-level participants were more unexpected. Of the 30 juniors, seven stated that no education courses they had taken dealt with the topic of poverty, and 19 participants said that poverty had been discussed in only one or two education courses. Only four juniors responded that poverty had been discussed in three or four courses. Of the 42 seniors, six said that no education courses they had taken discussed poverty, 25 participants remembered discussions in one to two courses, and seven said that there had been conversations around the topic in three to four courses. Only two of the seniors stated that they remembered discussing poverty in five or more education courses. Interestingly, two seniors chose not to respond to this question. While this could have simply been an oversight, we wondered if this question was not addressed because the preservice teachers had limited recollection of whether poverty had indeed been a topic of conversation in education courses throughout the program.

The results of this particular question do not necessarily suggest that faculty members did not cogitate upon the effects of poverty within society and in the development and learning of children; however, it does show that if poverty is not discussed contextually and deliber-

ately, preservice teachers will not readily recall the information and may not be as prepared to apply such learning in the P-12 environment.

## ***2. Attitudes toward Those in Living in Poverty***

The preservice teachers were asked to describe words that they associate with those in poverty and to give words to describe their feelings toward those from low-income circumstances. Sophomore-level participants described those in poverty as being uneducated and on welfare, and used terms such as lazy, dirty, sad, pathetic, and scary to describe their personal feelings toward those living in poverty. Junior-level participants perceived those in poverty as being uneducated, on welfare, jobless, homeless, and as living in the inner-city and the ghetto. In addition, these participants used words such as unfortunate, sad, and disadvantaged to describe their personal perceptions. Senior-level participants associated individuals in poverty as being uneducated, unemployed, on welfare, unhealthy, and homeless, and used terms such as grungy-looking, lazy, and needy to define personal perceptions of those living in impoverished conditions.

The data collected show that, unfortunately, preservice teachers can have many preconceived notions and misconceptions concerning those living in poverty. Because the institution is in an urban setting, participants may have equated poverty with inner-city locations simply based upon proximity. Yet having a belief that poverty is restricted to inner-cities is erroneous, as poverty is undeniably existent in rural regions, small towns, and suburban locations, as is the mindset that poverty and homelessness are automatically intertwined. Subsequently, it is important that pre-educators understand that many poor adults work full-time, and it is incorrect to assume that those living

in poverty are inherently unemployed or automatically receive government subsidies. In fact, Cottrell (2010) estimates that over half of all children living in low-income households have at least one parent who works full time during a twelve-month period.

In addition, preservice teachers must recognize that while poverty can affect development and learning processes, generalizations that those living in poverty are uneducated are inaccurate. Children from poverty do often struggle in academics (Allington, 2012), yet it is important for teachers to realize that children can meet goals and appropriate expectations; therefore, we must prepare future educators in best practices for reaching and teaching all learners effectively.

## ***3. Perceptions of Preparedness***

In this study, participants were asked about their feelings toward teaching students living in poverty and to rate feelings of readiness and preparedness toward teaching all students. The majority of all participants (67%) stated that they felt prepared to teach children of poverty, even while having little or no recollection of discussing poverty in college courses. Surprisingly, 81% of the sophomore participants (n=21) said they already felt prepared to teach children of poverty, even prior to being accepted into the education program and without taking courses for a teaching degree. One hundred percent of juniors and seniors stated that they had experience working with children of poverty, which was due primarily to practicum and field placement experiences in local Title I schools.

In analyzing the data, we discovered that preservice teachers may feel prepared, but without consistent instruction in education courses, future educators will still have misconceptions concerning poverty. Having uninformed and

incorrect beliefs can be extremely detrimental to both students and families and can limit an educator's ability to support all learners in the classroom. Looking at the perceptions of preservice teachers toward those in poverty has given us greater appreciation of the work that we must do and a much better understanding of the goals we must set to educate future teachers and leaders. As Mulvihill and Swaminathan (2006) stated, preservice teachers "would not be adequately prepared to encounter poverty issues in relation to their teaching if deliberate attempts were not made to introduce such issues in teacher education curricula that dispel existing notions of poverty and the poor" (p. 106).

### Discussion

This study shows that it is vital to be deliberate in discussions of poverty in educational courses, and that these conversations must start early and continue throughout an education program. It must be noted that while the findings of this study seem negative, we look at this information as a means to better support future educators. Educator preparation providers must prepare teachers who will make schools a place of growth and success for all children. In order to retain teachers within the profession, it is important to first adequately train preservice teachers, and preparing educators to effectively teach diverse learners must be a priority. Through this study, we learned that we must begin by making it a priority to not only discuss poverty in courses but to also give preservice teachers opportunities to self-reflect prior to entering the teaching profession.

Students come to school from a wide array of backgrounds, prior knowledge and experiences, and social, emotional, and academic challenges and skillsets. As we prepare preservice teachers for the field, we must remember to not just teach the content, but must also

make culturally responsive pedagogy and diversity education a part of all we do. The ultimate role of the educator is to prepare students to become career and college ready (Neuman & Roskos, 2013), but to do so, teachers first understand the students within the classroom and recognize the unique backgrounds of each individual child.

The discussion of this study may be relevant for individuals from other educator preparation programs who strive to enhance preservice teachers' knowledge and understanding of teaching children of poverty. The impact of this could be far-reaching for teacher preparation programs globally, as the field of education, and the global economy, is ever-changing.

Now more than ever, we must know how best to equip candidates for the increasingly diverse landscape of education. Preservice teachers must be prepared to meet the demands of the profession; therefore, better training and preparation can benefit novice teachers and the students with whom they work. In addition to helping students be more successful in the classroom, this could also have a positive impact reducing attrition among new teachers. Understanding the common misconceptions preservice teachers may have might be helpful in informing decision-making and adjusting practices around preparing teachers to work more effectively with students living in poverty.

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# LITERATURE'S ABILITY TO EVOKE EMPATHY: AN ANALYSIS OF SUHEIRHAMMAD'S POEM "FIRST WRITING SINCE"



NISREENYAMANY

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"First Writing Since" is a poem written by Suheir Hammad, a twenty first century Palestinian American poet, author and political feminist activist. She wrote the poem as a reaction to the attacks on the United States on the morning of Tuesday, September 11, 2001. Hammad e-mailed the poem to 50 friends. The poem took a life of its own and it was sent to 50,000 people. The poem became one of Hammad's most famous and often anthologized poems. The main reason behind the poem's success, perhaps, is that it offered an outlet for people who were affected by the 9/11 tragedy. However, the poem also has qualities that appealed to people's sensibilities and emotions and make it capable of evoking feelings of empathy, through various techniques and approaches, so much so that people not only read it but also contributed in spreading it all over the U.S.

### ***What is empathy? What does it exactly mean?***

Empathy is "the capacity to understand and respond to the unique affective experiences of another person" (Lamm 42). It's "an other-oriented emotional response consistent with the perceived welfare of another." So "if the other

is oppressed or in need, empathic feelings include sympathy, compassion, tenderness, and the like" (Batson et al. 1656). It's often confused with sympathy and the main difference between the two is that sympathy, unlike empathy, does not involve a shared perspective or shared emotions,

However, in order for empathetic feelings to be experienced by readers or audience, an overlap needs to occur between the audience and the character of the text or the speaker whose voice is expressed in the poem. In other words, there is a need to experience "a sense of similarity between the feelings one experiences and those expressed by others" (Lamm, Batson and Decety 42).

The fact that the poem is inspired and based on a real event, and such a well-known tragic event to be specific, helps in eliminating any sense of skepticism that might cause readers to distance themselves from the emotional impact of the poem and regard its details as fictional or imagined. Moreover, Hammad herself has been closely touched by the tragedy. She lives in New York and has experienced the whole event first hand as the details of the poem tells us. (Re-

searchers) Batson et al. have found through their experiences that less empathy is reported, when participants are aware that the person they empathize with is fictional (1666). The authenticity of the experience described in the poem, therefore, predisposes readers and audience towards belief and empathy. It also encourages them to put themselves in the speaker's place (the poet) and share her feelings because all those details that she mentions in the poem are true.

"First Writing Since" uses several techniques to engage its readers emotionally and evoke empathy in them. It consists of seven sections, each of which includes two or more stanzas written in "deliberately loose, apparently improvised form of free verse." The result is that the poem reads like "a confessional or a series of diary entries outlining the impact of the terrorist attacks on herself, her family, and the various, unnamed people she meets or imagines on the streets of New York City" (Gray 482). Hammad's use of loose and seemingly improvised form of free verse makes readers feel that this is a spontaneous outpouring of emotions and this, in its turn, encourages them to be open to its effect and sensitive to feelings of empathy that such confessions can arouse.

There are various techniques that can be used to evoke empathy in its audience & usually different techniques would elicit different types of empathy, such as perspective taking (cognitive empathy), memory-based empathy, and emotional contagion, or what is sometimes called empathic mimicry. Perspective taking entails "imagining how that person is affected by his or her plight" (Batson et al. 1656). Memory-based empathy entails remembering, rather than imagining, feelings and situations similar to those experienced by others. Emotional contagion is "the tendency to automatically mimic and synchronize facial expressions, vocalizations, postures, movements with those of

another person and consequently, to converge emotionally" (Hartfield, Cacioppo and Rapson 81). In the poem, we would notice that Perspective taking and memory-based are the types of empathy that Hammad employs most frequently. I'm going to focus mostly on the first three sections.

A noticeable approach that Hammad employs in her poem, which helps in involving the audience in perspective-taking, is the use of a first person narration, an empathetic narrative technique that "best promotes character identification and readers' empathy" (Keen 219). It is evident through the use of the first-person singular pronoun "I" (all through the poem) and also plural first-person pronoun "we" (see sections 3, 5). The whole poem is presented through the eyes and feelings of its speaker, thus maximizing the opportunity for the audience to imagine or relive (in the case of those who were touched by this particular tragedy or a similar one) the speaker's pain and experience.

-Let's check the poem again and for time's sake, I'm focusing here mainly on the first 3 sections.

The first instance in which we, as readers, can be drawn into perspective-taking empathy is when reading the opening lines of the poem, in which Hammad questions the possibility to write about such a traumatic event, "there have been no words, i have not written one word," she confesses. Like so many shocked people during that event, She is wordless. Moreover, such inability to express feelings or thoughts reminds readers through memory-based empathy technique of situations and traumatic events in which they felt similarly and were too stunned to put their feelings into words.

Through perspective taking and perhaps also memory-based empathy, readers can empathize with Hammad as she tells us "i feared

for my sister's life in a way never before" (section 1). We can remember moments in life when we were seized with fear for our loved ones because of an imminent tragedy or a situation in which they were in danger. However, even if we have never experienced such a moment, we can surely imagine how it feels to be so afraid for a loved one. Hammad, in fact, repeats this when she prays, "please, don't let it be anyone who looks like my brothers" (section 1). In doing so, She expresses her fears for her sister and brothers' sake and also engages the readers even more deeply to feel her plight and empathize with her. However, it goes beyond that for she prays for "anyone who looks like [her] brothers" and later on in section 6, we realize what her brothers look like: "their faces are of the archetypal arab man, all eyelashes and nose and beautiful color and stubborn hair." By describing them, Hammad is initially encouraging readers to empathize not only with her brothers but also with anyone who looks like them. The effect is to enlarge the sphere of empathy to include Arabs and people from different ethnicities whose looks are similar to those of her brothers and different from that of the archetypal white American. In fact, Hammad makes this point clear as she writes, "most americans do not know the difference between indians, afghanis, syrians, muslims, Sikhs, hindus, more than ever, there is no difference" (section 1). In pointing out Americans' inability to differentiate among these different ethnicities, Hammad is also pointing to the danger that such an inability can create and at the same time she is eliciting empathy for these groups who can be easily mistaken for each other.

Another approach that Hammad employs to elicit empathy is by providing details about "the dead who are called lost" (section 3). And so she tells us about "iris, mother of three," "priti, last seen on the 103rd floor. she was talking to her husband on the phone and the

line went,” “george, also known as adel. his family is waiting for him with his favorite meal.” By providing those details about the “lost,” Hammad leads readers into imagining the feelings of the families of the “lost” or recalling similar feelings when they lost their loved ones. Readers can imagine, for example, the pain and the loss that Iris’s kids and family must be feeling. They can imagine how painful it must be for Priti’s husband to suddenly lose his wife. Readers can also imagine how worried George’s family must have been as they were waiting for him with “his favorite meal.” The details that Hammad provides about the victims make the whole experience more real to readers and also make them realize that those who were lost were people like themselves who have families and loved ones that are traumatized by the loss. It also drives home the fact that none of us is safe and that a tragedy can occur at any moment.

### ***Other approaches***

There are other approaches evident in the poem that help in stirring people’s emotions, engaging their empathy, and also drawing their at-

tention to the ramifications of such a tragedy. There are many instances in which the poem promotes a more adequate model of human nature and the human condition. For one, it highlights human solidarity, which means “all persons are inherently and profoundly interconnected with others in three basic ways: practically, ontologically and emotionally-psychologically-neurologically.” Humans are connected on a practical level, as “no individual is capable of surviving without the help of others.” Additionally, “all humans are also connected with each other ontologically, through sharing a common, universal human nature.” All humans have bodies and brains and these are the basis for “the emotional-psychological- neurological attunement, care and concern for others” (Bracher 106, 109, 114).

This solidarity schema is activated early in the poem as Hammad emphasizes that the 9/11 tragedy involves not just those affected directly by it. Thus, when she tells us, in the first section, that she felt fear for her sister’s life, she concludes, “and then, and now, i fear for the rest of us.” In that way, Hammad manages to enlarge the

sphere of empathy to include not only people who are closely related or loved ones, but “the rest of us.” One would assume that “us” refers, first of all, to all Arabs, who bore the burnt of American hostility after 9/11. It might also refer ultimately, to all those who are reading the poem; that is almost any human being and not just Americans.

The situationism schema is promoted when Hammad, through a perspective-taking technique, reflects on why the attackers would attempt such a heinous act. She declares: “I do not know how bad a life has to break in order to kill. /I have never been so hungry that I willed hunger/ I have never been so angry as to want to control a gun over a pen./ not really./ even as a woman, as a Palestinian, as a broken human being./ never this broken” (section1). Here Hammad is indicating that the attacks must have been driven to a significant degree by the attackers’ circumstances and their pain. She reasons that they must be such broken human beings that it is beyond her comprehension, “even as a woman, as a Palestinian, as a broken human being” to understand what they must have gone through in order to be able to attempt such a crime and to choose “a gun over a pen.” Such passages help readers to see how human behavior is affected by conditions outside of themselves and that’s what Hammad is trying to establish through this.

To conclude, the poem “First writing since” can be seen as an example of literature’s ability to evoke empathy in its audience. I have analyzed merely few parts to show that. However, I might venture saying that the poem’s success and the fact that it has received much attention and was widely circulated indicate that it actually appealed to people’s sensibilities and evoked their empathy in various ways.

## **Appendix**

### **first writing since**

1. there have been no words.  
i have not written one word.  
no poetry in the ashes south of canal street.  
no prose in the refrigerated trucks driving debris and dna.  
not one word.

today is a week, and seven is of heavens, gods, science.  
evident out my kitchen window is an abstract reality.  
sky where once was steel.  
smoke where once was flesh.

fire in the city air and i feared for my sister’s life in a way never before. and then, and now, i fear for the rest of us.

first, please god, let it be a mistake, the pilot’s heart failed, the plane’s engine died.  
then please god, let it be a nightmare, wake me now.  
please god, after the second plane, please, don’t let it be anyone

who looks like my brothers.

i do not know how bad a life has to break in order to kill.  
i have never been so hungry that i willed hunger  
i have never been so angry as to want to control a gun over a pen.  
not really.  
even as a woman, as a palestinian, as a broken human being.  
never this broken.

more than ever, i believe there is no difference.  
the most privileged nation, most americans do not know the difference  
between indians, afghanis, syrians, muslims, sikhs, hindus.  
more than ever, there is no difference.

2. thank you korea for kimchi and bibim bob, and corn tea and the  
genteel smiles of the wait staff at wonjo the smiles never revealing  
the heat of the food or how tired they must be working long midtown  
shifts. thank you korea, for the belly craving that brought me into  
the city late the night before and diverted my daily train ride into  
the world trade center.

there are plenty of thank yous in ny right now. thank you for my  
lazy procrastinating late ass. thank you to the germs that had me  
call in sick. thank you, my attitude, you had me fired the week  
before. thank you for the train that never came, the rude nyer who  
stole my cab going downtown. thank you for the sense my mama gave me  
to run. thank you for my legs, my eyes, my life.

3. the dead are called lost and their families hold up shaky  
printouts in front of us through screens smoked up.

we are looking for iris, mother of three. please call with any  
information. we are searching for priti, last seen on the 103rd  
floor. she was talking to her husband on the phone and the line  
went. please help us find george, also known as adel. his family is  
waiting for him with his favorite meal. i am looking for my son, who  
was delivering coffee. i am looking for my sister girl, she started  
her job on monday.

i am looking for peace. i am looking for mercy. i am looking for  
evidence of compassion. any evidence of life. i am looking for  
life.

4. ricardo on the radio said in his accent thick as yuca, "i will  
feel so much better when the first bombs drop over there. and my  
friends feel the same way."

on my block, a woman was crying in a car parked and stranded in hurt.  
i offered comfort, extended a hand she did not see before she said,  
"we"regonna burn them so bad, i swear, so bad." my hand went to my  
head and my head went to the numbers within it of the dead iraqi  
children, the dead in nicaragua. the dead in rwanda who had to vie  
with fake sport wrestling for america's attention.

yet when people sent emails saying, this was bound to happen, lets

!! not forget u.s. transgressions, for half a second i felt resentful. hold up with that, cause i live here, these are my friends and fam, and it could have been me in those buildings, and we're not bad people, do not support america's bullying. can i just have a half second to feel bad?

if i can find through this exhaust people who were left behind to mourn and to resist mass murder, i might be alright.

thank you to the woman who saw me brinking my cool and blinking back tears. she opened her arms before she asked "do you want a hug?" a big white woman, and her embrace was the kind only people with the warmth of flesh can offer. i wasn't about to say no to any comfort. "my brother's in the navy," i said. "and we're arabs". "wow, you got double trouble." word.

5. one more person ask me if i knew the hijackers.  
one more motherfucker ask me what navy my brother is in.  
one more person assume no arabs or muslims were killed. one more person assume they know me, or that i represent a people.  
or that a people represent an evil. or that evil is as simple as a flag and words on a page.

we did not vilify all white men when mcveigh bombed oklahoma. america did not give out his family's addresses or where he went to church. or blame the bible or pat robertson.

and when the networks air footage of palestinians dancing in the street, there is no apology that hungry children are bribed with sweets that turn their teeth brown. that correspondents edit images. that archives are there to facilitate lazy and inaccurate journalism.

and when we talk about holy books and hooded men and death, why do we never mention the kkk?

if there are any people on earth who understand how new york is feeling right now, they are in the west bank and the gaza strip.

6. today it is ten days. last night bush waged war on a man once openly funded by the cia. i do not know who is responsible. read too many books, know too many people to believe what i am told. i don't give a fuck about bin laden. his vision of the world does not include me or those i love. and petitions have been going around for years trying to get the u.s. sponsored taliban out of power. shit is complicated, and i don't know what to think.

but i know for sure who will pay.

in the world, it will be women, mostly colored and poor. women will have to bury children, and support themselves through grief. "either you are with us, or with the terrorists" - meaning keep your people under control and your resistance censored. meaning we got the loot and the nukes.

inamerica, it will be those amongst us who refuse blanket attacks on the shivering. those of us who work toward social justice, in support of civil liberties, in opposition to hateful foreign policies.

i have never felt less american and more new yorker, particularly brooklyn, than these past days. the stars and stripes on all these cars and apartment windows represent the dead as citizens first, not family members, not lovers.

i feel like my skin is real thin, and that my eyes are only going to get darker. the future holds little light.

my baby brother is a man now, and on alert, and praying five times a day that the orders he will take in a few days time are righteous and will not weigh his soul down from the afterlife he deserves.

both my brothers - my heart stops when i try to pray - not a beat to disturb my fear. one a rock god, the other a sergeant, and both palestinian, practicing muslim, gentle men. both born in brooklyn and their faces are of the archetypal arab man, all eyelashes and nose and beautiful color and stubborn hair.

what will their lives be like now?

over there is over here.

7. all day, across the river, the smell of burning rubber and limbs floats through. the sirens have stopped now. the advertisers are back on the air. the rescue workers are traumatized. the skyline is brought back to human size. no longer taunting the gods with its height.

i have not cried at all while writing this. i cried when i saw those buildings collapse on themselves like a broken heart. i have never owned pain that needs to spread like that. and i cry daily that my brothers return to our mother safe and whole.

there is no poetry in this. there are causes and effects. there are symbols and ideologies. mad conspiracy here, and information we will never know. there is death here, and there are promises of more.

there is life here. anyone reading this is breathing, maybe hurting, but breathing for sure. and if there is any light to come, it will shine from the eyes of those who look for peace and justice after the rubble and rhetoric are cleared and the phoenix has risen.

affirm life.

affirm life.

we got to carry each other now.

you are either with life, or against it.

affirm life.

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# HOW WILL OPEN SOURCE HARDWARE INFLUENCE OUR BUSINESS AND EDUCATION IN THE FUTURE?

## Abstract

This paper presents how open source hardware will influence our business and education in the near future. The open source hardware has been playing a key role in business and education. Historically, for example, the vacuum tube radios technology was invented and patented by Dr. Hiroshi Ando. Mr. Konosuke Matsushita (founder of Panasonic) purchased Ando's patents and delivered the technology to the manufactures in 1932 at no charge. Since 1932, every family in Japan has been owning an inexpensive consumer radio set. The vacuum tube radios technology is the first, and only the first open source hardware. Thanks to open source hardware, 3D printers and laser cutters are becoming cheap and available for personal use together with open source software. In this paper, our experience of building a laser engraving machine with less than US\$70 is presented where gcode plays an important role. Innovations of open source hardware including Raspberry Pizero(\$5), CHIP(\$9), Nano-Pi-NEO(\$7.99), GPU, and others will bring us inexpensive artificial intelligent system. In other words, we may lose many of our jobs in the near future because such cheap AI system can put you out of a job. We must dramatically change the contents of education in order to prepare for the future human jobs.

We must determine what contents of education will be needed in the future society. We should rethink how we can have a fun time or a good time with shortened working hours from the global viewpoints.

Keywords—open source hardware, vacuum tube radios, 3D printers, laser engraving machines, artificial intelligence, GPU, gcode

## INTRODUCTION

Wikipedia states that Open-source hardware (OSH), consists of physical artifacts of technology designed and offered by the open design movement [1]. Both free and open-source software (FOSS) as well as open-source hardware is created by this open-source culture movement and applies a like concept to a variety of components [1].

Wikipedia also says that First hardware focused “open source” activities were started around 1997 by Bruce Perens [1]. This paper would like to correct the Wikipedia statement. The vacuum tube radios technology was invented and patented by Dr. Hiroshi Ando. Mr. Konosuke Matsushita (founder of Panasonic) purchased Ando's patents and delivered the technology to the manufactures in Japan in October 1932 at no charge [2]. Since 1932, every family in Japan has been owning an inexpensive consumer radio set. The vacuum

tube radios technology is the first, and only the first open source hardware.

Since the advent of hardware description language (HDL), instead of schematics, sharing HDL code has been forming open source hardware where semiconductor intellectual property cores or IP cores have been playing a key role.

ARM -based CPU is one of HDL incubated CPUs. However, ARM IP core is a proprietary product of ARM Ltd and not for free. ARM based devices occupies over 70% market share of embedded system [3]. ARM-based CPU market share in 2010: over 95% in smartphone market [4]. Inexpensive ARM-based CPU has brought a series of Raspberry Pi including Pizero

(\$5) [5], CHIP(\$9) [6], and NanoPi-NEO (\$7.99) [7], and others. In February 2016, the Raspberry Pi Foundation announced that they had sold eight million devices.

From Gartner, iOS and Android have 98.4% of smartphone market share. Both iOS and Android operating systems are based on open source software as shown in Fig.1.

Worldwide Smartphone Sales to End Users by Vendor in 4Q15 (Thousands of Units)				
Company	4Q15 Units	4Q15 Market Share (%)	4Q14 Units	4Q14 Market Share (%)
Samsung	83,437.7	20.7	73,031.5	19.9
Apple	71,525.9	17.7	74,831.7	20.4
Huawei	32,116.5	8.0	21,038.1	5.7
Lenovo*	20,014.7	5.0	24,299.9	6.6
Xiaomi	18,216.6	4.5	18,581.6	5.1
Others	177,798.0	44.1	155,551.6	42.3
<b>Total</b>	<b>403,109.4</b>	<b>100.0</b>	<b>367,334.4</b>	<b>100.0</b>

Fig.1 Open source operating system of smartphone market share: <http://www.macrumors.com/2016/02/18/ios-android-market-share-q4-15-gartner/>

Downloading/updating/upgrading Linux operating systems, applications, development tools, device drivers, other software from the internet for free of charge, you can make a small artificial intelligent system with inexpensive open source hardware.

It is understood that ARM-based CPU and open source software play a key role with open source hardware which can build inexpensive artificial intelligent machines. The system of ARM-based CPU and open source software has globally dominated the smartphone market (95%) and the embedded system market (over 70%) as mentioned earlier.

Innovations of open source hardware including Raspberry Pizero(\$5), CHIP(\$9), NanoPi-NEO(\$7.99), and others will bring us inexpensive artificial intelligent system where they are all based on ARM-CPU. ARM-based CPU will be a heart of IoT devices as shown in Fig. 2.

Open source software libraries for machine learning include TensorFlow from Google, CrowdFlower, Keras, CNTK from Microsoft, Caffe from UC Berkeley, Deeplearning4j, MXNet, SINGA from Apache, Theano, Chainer, and others. Most of open source machine learning can be programmed by Python. Fig. 3 shows race for AI where many giant companies have been involved in the business competition..

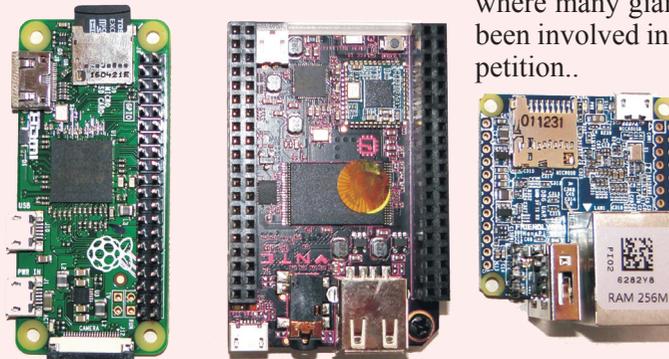
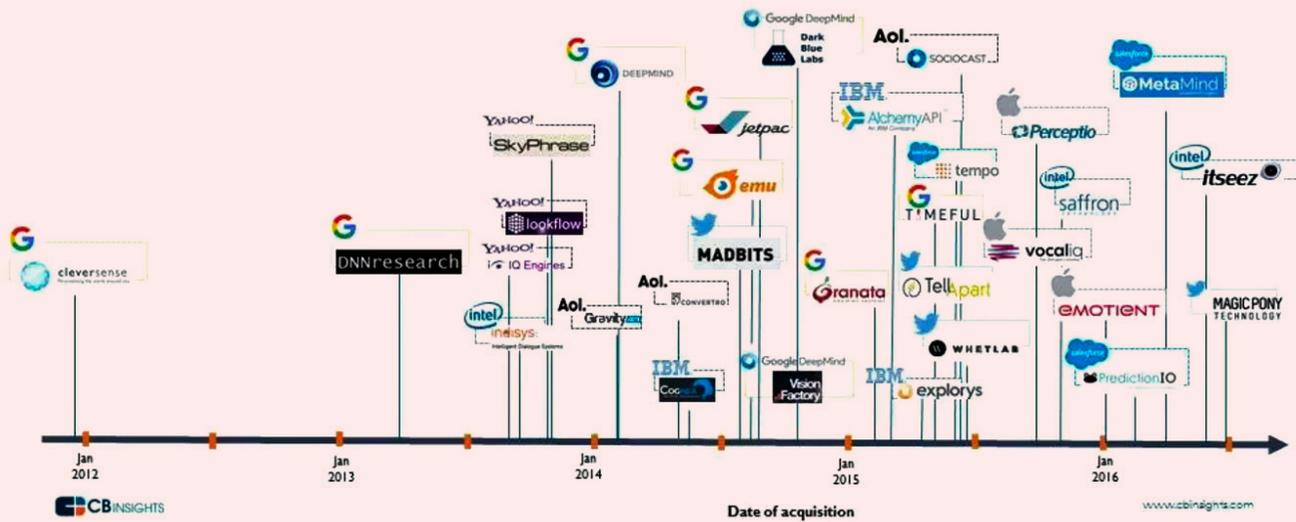


Fig. 2 Pizero, CHIP, NanoPi-NEO from left

## Race For AI: Most Active Acquirers In Artificial Intelligence



**Fig. 3 Race for AI:**

<https://www.cbinsights.com/blog/top-acquirers-ai-startups-ma-timeline/>

We have been using CPUs for long time. However, for machine learning, GPU has been used for fast computation. As shown in Fig. 4, the size of GPU core is much smaller than that of CPU core so that massive GPU cores can be embedded in a single silicon chip.

**Fig. 4 difference between CPU and GPU**

<http://allegroviva.com/gpu-computing/difference-between-gpu-and-cpu/>

The latest NVIDIA GPU as of Aug. 5 of 2016, Titan X Pascal packs in 3,584 CUDA cores with a 1,417MHz base and 1,531 MHz boost clock in a single chip. The GPU chip is composed of 12 billion transistors with 11 TFLOPS (32bit floating point) capability. It is sold for \$1200. The GPU can be used with open source machine learning libraries. Because of the recent progress of GPUs, a student can buy and own a supercomputer by himself/herself.

The GPU computing environment and open source machine learning software will make us to build in-



expensive artificial intelligent system. Professor Andre Spicer said that AI could put you out of a job [8]. AI will quickly replace many forms of complex knowledge work ranging from lawyers to librarians, professors to policy analysts [8]. As of Aug. 5 of 2016, the google search result using keywords of AI and “out of a job” is 332,000. Many people believe that AI will be able to improve the efficiency of our jobs or to put you out of a job. In other words, sooner or later, our working hours will be significantly reduced by AI.

We must dramatically change the contents of education in order to prepare for the future human jobs. We must determine what contents of education will be needed in the future society. We should also rethink how we can have a fun time or a good time with shortened

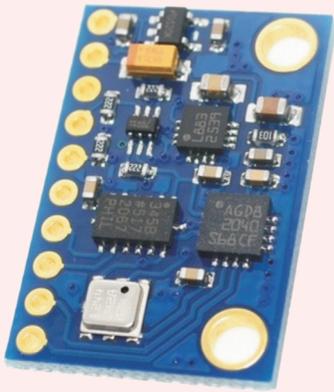
working hours from the global viewpoints.

Arduino is another open source platform which uses 8-bit micro-controller of Atmega328 (around \$1) and related AVR 8-bit chips. Most of the existing sensors and actuators can be easily controlled by Arduino system where Arduino chip can be connected to GPIO, serial UART, i2c bus interface, spi interface. Arduino will be a heart of IoT devices as like ARM-based CPU.

With the progress of the Drone technology, a variety of MEMS (Micro Electro Mechanical Sensor) sensors have become cheaper for personal smart sensing. Recent two MEMS sensors are distinguished: GY-801 and BME280.

GY-801 is composed of four

sensors for Drone: L3G4200D (three-axis gyroscope), ADXL345 (three-axis accelerometer), HM-C5883L (three-axis digital compass), and BMP180 (digital pressure sensor). GY-801 module is sold for \$8.39.



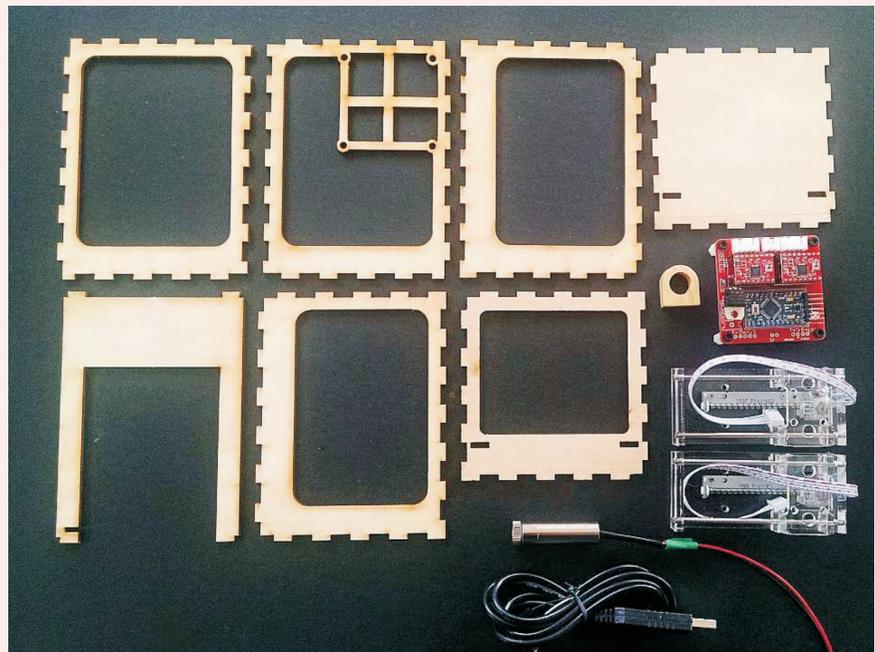
**Fig. 5 GY-801**  
**Fig. 6 BME280**

BME280 is composed of three sensors for sensing humidity( $\pm 3\%$ ), temperature( $\pm 1^\circ\text{C}$ ), and air pressure( $\pm 1\text{hPa}$ ). BME-280 module is sold for \$4.12.

## II. OPEN SOURCE LASER ENGRAVING MACHINE

We have purchased a laser engraving machine kit for \$68: <http://www.aliexpress.com/item/micro-mini-laser-engraving-machine-diy-kits-laser-CNC-diy-kits/32616470826.html?spm=2114.10010108.1000023.13.Bo7Dzy>

The kit is composed of a controller, two slide motors, a laser module where the controller controls motors and the laser without any software. Hacking the kit without manual is not so hard. The followings are described how to hack the kit:



**Fig. 7 laser engraving machine kit**

1. Connect the kit to your PC through USB cable.
2. Find the port number (com number) of USB.
3. Use TeraTerm, picocom, or miniterm.py for USB connection between PC and the kit.
4. See the returned messages on the connected screen.

The returned messages include a keyword “GRBL”. From “GRBL” we knew that the kit is based on open source laser engraving.

GRBL is a free, open source, high performance software for controlling the motion of machines that move, that make things, or that make things move, and will run on a straight Arduino. Most open source 3D printers have GRBL.

We need three software applications for laser engraving: one is to create a picture: picture editor, the second is to generate GRBL code (gcode) data, the last is to send gcode data to the kit from PC. “gcode” is a keyword for laser engraving/cutting and 3D printing.

The followings are shown how to reach three open source software applications for the purchased kit:

1. Search for “Lite Fire Laser” which is described on the kit web page.
2. We have found the interesting link: <http://cnc-factory.eu/lite-fire-laser-engraver/>
3. From the link, we have reached the name of “inkscape” which is an editor of open source engraving software.
4. Search for inkscape plug-in software.
5. We have found the import link for plug-in software: [http://www.jtechphotonics.com/Downloads/JTP\\_Laser\\_Tool\\_V1\\_6.zip](http://www.jtechphotonics.com/Downloads/JTP_Laser_Tool_V1_6.zip)
6. Search for “Lite Fire Laser” for Windows device driver.
7. We have found that CH341 is a device driver.
8. Search for ch341 driver for Windows.
9. Searched result: ch341s-er.zip <https://docs.google.com/file/d/0B-mqOQa-blpIXa1c1WVICOEZTU00/edit?pref=2&pli=1>
10. Search for gcode sender

11. Download the gcode sender program:

UniversalGcodeSender.zip

<http://bit.ly/1hftIhy>

By hacking the kit, three software applications are found to be useful as follows: “inkscape” for picture editor, “JTP\_Laser plug-in” inkscape software for generating gcode data, and “universalcodesender.jar” for gcode sender for sending gcode data from PC to the kit.

We have built the laser engraving kit within few hours and have learned a role of “gcode” for manipulating CNC (computer numerical control) machines including 3D printers, laser cutters/engraving machines, PCB fabrication machines, and others.

Fig. 8 shows the snapshot of engraving using the constructed kit. The picture was drawn by inkscape editor. The gcode data was generated by inkscape with the plug-in gcode generator. Universal Gcode Sender sent the generated gcode data to the kit. The kit successfully engraved the described picture which was edited by inkscape.

### III. CONCLUSIONS

We would like to address that the first open source hardware (vacuum tube radio) was made by Konosuke Matsushita in 1932. The vacuum tube radio satisfies the statement of “open source hardware” described in Wikipedia [1]. From HDL (hardware description language), ARM-based IP cores were created. ARM-based CPU and open source software have dominated the embedded system business (over 70% market share) and smartphone business (over 95% market share).

Open source machine learning libraries make us to build inexpensive artificial intelligent system with open source hardware. GPU plays a key role for fast computation on machine learning. Two kinds of IoT devices are intro-

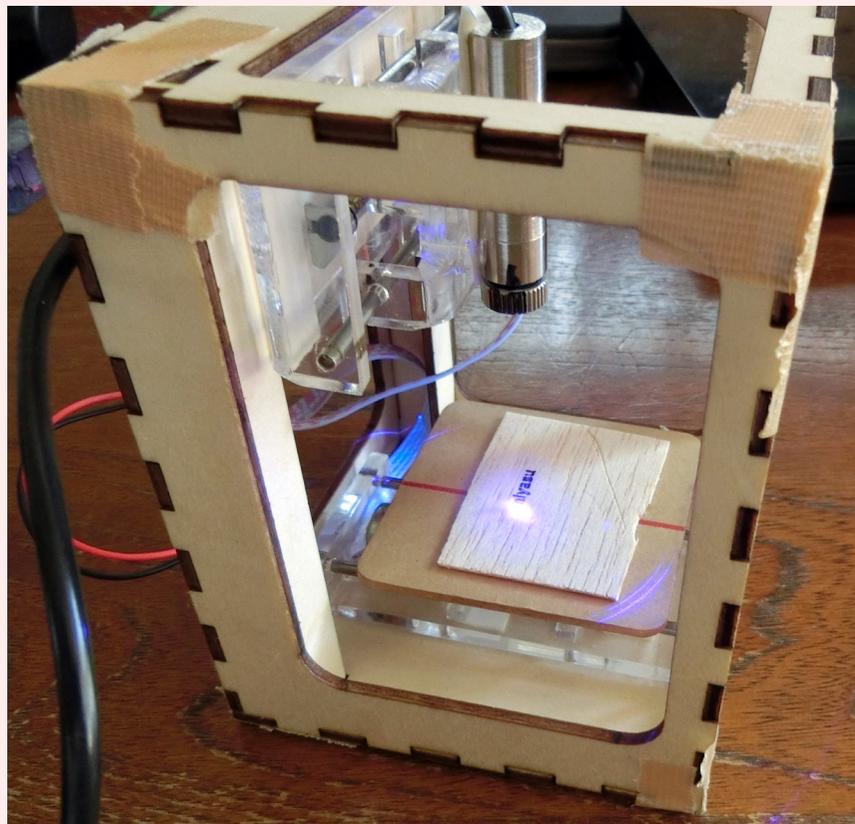


Fig.8 Engraving using the constructed kit

duced: ARM-based CPU and Arduino.

AI will significantly reduce our working hours or will put you out of a job. We should also determine

what contents of education should be needed for the future human jobs. We should also rethink how we can have a fun time or a good time with shortened working hours from the global viewpoints.

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- [8] <http://www.cnbc.com/2016/03/17/man-vs-machine-ai-could-put-you-out-of-a-job.html>

# STRATEGIES FOR STRUGGLING READERS

LEARN HOW TO SUPERCHARGE YOUR READING INSTRUCTION WITH BRAIN-BASED STRATEGIES!



DR. BENITA BELL

*Dr. Benita Bell is an educational author and presenter. Benita is founder of Brain-Based Reading Experts, a consulting company offering professional development and school wide improvement consultation. Benita is an Adjunct Professor at Concordia University Chicago and teaches graduate classes in the Psychology and Counseling Education Departments.*

*Her expertise in education and administration enable Benita to share with her students practical and researched based strategies to improve student achievement.*

## **Abstract**

This paper is based on the most current information we have about the human brain during the process of reading. Through the advances of fMRI, PET, and EEG brain imaging, neuroscientists have begun to learn about how the brain processes new information, and transfers the new learning from short term to long-term memory. This new information regarding how the brain learns to read can help teachers to create effective, research-based lessons and activities. Traditionally, teachers have learned by trial and error which instructional methods met the needs of their students. Current brain research can be used as a guideline when creating a preliminary brain-based reading instructional framework. Two key ideas from neuroscience pertaining to reading instruction were consistently found in the literature: 1) the brain attends to novelty, movement, intensity and contrast 2) neural connections are built through the repetition of skills. Effective brain-based instruction requires different instructional strategies for individuals based on such variables as prior learning, experi-

ence, and a select set of cognitive neuroscience principles. This paper outlines some of the most important information we currently possess on how the brain learns and in particular how the brain learns to read. In addition this paper offers brain specific instructional strategies targeted at teaching the components of reading instruction

**Key Words:** Reading, brain-based research, neuroscience, imaging, cognitive science, reading strategies, struggling readers, teaching ring, dyslexia, reading research.

## **Introduction**

The ability to read well is a prerequisite skill that every student needs to succeed in school and every adult needs to be successful in their everyday life. Dehaene (2009), a leading cognitive scientist maintains, “Neuroscience today sheds indispensable light on how a reader’s brain works and what makes it more or less receptive to different teaching methods” (p, 326). The question of how to best teach students to read has been the source of heated debate for over 100 years amongst educators. Unfortunately,

not all students learn to read easily, in fact, many struggle to acquire the skills to become fluent readers throughout the course of their years in school. Many students come from home environments that do not support the development of phonemic awareness and pre-reading skills due to constraints of time or lack of parental educational backgrounds. Finally, there are dyslexic students who receive intensive reading instruction in small groups or on a one-to-one basis who continue to struggle with becoming skilled readers.

Regardless of which instructional method is used, most educators agree that learning to read is a multi-step process. Learning to read can be compared to learning to play a musical instrument. We learn to read at increasingly higher levels of skill development or achievement with training and practice. To decode or sound out words is just a first step in the acquisition of reading proficiency. After obtaining a familiarity with the letter-sound relationships in reading, students must then learn to use this process at an automatic level, to read with fluency. Sprenger (2013) suggests that “reading is a complete cognitive process that has five essential components built on brain development and experience” (p. 75). Reading experts have identified the five major categories of skills which are developed and used as children or adults learn to become skilled readers as: 1) phonemic awareness, 2) phonics instruction, 3) vocabulary, 4) fluency, and 5) comprehension.

Two key ideas from neuroscience pertaining to learning and reading instruction were consistently found: 1) the brain’s need for novelty, and 2) the repetition of skills builds and strengthens neurons, multisensory instruction is effective. Refer to Appendix A for a table of reading strategies supported by our current understanding of neuroscience.

## **The Brain’s Need for Novelty**

The Reticular Activating System (RAS) is a structure of the brain that performs the first screening of all sensory input before it enters the brain is especially responsive to novelty. Understanding that novel or different instructional activities will be allowed through the RAS allowing your students to attend and receive these activities has important implications for teachers. Changes in the classroom, activities and strategies will catch the RAS’s need for novelty. Willis (2008) recommends that teachers use this information about the brain to inform their teaching by incorporating novelty into their daily instructional activities.

Neuroscientists believe that concrete vivid images are an important way to convey learning. According to Jensen (2008) the brain has an attentional bias for high contrast and novelty and 90 percent of the brain’s sensory input is from visual sources. (p. 56). What does that mean for reading teachers? Teachers should incorporate project-based assignments, computers, videos, books, cameras, art supplies, visual aids, and posters, and graphic organizers into their reading and literature lessons

## **The Repetition of Skills Builds and Strengthens Neurons**

Learning involves the activation of thousands of neurons, which make connections in order to make networks of neurons. As reading skills are practiced, neurons send dendrites to other neurons, creating denser neural connections and possibly increasing myelination. The repetition of correctly performed skills building dendrites has implications for all the components of reading. Regular practice of skills will improve phonemic awareness skills, phonics skills, vocabulary development, fluency, and comprehension by changing the architec-

ture of your students’ brains.

Reading is a relatively recent cultural creation, and the alphabet itself is thirty-eight hundred years old. When viewed through a neuroscience lens, reading is the development of the brain making connections between thousands of neurons through the process of rehearsal. Neuroscientists have identified the regions of the brain devoted to hearing, vision, speech, as well as the recognition of faces and places. Situated between the regions of the brain, which enable us to recognize faces and the portion, which we use to recognize places, is an area, termed the visual word form.

Dehaene (2009) proposes that when a student reads a word, activation begins in the occipital or visual processing portion of the brain followed by neural activity in the left occipital temporal region (Brain’s Letter-Box) that extracts the visual word form. Neuroscientists believe that as we learn to read, after numerous times of sounding out a word, the brain stores the word in the visual word form area in the form of a picture.

## **Phonics**

Sousa (2010) asserts that, “Teachers have taught for centuries without knowing much, if anything, about how the brain works” (p. 2). Recent brain research supports an explicit phonetic approach to teaching decoding. Sally Shaywitz, a neuroscientist and professor of pediatrics at Yale University School of Medicine, has studied the brain mechanisms involved in the reading process using magnetic resonance imaging (MRI) technology. Shaywitz (1999) explains, “Although phonics is more important for some children than for others, all children can benefit from being taught directly how to break up spoken words into small units and how letters represent sounds” (p. 29). For many students, whose home environment supports liter-

acy the decoding process can be accomplished with even poorly developed phonics programs. For students, whose homes do not support the development of literacy, the method of beginning reading instruction is of critical importance.

## Vocabulary

Hart and Risley (2003) in their gold standard research study found that somewhere between eighty-six and ninety-eight percent of children's recorded vocabularies matched that of their parents. They also found that by the age of three, children living in professional families had a recorded vocabulary size of 1,116 words whereas children in working class families' vocabulary size was 749 words. This difference in the vocabulary of children entering school puts children of working families in a catch-up position as they began to learn to read. However, enriched early childhood programs can help students increase their vocabulary, lessening the existing gap in vocabulary.

## Fluency

Let's turn our attention to reading fluency and look at some of the brain compatible strategies that improve fluency. According to Willis (2008), "Fluent readers can decode, recognize, and comprehend the meaning of text at the same time, so their networks fire effectively and efficiently" (p. 47). Using the gradual release of responsibility model, to promote reading fluency is an accepted methodology among reading experts. In step one of this model, the teacher models reading a passage with fluency. During this time, students hear the correct pronunciation and expression for this passage. In step two, students choral read the passage with the teacher. Step three follows when students choral reading without the teacher. Finally, during step four, students read along independently after practicing the passage.

## Reading Comprehension

When students have mastered the alphabetic principle, and can masterfully decode words, and read with fluency, their working memory is freed up for the task of comprehending the text. Students with strong knowledge about the world and a wide range of things bring to the reading process prior knowledge. Reading teachers know that activities that activate and build prior knowledge will ultimately improve vocabulary and reading comprehension. When teachers model comprehension strategies, they show students how to break down the text to extract meaning. Visualizing, predicting, active questioning, making text connections, reading anticipation guides, story maps, creating and completing graphic organizers are just a sample of the numerous effective comprehension strategies.

Learning to read is not a linear endeavor because the cognitive elements of reading support and reinforce each other. As letters are sounded out into words, the meaning of these words comes into play. The importance of a well-developed vocabulary supports the development of decoding, fluency, and comprehension skills. Neuroscientists view reading as the product of multiple contributing reading

### subskills.

Through the advances of fMRI, PET, and EEG brain imaging, neuroscientists have begun to understand how the brain processes new information, transfers the new learning from short term to long-term memory, and retrieves that learning at a future time. Teachers can use this information to create effective, research-based lessons, activities, and assessments. Traditionally, teachers have learned by trial and error which reading methods met the needs of their students.

Current brain research can be used

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as a guideline when creating a preliminary brain-based reading instructional framework. Two of the key ideas from neuroscience pertaining to reading instruction are: 1) the brain's need for novelty, and 2) the repetition of skills builds and strengthens neurons and their connections. Interesting and var-

ied activities appeal to the brain's interest in novel stimuli. Focused practice over time of key reading skills builds dendrites, increases the density of neural connections, and strengthens neural myelination which allows students to become fluent readers with a deep understanding of text. The ability

to read well enables to students to read in the science and social sciences content areas. Most importantly, the ability to read often results in students developing the desire to read independently. Good readers very often become avid readers with a passion for reading that lasts a lifetime.

Reading Strategies	Brain Research
<p><b>All Reading Skills:</b> Build novelty into your lesson. Vary instructional activities</p>	<p>“Novelty, change, and other curiosity evoking events alert the Reticular Activating System (RAS) to pay attention” (Willis, 2010, p. 50).</p>
<p><b>All Reading Skills:</b> Use Multisensory Channels</p>	<p>“Because the brain cross-references information in multiple categories and each sensory input has its own reception and memory storage station, it makes sense that reviewing patterns with different sensory experiences could make it easier for students to access the patterns “(Willis, 2008, p. 30).</p>
<p><b>All Reading Skills:</b> Give your students examples of how the story or book relates to their lives. Encourage students to share their own experiences.</p>	<p>“Relevance is a function of the brain in making a connection from existing neural sites. Context triggers pattern making which relates to the activation of larger neural fields” (Jensen, 2008, p. 180-181).</p>
<p><b>All Reading Skills:</b> Self-Selected Books increase motivation (Question and discuss as you read</p>	<p>“Neuroimaging studies reflect the influence of stress and pleasure on the filtering of sensory input that enters the brain (RAS), and the next filter (Amygdala – Krashen’s Affective Filter) determines whether the information goes to the thinking brain (prefrontal cortex) or the lower, involuntary reactive brain” (Sousa, 2010, p. 49).</p>
<p><b>Fluency:</b> Have students read aloud and provide effective guidance and feedback to improve their fluency.</p>	<p>“Repetitions will become stored in long-term memory. “With repeated encounters of the same word, the child’s brain makes a neural model-called a word form-that encompasses the spelling, pronunciation, and meaning of the word” (Sousa, 2005 p. 55).</p>
<p><b>Vocabulary:</b> Have students create a personal Pictionary by illustrating the definition of a new content-area vocabulary word.</p>	<p>“Different areas of the brain, including the amygdala and the thalamus, are activated when people are involved in art activities” (Jensen, 2008, p. 169).</p>

# STUDENT RESEARCH

## THE REVERBERATIONS OF LEGALLY SANCTIONED DEATH

*a glimpse at the after-math of capital punishment*



SOMDUTTA

*Somdutta Mazumder is a 21 year old who fosters an unwavering love for books and pens. She recently completed my graduation in psychology from Lady Shri Ram College for Women and currently working with Hindustan Times. She plans on going to Australia for her masters in organisational and social psychology in the near future. An ardent animal lover, she finds solace in dogs, literature, rain and good coffee (in no particular order).*

I remember the exuberant shade of green of the paddy fields surrounding us. I remember shuddering as I caught sight of the many curious eyes scrutinizing me from head to toe. I remember the rancid stench of sweat, mud and animal waste, the dingy houses devoid of adequate fresh air, the dense smoke emanating from the make-shift kitchen as they rushed to welcome

us with food. But, most of all, I remember all those grim faces, that either spoke in hushed tones and mono syllables or let out deafening cries of anguish. Those faces had bleak eyes that seemed to wander far away and lines of unremitting exhaustion etched across them that told stories of despair and agony. "They will neither let us live nor allow us to die, they hope for us to suffer and wither away....I don't have it in me to go on anymore." These words were uttered by Maula, whose husband Jagat was sentenced to death some five years back.

In a country, where crime rates are skyrocketing every single day, and the gruesome acts continue to worsen in shape and form, capital punishment remains a much-debated issue. Some people assume the stance of agreeability and speak in favour of the death sentence in terms of being fair, while others criticise this form of punishment on the grounds of inhumanity and violation of basic individual rights. Let me state in the very beginning that I belong to neither of these groups. I don't intend to weigh or analyse capital punishment nor propose an alternative. My sole aim is to tell stories that often go unheard and acquaint people with an imagery of what is left behind, once an individual gets sentenced to death.

During one such visit, we met the 105-year-old father of the prisoner.

It was heart wrenching to watch a frail old man who walked with the pride of a 20-year-old, burst into tears at the mention of his son. As he wept, he said to us, "the second I got to know about the death sentence, it felt like life had suddenly been taken away from my body. I don't understand what god is trying to do. He is innocent, he was trapped. The son dies while his father is still alive, what kind of a religion is this?.....He had gone to attend a function when the police came and took him away from us. People came up to me and told me that they are going to take my son away and there was nothing I could do about it."

### **we met the son of the prisoner.**

Interviewer – "How was your father's general behaviour with all of you?"

Son – "If he had been mean to us, there would have been no problem. The love he had for us is the primary reason why it has been so hard to get used to life without him. My younger brother has been suffering the most. He often gets up in the middle of the night and starts crying. He will start frantically looking for father and when he realises that he's not around, starts sobbing unconsolably. This happens almost every night and we feel utterly helpless" These are a few extracts from the many conversations we had with these people. Most of them, seem to have lost sight of their hopes and aspirations and now devote all their energy to surviving the aftermath of one particular occurrence. They hardly seem like individuals with their own thoughts, goals, and wishes, and more like the product of the consequences that followed when their family member was awarded the death sentence. These experiences, have forced me to carefully analyse the meaning of fair and unfair and ponder upon whether such a distinguishing line even exists between the two.



# COMMENTARY

## THE TRAIN OF THOUGHTS...

It was raining heavily when I left home today, at dawn, for the railway station. I was excited about the five hour (and close to 300 km) journey to Kochi from my hometown of Trivandrum. 20 years ago, I was a regular on these trains, riding these tracks for school, for work, and sometimes just to see the sun rise over gorgeous lakes. One added benefit was the amazing food servers would walk around with, calling out the names of delicious dishes (the bread omelet was my favourite!).

A lot has changed - the food, the trains, and me. I am no longer that student activist who wanted to turn the world upside down, but a pragmatic counsellor on a talking circuit invited by some of the top schools in the country to present my ideas on preparing for university. The world has also changed around me, every day seems to bring a new disaster - from hurricanes and earthquakes to the threat of nuclear war, the globe is now in a permanent mode of crisis.



NNS CHANDRA

*Education and university admissions coach N N S Chandra has been leading organizations working with hundreds of students, guiding them, counseling and consulting on several areas including university admissions in United States. Chandra is active with and carrying accreditation of several professional organizations like NACAC, OACAC, ASCA, ACA, Study Iowa etc. teaches and consults in North America, speaks in international conferences, presents and give lectures around schools, colleges and other educational institutions around the world. He is also a writer with published works (fiction and non-fiction) currently finalizing his first full collection of short stories.*



Photo : My old Cricket Club (Pioneers) get together

While I was reading the news aboard the train on the latest Donald Trump gaffe (he called Kim Jong-Un a Rocket Man?!), my eyes glanced over the passionate speech that Pope Francis recently gave, where he stated that God was “not a magician with a magic wand” and defended science against creationism and theories of intelligent design. It reminded me suddenly of Saint Thomas the Apostle, who has always fascinated me, initially for his far-flung travels. It is suggested he went as far as Tamil Nadu and Kerala; there is evidence that by 52 AD, he had baptized several people and began a sect there (the Mar Thoma Nazranis). He was also known colloquially as ‘doubting Thomas’, because he initially doubted the idea of Christ’s resurrection.

Despite my agnostic beliefs, I am of a mind with Saint Thomas and Pope Francis: having doubt is important. Being curious is the key



*Despite my agnostic beliefs, I am of a mind with Saint Thomas and Pope Francis: having doubt is important. Being curious is the key to being a lifelong student, but it takes a great deal of courage to refuse absolutes; it’s a quality I would like all of my students to have.*

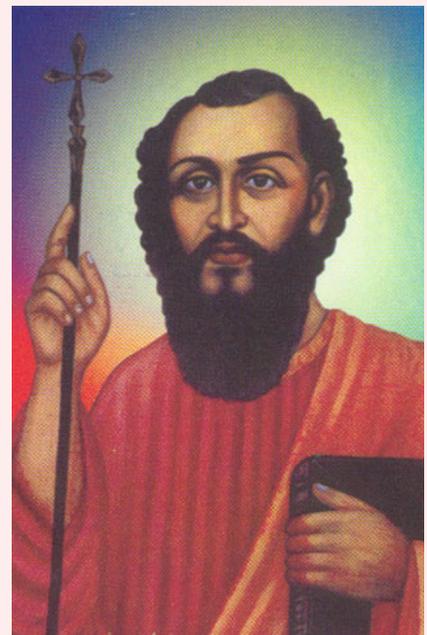


Photo : Thoma Sleeha Courtesy : Flickr

in the ‘Uber-ized’ world; this is a challenge, as you can imagine!

To be honest, I have been in Asia a little too long this time. It’s been almost 50 days since I left North America, and in that time I’ve met with 100s of students, teachers, educators and policy makers, gave lectures and lead seminars, engaged in small group discussions in universities, colleges and local schools. I also wrote and published a few articles on Indian mainstream media and followed the dynamic conversations among my readers. It has not been all work however, as those 50 days include a large family event and an intense reunion with 23 of close high school and old cricket club friends. All in all, it has been an exciting few weeks, but I am ready to be back in Boston and Iowa, and back to my fellowship work at the teachers institute in the Canadian Parliament.

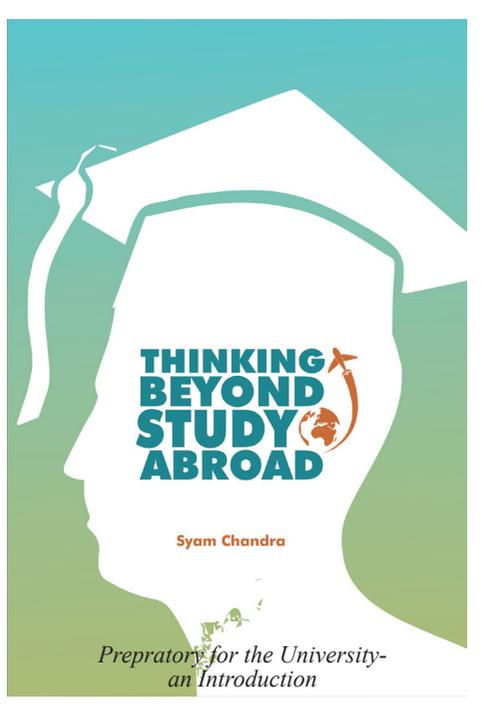
Still, I must admit, I will miss my time here. While a lot has changed, the rains, the trains, the lakes, the rivers and the sunrise remain as spectacular as they were 20 years ago.



to being a lifelong student, but it takes a great deal of courage to refuse absolutes; it’s a quality I would like all of my students to have. Perhaps I will add that to my next lecture, alongside my talk on the jobs of the future and the skills required to succeed in tomorrow’s world. I plan on referring to the World Economic Forum Report on the same - the report refers to socio-economic and demographic factors that might create a perfect storm of business model change in all industries, resulting in major disruptions to labour markets. New categories of jobs will emerge, partly or wholly displacing others. The skill sets required in both old and new occupations will change in most industries and transform how and where people work. I aim to unpack and provide specific information on the relative magnitude of these trends to groups of high school millennials already living

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### **Alphonse O'Bannon, Publisher TiGEs**

At Transitions in Global Education we seek to be at the forefront of the conversation surrounding education and have done so for the last year through the medium of our journal. Adding to this, we are going to expand the ways in which we carry on the discussion surrounding education be it through the written word or through video. One of these paths involves the publishing of an upcoming book titled "Think beyond study abroad" written by our lead editor N N S Chandra. With our editors Prof Sheffield and Mr Bhowmick contributing a chapter each.

#### **Core Ideas/Points.**

The core idea of the book is that instead of focusing on the application and admission only, we should focus on building competency and developing the skills and qualities required to thrive in a global university. We need to prioritize not just admission, but what comes before and after: the wealth of knowledge and perspective that students can garner through the process, and the sociocultural competence required to succeed in a competitive global environment.

Preparing for an international education in a top university must move beyond a simple "study abroad" approach and instead focus on developing a comprehensive, holistic model that involves a continuous process of engagement, experience and learning. We must understand that the requirements, interests and capabilities of each student are unique.

#### **• Marketing & Publicity**

Marketing and Publicity will be overseen by our publishing team with Phil Mclsaac, senior public relations consultant will act as personal publicist. TiGEs has secured the services of a New York-based publicity firm to work in tandem with Mr Mclsaac.

We have made arrangements Amazon, Rediff and with university search Web sites that include but are not limited to CollegeConfidential, University Online Local book tour with N N S Chandra including national, independent, and campus bookstores as well as retailers (Barnes & Noble, Borders, Prince Books Reach-out to all IB and top international schools around the world via email

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#### **N N S Chandra**

Education and university admissions coach N N S Chandra has been leading organizations working with hundreds of students, guiding them, counselling and consulting on several areas including university admissions in United States. lectures around schools, colleges and other educational institutions around the world.

#### **Dan Sheffield**

Professor Dan Sheffield is a Canadian intercultural relations educator with life and work experience in Egypt and South Africa. For a number of years he has worked with Indian students seeking to study in North America. He has a passion to see students develop a global mindset during the course of their university studies in North America.

#### **Sohom Bhowmick**

Sohom currently works at 8K Miles Media as Marketing/Sales specialist. He is also a sub editor of Transitions in Global Education. Graduated from University of Iowa in Economics and Entrepreneurship. Involved in developing and implementing student enrichment program

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students can use their AMC score in common application form.

Ivy League Schools, Carnegie Mellon University, CalTech University, MIT specifically ask for AMC score.

### AMERICAN MATHEMATICS CONTEST 8 (AMC 8)

The AMC 8 is a 25-question, 40-minute, multiple choice examination in middle school mathematics designed to promote the development of problem-solving skills. The AMC 8 provides an opportunity for middle school students to develop positive attitudes towards analytical thinking and mathematics that can assist in future careers. Grade 8 and below can participate

### AMERICAN MATHEMATICS CONTESTS 12 (AMC 12)

The AMC 12 A/B (Grade 11 and 12) is 25-question, 75-minute, multiple choice examinations in high school mathematics designed to promote the development and enhancement of problem-solving skills. The AMC 12 covers the entire high school curriculum including trigonometry, advanced algebra, and advanced geometry, but excluding calculus.

### AMC 8

COMPETITION DATE:

**NOVEMBER 14, 2017**

### AMC 10/12 A

COMPETITION DATE:

**FEBRUARY 7, 2018**

### AMC 10/12 B

COMPETITION DATE:

**FEBRUARY 15, 2018**

### AMERICAN MATHEMATICS CONTEST 10 (AMC 10)

The AMC 10 A/B (Grade 9 and 10) is a 25 question, 75 minute multiple choice examination in secondary school mathematics containing problems which can be understood and solved with algebra and geometry concepts.

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[www.transitionslab.com](http://www.transitionslab.com)

<http://www.maa.org/math-competitions/international-registrations>

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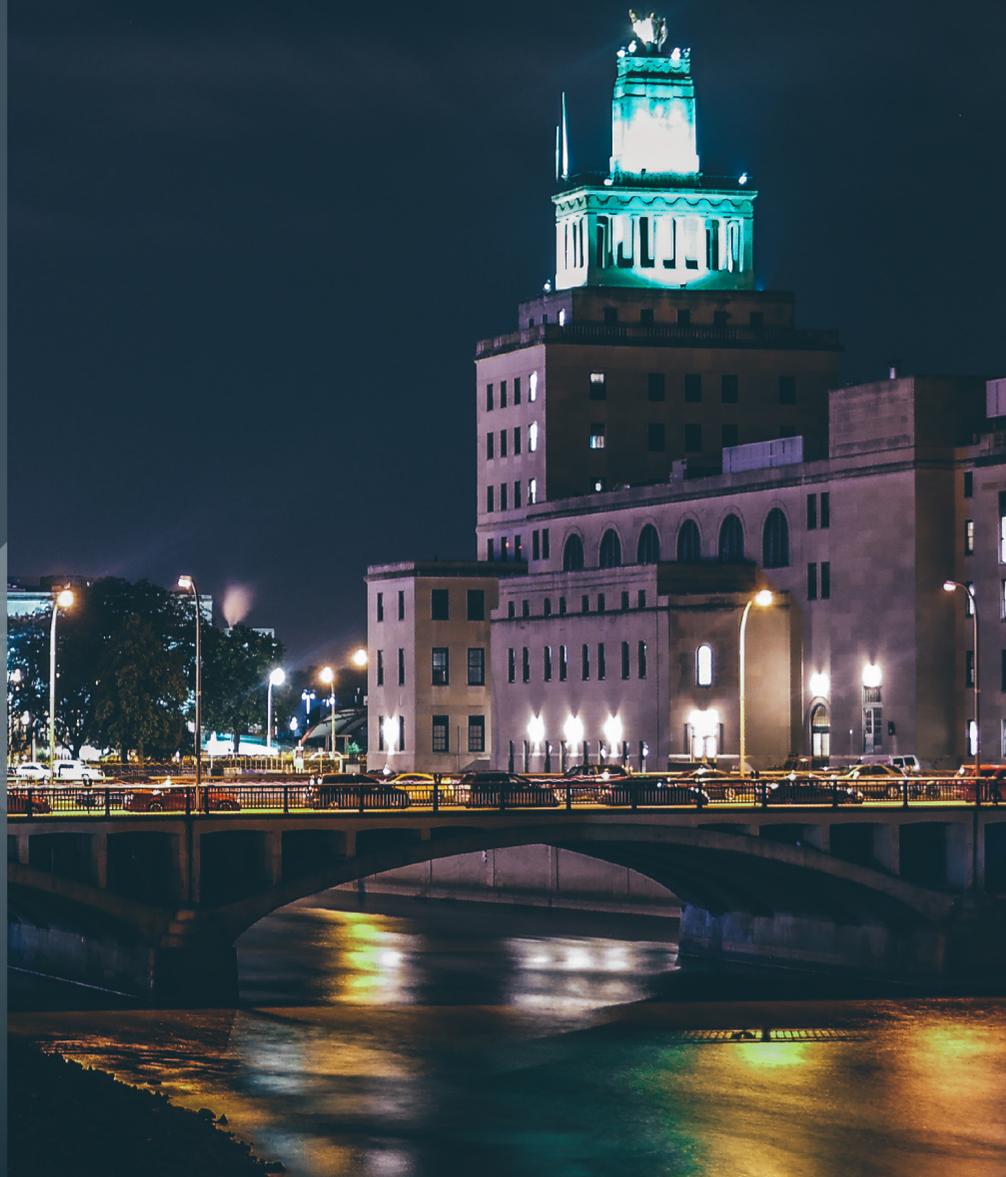
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