



Volume : 1  
Issue : 03  
January 2017

Price : \$ 15

ISSN 2369:3533



**Transitions In Global Education**

A Research Journal focusing on higher education, Winter Edition 2017

AROUND THE  
WORLD IN 80 TRIALS:  
A NEW PARADIGM OF  
**GLOBAL  
RESEARCH**

THE RISE OF  
CONSERVATIVERIANS  
AND DEMOCRACY  
**IN AMERICA**

AUTO  
ETHNOGRAPHIC  
**RESEARCH**

EDUCATION  
AS A GLOBAL  
**COMMODITY**

GIRL-CHILD  
EDUCATION  
IN THE PRESENT  
**NORTHERN  
NIGERIA**



# TRANSITIONS LAB PREPARATORY SCHOOL

EXCLUSIVE INTERNATIONAL PARTNER TO MAA IN INDIA.



## WHY TAKE AMC ?



**AMC 10/12 A COMPETITION DATE:**  
**FEBRUARY 7, 2017**

**AMC 10/12 B COMPETITION DATE:**  
**FEBRUARY 15, 2017**

### 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.

### 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.

Provides an opportunity for high school students to develop positive attitudes towards analytical thinking and unique problem-solving challenges in a low-stress and friendly environment.

The first in a series of competitions that lead all the way to the International Mathematical Olympiad. Your students with top scores on the AMC 10 or 12, may be invited to take the American Invitational Mathematics Exam (AIME). High achievers on the AIME are invited to participate in the USA Mathematical Olympiad.

College admissions officers love to see problem-solving skills on applications.

Students can use their AMC score in common application form.

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



**Pranathi Patel**

pranathi.patel@transitionslab.com

91-8185918115

www.transitionslab.com

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



# C O N T E N T S



Volume : 1 Issue : 03 January 2017

## Editorial Board

### Guest Editor (Winter Issue)

**MSR Dev**  
Educator, Retd. Director of India's Space Agency

### Lead Editor

**N N S Chandra**  
Educator, Senior Counselor, Trans Web Global

### Editors

**Dr. Ruth E White**  
Educator, Trustee Mount Mercy University  
**Dan Sheffield**  
Interculturalist, Trainer, CultureShift  
**Doug Wagner**  
Political Consultant, Talk radio Host  
**Michaela Murphy**  
Writer, Activist, Teacher, Consultant

### Sub Editors

**Sohom Bhowmick**  
University of Iowa  
**Achyuth Chandra**  
McGill University

### Bureau Chiefs and Resident Representatives

**Europe**  
**Richard Bert**

### Office of Resident Representatives

**South America**  
Av. Paulista, 2300 - Consolação,  
São Paulo - SP, 01310-300, Brazil,

### Resident Representatives

**China**  
**Wade Wagner, Ni Wagner**

### Nigeria

**Eric Idehen**

### Ghana

**Wisdom Darko**

ISSN 2369:3533

Printed and Published by

**Alphonse O'Bannon**

**Head Coach,**

**Transition Lab University Preparatory School**

220 E AVE ME

Cedar Rapids, IS 52402

Hamilton, Canada

layout and design by Arun V Dev, Devgrah,

Trivandrum, devgraph2013@gmail.com

Mob: 9961213370. All photographs unless otherwise

indicated are used for illustrative purposes only.

www.tiges.ca



- 04 About Us
- 05 Global Educational Institutions of Excellence for the 21st Century ?
- 07 Education as a global commodity
- 11 Last Few Weeks
- 12 The rise of Conservaterians and democracy in America
- 14 Around the World in 80 Trials: A New Paradigm of Global Research
- 17 Where are we now
- 19 Dreaming a Leadership
- 20 Global Mindset in a World with Trump
- 22 Technology in Science, Business & Arts
- 24 Auto Ethnographic Research: Know Thyself
- 28 Contextual challenges and school leadership development in the small island developing states of Fiji
- 30 Girl-Child Education in the present Northern Nigeria : How Far So Far



- 37 Developing Mathematical Meaning - In the Context of Multiplicative Situations
- 41 Enquiry into the investment climate of Iowa
- 43 SEP - a lifelong learning experience.....
- 45 American Math Competitions
- 47 Arrival
- 49 Math in Movies Dispatches from Boston and Mumbai
- 52 Honours Program A quick overview

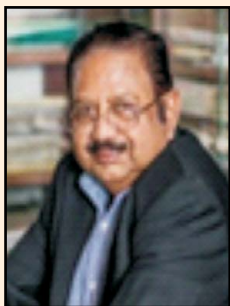


## ABOUT US

**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.



*M S R Dev is a graduate (1966) in Mechanical Engineering from the National Institute of Technology (NIT) - Warangal, and a Post Graduate (1968) in Aeronautical Engineering from the Indian Institute of Science (IISc), Bangalore. He possess an MBA (1990) and doctorate (PhD. 1992) in Business Administration from Newport University, California and a Fellow of the Aeronautical Society of India, Institution of Engineers India, and Institute of Marketing and Management India. He took active interest in professional associations and undertook key roles and responsibilities such as, Past President of Aeronautical Society of India, Trivandrum (89 – 90); Chairman, Society of R&D Managers, India (1992); Advisor, Trivandrum Management Association; Advisor, National Institute of Quality and Reliability, India; Life Member, Indian Astronautical Society and Member of Indian Society for Training and Development.*



**Dr. M S R Dev**  
International Educational and  
Management Consultant.

## GLOBAL EDUCATIONAL INSTITUTIONS OF EXCELLENCE FOR THE 21ST CENTURY ???

As Donald Trump era dawns, the educated and elite community around the world is looking for how the United States of America (US) is going to visualize the higher Educational System in the country and whether US is striving and aspiring to be on the top of the ladder in the domain of Global Educational Facilitation in the coming decade? In the above context a few random thoughts on the envisaged characteristics of Global Educational Institutions of Excellence for the 21st century are enumerated.

1. The Global Educational Institutions of Excellence need to be consistently committed to improve and better the contemporary state of the world as its primary mission.
2. It must enrich and develop the customers – the students and learning community, with a passion to inculcate holistic personality in terms

of intelligent quotient, emotional quotient, cultural quotient, social quotient, etc..

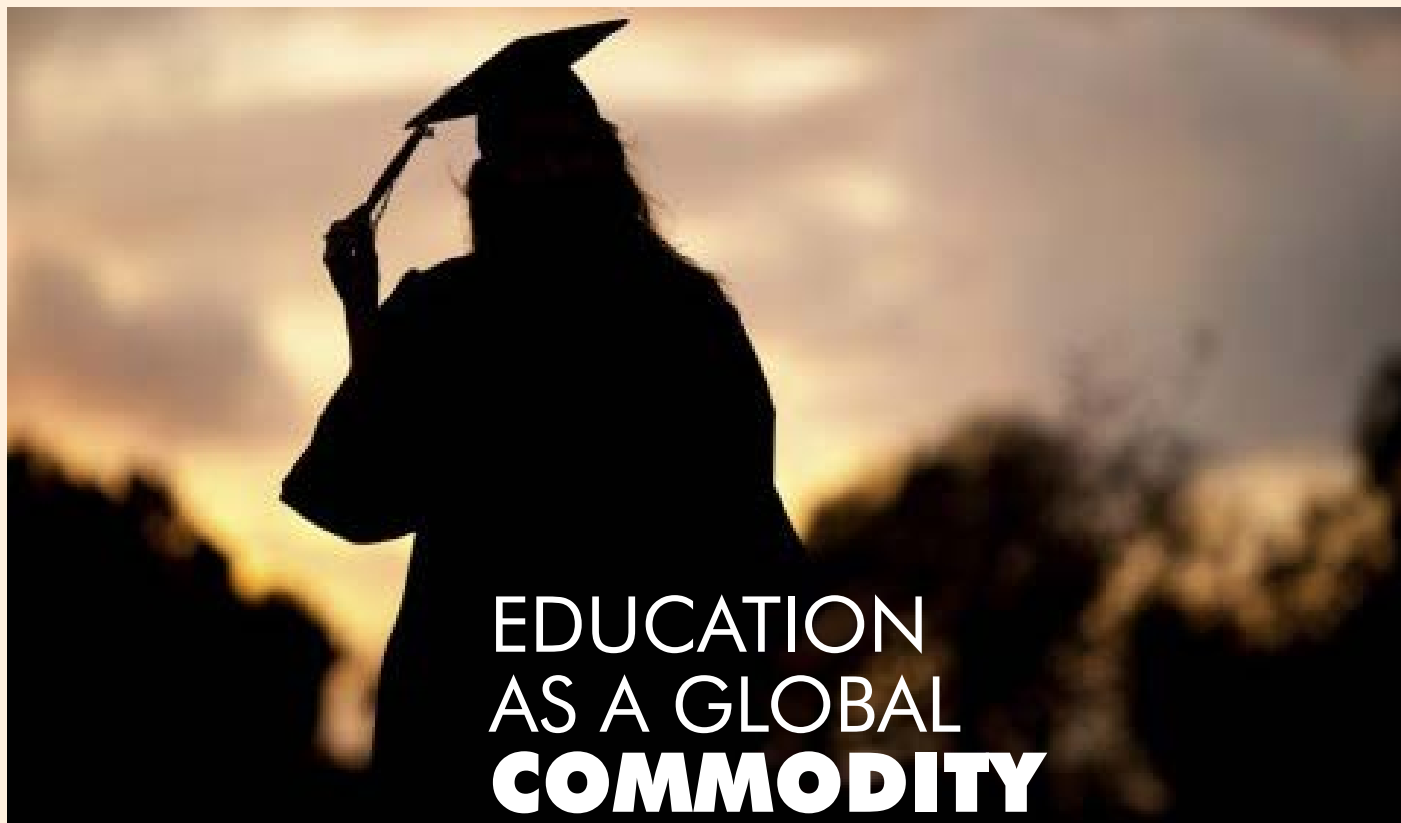
3. It has to employ creative and innovative tools and techniques to kindle the curiosity and research methodologies that meet the changing needs of the changing world.
4. The Global Educational Institutions need to be built on 6 pillars as its foundation, namely, the students, the teachers, the parents, the management / administrators, the employers and the society around as stakeholders.
5. It must evolve independent and inspiring ideas, concepts, knowledge, skill sets as well as attitude for future development.
6. The institutions need to be run as an integrated enterprise – combining the creative managerial characteristics of a philanthropic,





academic, business, scientific and socio-cultural enterprises.

7. It must uphold the culture and class of highest standards of governers, moral and intellectual integrity, values and ethics, reverence and dignity.
8. It needs to instill a unique institutional environment that facilitates all the stake holders to work in unison sans campus conflicts and chaos.
9. The institutions must develop an unique collaborative competitive spirit with other players in the market.
10. The futuristic model of a Global Educational Institution to be evolved as a partnership venture – 3P (Public, Private and People – society).
11. The institutions have to think and bring in new initiatives like Campus Social Responsibility (CSR) projects (refer – Corporate Social Responsibility) and to be accountable to the society around.
12. It must blend and balance and update the curriculum as well as teaching and learning systems year after year taking into account the changing needs of industries and society around the world so that the students coming out of the campus will be marketable globally.
13. The institutions have to continuously improve (KAIZEN) its campus culture, curriculum, creativity, etc. and inspire and influence to bring in positive changes in the state of the world.
14. It must visualize local, regional and global challenges in a broad canvas and create the community of students coming out of the institutions as problem solvers in the contemporary competitive and chaotic world.
15. It has to develop with a missionary zeal an army of intellectuals, experts, specialists and knowledge partners to partake in the fourth industrial revolution happening today to encounter diverse domains such as, nanotechnology, biotechnology, space technology – space planes and inter-planetary travels, quantum computing, 3D printing, self-driving vehicles, artificial intelligence, robotics, the internet of things, etc. and contribute in bringing out a future ready educational ecosystem. Yes, tomorrow the revolutionary technologies are going to govern and control the future of our planet and the society.
16. The institutions have to create global Acceptance of students and employers from around the world.
17. The institutions also have to seek and reach out global Approvals in terms of accreditations, international standards and quality norms.
18. It needs to imbibe a holistic culture – balanced in terms of values, ethos and behavior along with academic excellence and practical wisdom.
19. Ultimately the institutions need to be Affordable to a large cross section of society – cost effective for the students admitted locally, regionally and globally.
20. It must facilitate the students to step into global careers and real world environment with confidence and conviction.
21. The Global Educational Institutions must constantly review and audit the quality and excellence of the students coming out of the institution as visible self-certification of that institute that tick the institutional excellence and its mission success.



# EDUCATION AS A GLOBAL COMMODITY

*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.*



**Sapan Taneja**  
University of Warwick

## Abstract

Globalisation in the late 20th and early 21st century has truly been worldwide in reach with its echoes being felt deep in the formulation and modification of culture, society and institutions. Permeating every aspect of society, the impact of globalisation on higher education has been, and continues to be, immense. While the term has become a common buzzword in almost any contemporary discussion, it still remains tough to conceptualise as it functions and impacts on a number of different levels. For the purpose of this article we will focus on the effect of globalisation on the education sector. The global higher education market has expanded rapidly under the conditions of globalisation based on the principles of global competition. The impact of globalisation on education has been through the guise of neo-liberal economic policies and by its homogenisation to serve a broader and more diverse student population. Both of these aspects of will be examined in this article. But to first understand the impact of globalisation on the education sector one must also look at the impact that education has on economic growth.

## Education as a global commodity

Economic globalisation that became the key feature of the global economy in late 20th century led to the spread of neo-liberal policies worldwide. These policies are characterised by the rapid growth in cross-border trade in commodities and services. The WTO, formed in 1995, has advocated for liberalisation and promoting free trade leading to a massive expansion in global trade. The average share of imports and exports increased from 20 per cent in 1995 to 30 per cent in 2014. Tariff and non-tariff barriers have been cut down rapidly across the globe. Today 90 per cent of the world populace lives in open economies. This increased openness to trade also increases the demand for skilled workers in the economy and also increases their wages relative to unskilled workers. Liberalisation of trade provides a natural supply-side pressure to increase the number of skilled workers. Thus, for countries to compete in the global market, it became necessary to invest in human capital and education. This





led to a natural increase in the procurement of education through direct and indirect means. Increased trade gave a positive stimulus to education (both at the school and tertiary level) because education is needed for workers to remain competitive especially in high-skill industries. With the increased importance of knowledge economy in the growth and development stories of nations in the modern, interconnected new global economy there is a growing demand for trained and educated workers. With the additional focus on the knowledge economy in the 21st century, higher education has become increasingly important in its role of preparing people for a new globalised economy. This has meant that students in developing countries such as India and China face the need to attain tertiary education in the West to remain competitive in the labour market.

Furthermore, the WTO made education one of the many services brought under the ambit of the General Agreement on Trade and Services (GATS) in 2000, making it a tradeable quantity akin to services like banking and other commercial services. The alteration of education regulation being done over discussions at an international trade forum suggests how deeply economic globalisation affects current education systems (Verger). Discussion over the impact of GATS on education contin-

*The global higher education market has expanded rapidly under the conditions of globalisation based on the principles of global competition. The impact of globalisation on education has been through the guise of neo-liberal economic policies and by its homogenisation to serve a broader and more diverse student population.*

ues to rage on and has been polarised. Supporters argue that the mandate allows for greater innovation, student access and economic growth. Additionally, the WTO mandate does not lay down a particular framework for education nor does it push for a specific agenda. The nature of the GATS also does not necessarily force states to open their doors to foreign universities. But While Singapore and Malaysia have done so, they have done so on their own accord. China has also been liberalising its position on the matter while other developing countries such as India and Argentina are still considering their positions on accepting the GATS on education. Critics of this move have stated that this essentially shifted the meaning of education from a set of skills, attitudes and ideals required

to be a contributing member of society, to being an internationally traded commodity. Developing countries are also more hesitant to adopt this agreement because they do not have any offensive interests in the liberalisation of education service industry as their educational institutions will be unlikely to compete or penetrate foreign education markets. Thus, there is a distinct possibility that a worldwide adoption of the GATS will breed inequality and dependence. Research and innovation that is relevant to the United States may not be deemed necessary for a country such as Ghana or China.

## Internationalisation of education

Due to these shifts in global economic forces, educational institutions (universities and colleges in particular) have faced a number of changes in design, implementation and practice of education. Knowledge producers play a key role in the new knowledge economy. At the university level, globalisation has manifested itself in what is labelled as internationalisation. Internationalism encompasses the various ways and methods through which academic institutions cope or exploit the forces of globalisation. These methods include a wide range of services such as study abroad programmes, greater recruitment of international students, research collaborations and increasingly internationalised curriculums.

The flow of students studying abroad is almost entirely from the global South to the global North. The number of international students enrolling in universities in the West has increased substantially over the last few decades. Globally, international student mobility has grown from 1.3 million in 1990 to 5 million in 2014. The United States alone hosts more than a million international students out of which almost half are from India and China. While the integration of foreign students into a campus allows for greater cultural and social heterogeneity, it has also meant that universities now target international students as a major export. The recruitment of international students into universities is being seen as quick driver of revenue for universities. To push this recruitment universities



are increasingly setting up a number of offices abroad or by setting up satellite schools. This commodification of higher education has also led students to perceive education as simply a means to employment rather than for individualistic development.

While the composition of the student body may have diversified in universities, the curriculum has not. In fact, the opposite is observed with a number of higher education institutions aiming to standardise courses with their contemporaries. The MBA degree, which was developed to prepare American students for work in American businesses has become a standardised model copied in a number of other countries. While the programme may be tweaked to fit a local context, the framework remains distinctly American. Proponents of globalisation argue that the growing internationalisation of business education can help in creating internationally recognised business standards as well as spread best practice techniques. There has also been a shift towards homogeneity in the way institutions operate. The term “institutional isomorphism” has been used to highlight the ways in which universities have adopted similar methods, processes and policies. This is primarily driven by the increased global competition between universities and the frequent movement of administrators from one organisation to another.

### Globalisation and inequalities in global education

The forces of globalisation that have made education a commodity to be traded in the global market has also led to the rise of increased competition

between universities for international students. Unfortunately, much like other aspects of globalisation, there is a fear that this has enforced existing inequalities between larger and richer institutions in the developed world versus smaller local academies. The marketplace for international education is dominated by large, well-funded universities with little room for smaller institutes that cannot compete with their resources. Major journals and research projects are still conducted primarily in major institutes in the US and the UK. Many smaller universities in the developing countries do not have the facilities or the funding to conduct high quality research and thus become dependent on their larger, foreign counterparts. While countries in South-East Asia as well as China, Japan and India are increasing their funding for local institutions and striving to attract more foreign students, there still remains a large bridge to overcome before they reach the level of major Western acad-

*Globalisation in the late 20th and early 21st century has truly been worldwide in reach with its echoes being felt deep in the formulation and modification of culture, society and institutions.*

*Permeating every aspect of society, the impact of globalisation on higher education has been, and continues to be, immense.*

emies. As with all other discussions surrounding globalisation, the question of inequality cannot be avoided and this rings true even for the discourse on globalised higher education.

This inequality is also reflected in the over-reliance on the English language to communicate ideas and knowledge. This is a factor because higher education worldwide have had to deal with this over-reliance. Being the medium of almost all internationally renowned journals and publications being fluent in the language becomes key for students, academics and universities. These research publications are crucial for universities as it helps them improve their standing in the competitive global market. For countries like UK and USA, where most of these publications are printed and published, this gives them a further advantage over there non-English speaking counterparts. This has also proven to be beneficial for Indian and Pakistani students where English is the primary second language. However, other countries have had to adapt their methods. Courses are being increasingly offered in English to attract students in countries such as Japan, Netherlands, Germany, China etc. Adopting the English language has become another aspect of the modern, internationalised university that competes in the current education market. Regardless, the ubiquity of the English language as the medium for global communication has given a significant advantage to wealthy, English speaking countries.

### Challenges to global education

While globalization has been the primary driver of international economic, political and social movements the last few years have brought with them a noticeable upsurge in an anti-globalization sentiment. In Europe, this has manifested in the growing popularity of right-wing parties and was perfectly encapsulated by Britain voting to leave the EU. A study conducted by Germany's Bertelsmann Stiftung found that voters in the EU are increasingly favoring right-wing parties due to a fear of globalization. The election of Donald Trump in the United States is another prominent indicator of this





*In the United States the situation is still unclear. Donald Trump has sent mixed messages regarding his views on student immigration. While he has criticized the H1-B visa program he has stated that he favors letting international students stay in the US*

growing sentiment. The new commander-in-chief of the United States tapped the concerns of the frustrated middle class and targeted the globalization movement. The global economy is demonstrating this shift as well. International trade is growing at a slower rate at just 1.7 percent. Income inequality has also been on the rise within countries and is fueling dissent against the establishment. The rising tide against globalization is hard to ignore and it raises the pertinent question of how this will impact global education.

In the United States the situation is still unclear. Donald Trump has sent mixed messages regarding his views on student immigration. While he has criticized the H1-B visa program he has stated that he favors letting international students stay in the US. Still, the growing sentiment from international students in the United States is one of discouragement for universities with students questioning their place in Donald Trump's America. In post-Brexit UK, there have been talks of tightening regulations for student visa applicants. British Home secretary Amber Rudd has called for increased regulation on permitting international students into the country. Forecasts published by the Higher Policy Education Institute suggest that limiting

foreign students could cost the UK as much as two billion pounds per year.

However, despite these concerns the effect on student migration will probably not be particularly drastic. The United States hosts over a million international students as mentioned above and this number seems likely to continue to grow. The increasing income levels in India and China (countries that make up the greatest share of foreign students) seems to suggest those students will continue to invest in education abroad at least in the short-run. It is also important to note that anti-globalization sentiments seem to arise primarily from older voters. A public poll in the UK suggests that citizens do not see international students as a problem and would like their number to increase or remain the same.

Thus, while the trends may seem alarming it is unlikely that global higher education will take too many steps back due to the current political climate. Institutions in the United States, Australia, Canada, UK, Germany and New Zealand have taken extensive steps to attract more international students to their universities and the students continue to come in record numbers. Universities have also integrated beyond just attracting students.

There exist multiple tie-ups between universities and a number of research and collaboration programs. It is unlikely that the education system that has internationalized itself greatly will be willing or even able to revert back. However, policy decisions taken by the government will determine how global education will look in the long run. If the Trump and May administrations do take steps to restrict student visas or limit job opportunities for international students then students may strong reconsider studying abroad. While it may not necessarily mean the end of the global education as we know it, it will certainly shift academic centers from those countries to others more open to internationalization.

Global education, as we understand it today, has been profoundly affected by the forces of globalization over the last two decades. It is safe to say that these forces of globalization will continue to shape and refine our understanding of education in the future.

---

#### References

- Altbach, P. G. (2001). *Higher Education and the WTO: Globalization Run Amok*. *International Higher Education*.
- Bagley, S. S., & Portnoi, L. M. (2016). *Higher Education and the Discourse on Global Competition: Vernacular Approaches Within Higher Education Policy*. *Globalisation, Comparative Education and Policy Research*.
- (2016). *Fear not Values: Public opinion and the populist vote in Europe*. Bertelsmann Stiftung.
- Hatakenaka, S. (2001). *The Role of Higher Education Institutions in Innovation and Economic Development*. *International Higher Education*.
- Inglehart, R. F., & Norris, P. (2016). *Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash*. HKS Faculty Research Working Paper Series.
- (2016). *Population Briefing International student migration What do the statistics tell us?* Office for National Statistics.
- Stromquist, N. P. (2007). *Internationalization as a response to globalization: Radical shifts in university enrolments*. *Higher Education: the international journal of higher education research*, 81-105.
- Velde, D. W. (2005). *Globalisation and Education: What do the trade, investment and migration literatures tell us?* Overseas Development Institute.
- Verger, A. (2009). *The Merchants of Education: Global Politics and the Uneven Education Liberalization Process within the WTO*. *Comparative Education Review*.
- Yang, R. (2003). *Globalisation and Higher Education Development: A Critical Analysis*. *International Review of Education*.





**N N S Chandra**  
Lead Editor

The last few weeks have been good for me. I restarted an old tradition I once practiced, in which I would daily do a number of sun salutations on a yoga mat, the

movements helping to calm and collect my scattered mind. 30 years later, the setting is a little different, as I now go through the movements in a 'hot yoga' studio next to dozens of millennials in unnecessarily expensive yoga-wear. A little counter-productive to these recent attempts at an aerobic routine was the opening of a newly favourite Indian restaurant across from the local university campus. I figure, as long as I'm daily undergoing the national past-time of India, I might as well properly get into the mindset by indulging in my motherland's food and spices as well.

It was over a steaming bowl of Kashmiri Kurma that I watched the swearing-in ceremony of the newly appointed president of the United States, Donald J. Trump. After all these months, that still feels a strange set of words to put together; those who know me, and have read or heard what I've been writing and saying for the past year, should be able to grasp my take on his politics. And yet, as I watched him stand next to the previous administration, all I could think was that I sincerely wished him well. I have always been fascinated by the spirit of America, and for a brief moment, I shared in the set of hopes, dreams and fears that make up its people.

Aside from the ever plentiful distractions of American politics, I have also recently been a little obsessed about the idea of 'world order' (and in many ways, this was how the central themes of this issue of TiGES came about). This obsession is not a new one, as I remember I was intrigued by the same topic in many of my early years as a writer, activist and journalist. Back then, I questioned the merits of a global world order, debating the logistics and the infrastructure that would be needed, as well as the innately autocratic logic it seemed to require. What I had not anticipated, however, were

# LAST FEW WEEKS

*We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society."*

the modern cultural dynamics we see at hand, which in many ways I believe reflect the genesis of a new, truly global culture.

It is hard to deny that the recent global mood is favouring isolationist policies and leaders; from 'Make America Great Again', to 'Make in India', and even to the youth protests in South India of the recent ban of a local cultural tradition of bull taming (Jalli Kettu), there are many communities around the world, large and small, that are yearning for a return to traditional identity. However, I believe this is only the last in a series of backlashes against the coming arrival of a borderless world; one united by global culture, as I mentioned, but also via what others have labeled, the 'fourth industrial revolution'.

If one were to see water and steam as having powered the first industrial revolution, which mechanized the means of production, and electricity supplied the fuel for the second (enabling true mass production), then in my lifetime, it was the synthesis of previous components with information technology (computers and code) that triggered the third industrial revolution: automated production. The fourth in this series, then, would be engineered by a fusion of technologies, blurring the lines of our physical, digital and biological lives. Klaus Schwab, the founder and executive chairman of the World Economic Forum, had this to say about this latest paradigm shift:

"We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society."

In the early 1990s, while finishing my MBA, I wrote many papers and theses on the World Trade Organization,

the International Monetary Fund, and other attempts by nation-states at a top-down approach to world order. Needless to say, I was fairly negative and critical in my analysis. A few years later however, I would experience these concepts in practice, as I became a part of the army of migrants that were shifting locales in search of opportunity. It was among these 'global nomads' that I was able to work and study in different parts of the world, learn the theories of cultural relations, and use that knowledge to consult with and teach others. Now, I feel more at home among fellow nomads, enabled as we all were by the latest in industrial revolutions and with whom I share a common culture, than I do with any of the native citizens of the two or three countries I collectively call home. I think this is an example of a more positive outlook to world order, one that is not forced on unsuspecting people by distant technocrats in ivory towers, but a spontaneous, bottom-up approach.

Even as I ramble optimistically, it would be wrong of me not to acknowledge the fact that not all global nomads choose their path voluntarily. With a recent increase in conflict and tragedy, the world is witnessing the largest refugee crisis since World War II, with millions around the world displaced and desperate. I think about the unaccounted and the unacknowledged: from Syria's refugee university students to stranded academics in Jordan; education will be a crucial component to help these people toward a better life, and even perhaps toward an induction into a new global community.

I leave you with the somber words of Mahatma Gandhi, writing on the topic of education in Young India, September 1<sup>st</sup> 1921 "In my opinion, the existing system of education is defective apart from its association with an utterly unjust government

- (1) It is based upon foreign culture
- (2) It ignores the culture of heart and hand
- (3) Real Education is impossible through a foreign medium"



**Dough Wagner**

*A strong background in executive leadership in the non-profit and municipal and federal government sectors with demonstrated success in such diverse areas as media, marketing, communication, public policy, politics, Lean processes, budgeting, market research, and organizational development.*

*Specialties:*

*Professional and organizational development, executive level marketing, communications, public relations and policy making experience, including: United Way organizations and school districts. Local, state and federal government operations; local, state and federal politics, lobbyist, government relations, media and communications (both consulting and on-air personality), crisis and emergency preparedness communications, advertising consultation.*



**Doug Wagner**

## THE RISE OF CONSERVATERIANS AND DEMOCRACY IN AMERICA

In “Democracy in America,” (1835 and 1840) Alexis de Tocqueville wrote, “But one also finds in the human heart a depraved taste for equality, which impels the weak to want to bring the strong down to their level, and which reduces men to preferring equality in servitude to inequality in freedom.” Specifically, he was talking about his impressions of what was then the emerging American democracy. As America makes another peaceful and successful transition of power, these words ring true, even today.

We have reached a point in American history where those who believe themselves to be weak are clamoring for more government action to not just level the playing field, but to levels the results thereon. Take, for example, the Progressive desire to tax those who risk their personal, political or actual capital to make millions of dollars. We have watched, in the past ten years,

as Progressive candidates in American elections have moved toward a more European style of taxation that would strip away any impetus for people to become millionaires or more! Who would want to see the rewards of their hard work removed from them by force and redistributed to anyone else, especially a government that is notorious for its lack of frugality?

As an aside, today, we find ourselves, as an American nation, talking about more free markets, more freedom from government and more rugged individualism...and I’m not talking about the 45th President of the United States, Donald Trump. What I’m talking about is the rise of those who are named, Conservaterians. These people are truly in step with de Tocqueville, in that they wish to draw all people up to the standard of living that they can achieve, rather than disposing them to the nearest government program.



*As an aside, today, we find ourselves, as an American nation, talking about more free markets, more freedom from government and more rugged individualism...and I'm not talking about the 45th President of the United States, Donald Trump. What I'm talking about is the rise of those who are named, Conservaterians. These people are truly in step with de Tocqueville, in that they wish to draw all people up to the standard of living that they can achieve, rather than disposing them to the nearest government program.*

Again, this is not about government dictating where we finish. The American Judeo-Christian ethic teaches us that God creates us equal, and how we find our way to our Maker again is up to us. And it is in this that I fear that many things about American society have been flipped on their head. Long dead Classical Liberals would be outraged to see what has happened in their "name" of "liberals." de Tocqueville even warned of this in his writings, saying, that in America, "The majority has enclosed thought within a formidable fence. A writer is free inside that area, but woe to the man who goes beyond it, not that he stands in fear of an inquisition, but he must face all kinds of unpleasantness in every day persecution."

We see this today in the form of the

#NotMyPresident and #NeverTrump campaigns, even after he has won the White House. Yes, there is a great American freedom of peaceful protest, but these protests get to the heart of what separates America from every other country on the face of the earth, and for all of history. That is the fact that after the ballots have been counted we have all put our differences aside and worked together for the good of America and her people.

Conservatives who once claimed rugged individuality as their calling now reach for a more collectivist ideal. Progressives who once leaned on the collective as their claim to power, now desire for government to enforce the individualist ideals their small groups desire so as to be part of "the norm." Homogeneity, which was once thought

to be what "the man" wanted for us, is what the very same people who had walked away from it now strive for. Unfortunately, that toys with not just time honored definitions of so many areas of our lives, but simply regards the ideas of the Judeo-Christian ethic our country was conceived upon as outdated material.

Speaking of outdated material, if you're interested in a foreign reading of how the American founders did and how an America of more than a century and a half ago looked, I encourage you to read Alexander de Tocqueville. Drink his words thirstily, but not greedily. Pay attention to the meaning behind his words, and read how they seem timeless. As a final taste, this quote, "There are now two great nations in the world, which starting from different points, seem to be advancing toward the same goal: the Russians and the Anglo-Americans... Each seems called by some secret design of Providence one day to hold in its hands the destinies of half the world."

While not Nostradamus, he was definitely a seer of the future, as well as of his day.





## AROUND THE WORLD IN 80 TRIALS: A NEW PARADIGM OF **GLOBAL RESEARCH**

**Achyuth Chandra**

*Achyuth is a Master's student of Clinical Psychology & NeuroSciences at the University of McGill, who specializes in the psychosomatic outcomes of chronic illnesses. In particular, his work focuses on patients afflicted with systemic sclerosis, an incurable auto-immune disorder.*

*He has published numerous papers and presented at regional and national conferences. He resides in Montreal, Canada.*



**Achyuth Chandra**

In April 16, 1917, in the waning years of the First World War, the Kaiser of Germany smuggled a devastating weapon from Switzerland to Russia through Berlin in a sealed train box-car. At that time, Russia still posed a significant threat to Germany's eastern flank, but in six short months, the delivered weapon would directly result in the utter demolition of the Russian government and the end of Russia's involvement in the war. This weapon was not a bomb or a gun or poison, it was an idea in the hands of a man named Vladimir Ilyich Ulyanov; better known to us today for his alias: Lenin.

The story of Lenin's infamous return to his motherland is a prime illustration of what I want to talk about today: the immense power of movement of thought. History is ripe with such examples. It was the translation of Greek texts of antiquity to Arabic via

*In the past decade, China, India and Brazil each more than doubled their spending on R&D - which enlarged their collective contributions to global research spending from 17 to 24 percent.*

Eastern Orthodox monks that initiated the golden age of Islamic science and philosophy, and it was the subsequent transfer of these Arabic translations (and original work, such as of





the great Islamic philosopher Averroes) into Latin via the Crusades that was the genesis of the European renaissance. Or, to turn again to the 20th century, we could examine Operation Paperclip, the American intelligence program that recruited more than a thousand German scientists following World War II (many of them former leading members of the Nazi Party), who subsequently built the foundations of NASA and the Space Race that was to follow between the USSR and the United States.

Note that all of these are examples not only of the movement of thought, but also of the movement of people. It is easy for us to ignore what used to be a pre-requisite of thought transfer: physical migration. In our modern, technology-oriented, globalized world however, this component is no longer necessary for intellectual and cultural interaction, and this freedom has exponentially increased the amount of scientific collaboration in the past 20 years.

Let's look at a few of the relevant statistics: in 1996, only about a quarter of scientific papers were authored by researchers from two or more nations; at the present, that number is closer to 40 percent. In 2008, the ratio of publications authored together by American scientists and researchers from other countries was 30 percent, as compared to only 16 percent of the same ratio in 1996. South Korea today ranks third in the list of countries who file patents at the United States Patent and Trade-

*In April 16, 1917, in the waning years of the First World War, the Kaiser of Germany smuggled a devastating weapon from Switzerland to Russia through Berlin in a sealed train boxcar. . This weapon was not a bomb or a gun or poison, it was an idea in the hands of a man named Vladimir Ilyich Ulyanov; better known to us today for his alias: Lenin.*

mark Office, whereas 25 years ago they would not even place in the top 10. Turkey, in that same time frame, has multiplied its research and development budget by six and increased its number of researchers by 40 percent.

In the past decade, China, India and

Brazil each more than doubled their spending on R&D - which enlarged their collective contributions to global research spending from 17 to 24 percent. One could list these sorts of figures for a long time, but all of them lead to an undeniable truth: there has been a monumental increase in the capacity of scientific research to reach across sovereign borders and into nations previously underrepresented in the global science field.

Though we began this article with the story of an infectious idea bringing down a government, it is difficult to deny the increasing intensity of research collaboration in the 21st century has been anything but positive. In fact, we take many of the finest products of this paradigm of international cooperation for granted: the Human Genome Project, the Large Hadron Collider in Geneva (with which the God Particle, the Higgs Boson was officially discovered), the Rosetta spacecraft (the first to land on a comet), the International Space Station, and many more. In this regard, globalization has been a benefit to science and to our species. We must be careful not to overstate this case however, as the great fruits of this phenomenon does not mean that there are not equivalent dangers to overcome in the new global research paradigm. Although we have increased in our capacity to collaborate and organize, there are still many risks and challenges we will continue to face in the years to come.

Ironically, one of these issues has to do with the very thing globalization was thought to solve: increasing im-

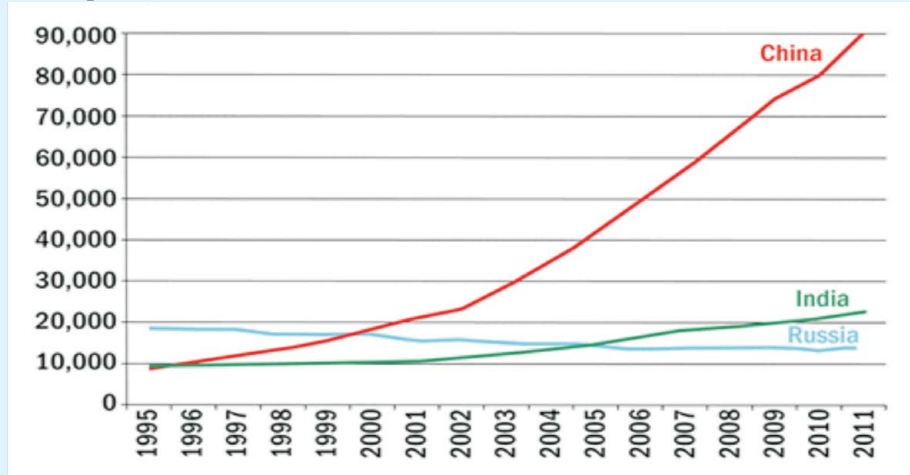


Figure 1 : Annual output of published science papers in Russia, China and India, 1995-2011  
Source: NSF, 2014/Simon Marginson

*Another major issue the global research community faces is the corrupting influence of external power-brokers on the research process itself. This is nothing new of course, for thousands of years, state governments have been using and abusing the products of science to their own ends; however, modern science is undoubtedly less starkly divided along nationalist lines than it ever was.*

pediments to international migration. Though, as I mentioned prior, this is no longer a requirement for collaboration, isolationist immigration policies (like those the president-elect of the United States wishes to implement)

can still severely limit the workings of global research. Although virtual communication has never been easier, many colleges and research institutions face increasingly strenuous problems associated with immigration—from collaborators unable to obtain visas to graduate students accepted into programs but unable to enter the country because of their nationality. Security is (and should be) a top priority for every nation in the world, but I believe we will need to re-examine and renegotiate the costs and benefits associated with more conservative national policies if we are to maintain and extend all the enormous achievements of scientific collaboration.

Another major issue the global research community faces is the corrupting influence of external power-brokers on the research process itself. This is nothing new of course, for thousands of years, state governments have been using and abusing the products of science to their own ends; however, modern science is undoubtedly less

starkly divided along nationalist lines than it ever was. This does not mean it has lost its power to disrupt the status quo. One only has to look at the enormous pushback on research into climate change by Big Oil to see how threatened some factions are by scientific thought. There are a number of methods that corporations, governments and other interests looking to subvert the power of research utilize: they can reduce agency effectiveness by hindering regulatory processes and pushing for censorship, they can influence political and legal systems into forced ignorance of scientific work, and most effectively, they can corrupt the science itself; often through publishing flawed scientific articles of their own, with very specific agendas and biases in mind. Modern researchers and scientists have to be aware of this external influence and guard against it; perhaps even more importantly, public regulators must fulfill their mandate and protect their citizens from these negative effects without falling victim themselves.

There is an ancient Greek proverb that reads: society grows great when old men plant trees whose shade they know they shall never sit in. Exactly 102 years from the day I write these words, Lenin passed away at the age of 53, never to know the full impact of his train car journey on the 20th century and beyond.

In my time, I no longer have to spend 9 days in a boxcar to share a powerful thought. We enjoy an unprecedented capacity to collaborate and communicate, to move and share our ideas with one another, regardless of location, ethnicity and creed. The effects of globalization, as much as it has been a mixed bag in many contexts, in the realm of science, it has been an emphatic success. It is a success, however, the continuation of which will require careful oversight and protection. From guarding against the malicious influences of government and corporate actions to finding workarounds for changes in state policies, all scientists and researchers share the responsibility for the maintenance of the tree of global community, to allow the next generation of thinkers and shakers to enjoy its shade.



Figure 1 Chart of Scientific Paper Collaboration between Countries





## WHERE ARE WE NOW ?

*Sohom Bhowmick is currently at Senior at University of Iowa. He is currently pursuing Economics and Management In his under graduate studies. He is currently working for TLUPS as the program Coordinator for Student Enrichment Program and sub editor for leading education research journal.*



**SohomBhowmick**

**I**t was August 17th 2013, when I first arrived to United States in hopes of gaining a better education and opportunity to have a place in the job market. My parents, teachers, friends even my house watchman believed that I will have a place in the American labor market. When you study economics you learn about labor markets and in those predictions 2017- 2018 would be a year where there would be a lot of opportunities for students who graduate with an undergraduate degree. Since the rise of Donald Trump whose new address is 1600 Pennsylvania Avenue, sentiments have changed in college campuses. People are shouting to 'Keep Hope' 'Not to give up' 'Fight for your rights' but I honestly say I am very scared at this point of my life. If someone asked me before November 8th if after graduating I would secure a job with an Economics and Entrepreneurship degree, I would smile and I would say yes because I believed in my

*If someone was asked me before November 8th if after graduating I would secure a job with an Economics and Entrepreneurship degree, I would smile and I would say yes because I believed in my capabilities as a student, however post American elections I don't have that smile any more.*

capabilities as a student, however post American elections I don't have that smile any more. It's not just me who is confused and but all the other international students who came at the hope of staying back for couple years, learn the American work ethic and go back to their home country and help it grow. Unlike the previous generations of students who arrived in 1990's because the situation in India was not attractive or in other lacked opportunity, Ameri-

ca used to be destination for everyone who aspired for a better living. With the millennial who arrived to the United States post 2010 don't have long term ambitions to settle in their adopted country. I would lie if I said I don't want to stay back in the United States, but I believe I need to imbibe certain professionalism, the structure on how business operate and then implement the American way of work ethics in an professional environment which India lacks. I believe the West has grown to a level of power where developing nations such as India and China aren't given the same playing field. But that has to change because more than half of the population is in developing countries and human capital will be key in terms of innovation and in terms of capital expenditure. Chaitanya Krishna who is a student at University of Iowa, studying Computer science is very keen in working for Google. It is his dream company as he intends to specialize in Artificial Intelligence. After these elections he is confused on what should be his next steps even as a student who specialized in a STEM field he is finding it difficult to make up his mind after this election climate. However, at the end I believe the Indian software companies are to blame.

*In my situation, my family does not have its own business. My parents are career corporate employees. Therefore I have to break barriers and stand for myself and build a name for myself. I have to survive the competition amongst the labor market and give my hundred percent towards the company.*

Thirteen outsourcing companies who are based out India take one third of all H1B visa. Seventy percent of the H1B visas went to workers from India which have displaced home grown jobs. Indian outsourcing companies have abused this program which has affected jobs to both Americans and incoming international students. The recent incident with Disney, where the American employees were substituted for Indian workers who were being paid a salary of a minimum of \$60,000 compared to \$85,000. When I discuss with my American peers, I develop a sense of openness but also the idea that there

is a sense of resentment amongst people. While they are open to accept new cultures, the idea of their jobs being replaced by someone not part of their culture makes them inferior. However there are students like Vedant Agarwal who studied Business Management in University of Iowa, whose family owns one of India largest textile business believes in making his country toward a path of high economic development. He says 'I want to work in India and make my business grow in South East Asia.' His clients include big retailers such as GAP, Old Navy, Jack and Jones and if he wanted he could have secured a job in one of these companies. Instead he wants to back, implement the knowledge he learned in college and expand his empire. In my situation, my family does not have its own business. My parents are career corporate employees. Therefore I have to break barriers and stand for myself and build a name for myself. I have to survive the competition amongst the labor market and give my hundred percent towards the company. With uncertainty for immigrants in next couple, I still believe in the land of opportunity and the American Dream which is still intact amongst the livelihoods in America and I want to be a part. □



Radio New Zealand





Pravda

**Alphonse O'Bannon**  
 Head Coach, Transition Lab  
 University Preparatory School  
 2220, NE Ave, SW,  
 Cedar Rapids, Iowa 52404  
 Alphonse.obannon@ytransi-  
 tionslab.com  
 319-533-5095

*Alphonse O'Bannon is Busi-  
 ness and Motivation Coach.  
 He is the Head Coach at  
 Transitions Lab University  
 Prep School (TLUPS), the  
 founder of the LBA founda-  
 tion (non profit organization  
 inspire hope in tomorrow's  
 leaders, believers and achiev-  
 ers.), member of Study Iowa,  
 associated with NACAC,  
 OCACA, ACA and  
 ASCA, and a veteran  
 US Marine Corp*



**Alphonse O'Bannon**

## DREAMING A LEADERSHIP

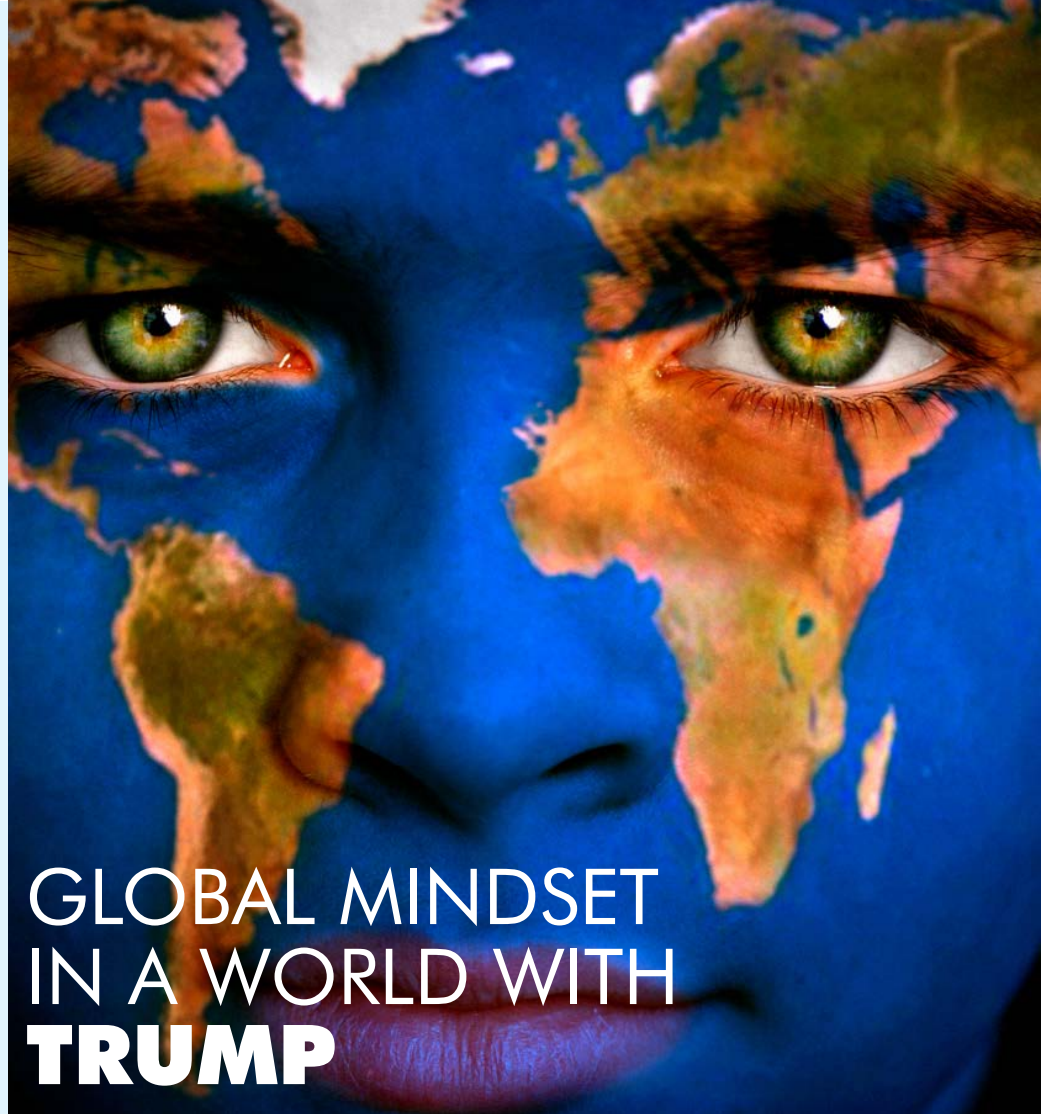
There is nothing unique or special about how Americans recognize the American Dream. Many will tell you that where we stand, right now, is not very dream like. Each iteration of the American Dream, isn't vague and isn't surreal. The American Dream most seem to connect with is simple... find the rungs and climb up the ladder. From the heights, you'll see farther, which will drive your hunger to climb even higher. For some, this is only part of the American Dream.

This more inclusive group welcomes lofty success, dynamic careers, wealth accumulation and even fame, but they also believe that the American Dream includes leaving our children a better and a quality life. At least two thirds of pre-Millennials believe that we are better off than our parents, which implies that the system in which we live in is working. I believe that the secret to achieving the American Dream is the proper determination of your educational path. A recent poll shows that many agree. In this poll, nearly half believe that education is path to the American Dream as opposed to roughly 10 percent who believe that the American Dream is a product of being born into wealth. Pair education with a strong work ethic, and you hav

*The American Dream most seem to connect with is simple... find the rungs and climb up the ladder. From the heights, you'll see farther, which will drive your hunger to climb even higher. For some, this is only part of the American Dream.*

the ingredients for success.

As we take in the results of the most recent Presidential election in the United States, there are mysteries within the divide of the two major political parties and in how they view the traditional aspirants to the American Dream, which are immigrants. 45 percent of Democrats say immigrants mostly help the United States compared to 53 percent of Republicans who believe they hurt the economy. Wall or no wall, both parties agree that immigration reform is essential, so there is some common ground from which to start. It is clear, by the passion of all involved, that the American Dream is in as good of shape as it has ever been



# GLOBAL MINDSET IN A WORLD WITH **TRUMP**

WordPress.com

*Professor Dan Sheffield is an adjunct lecturer at Tyndale University College & Seminary in Toronto, Canada. He is a sought-after educator and coach in the area of intercultural studies and cross-cultural communications.*

*Professor Sheffield has lived and taught in Egypt and South Africa, with extensive consulting experience in South Asia. As a father with two college-age adult children, he also understands the concerns of parents regarding education and international living.*



**Dan Sheffield**

[dsheffield@cultureshift.org](mailto:dsheffield@cultureshift.org)

As Donald Trump was being inaugurated as the 45th president of the United States in Washington, DC, I was teaching a class of graduate students in Toronto, Canada. The following day, female members of my family participated in their local Women's March to protest that inauguration. A few days earlier, I had been visiting in Niamey, Niger, an economically-challenged, African, Muslim-majority country on the southern side of the Sahara Desert. Each of these social locations (Washington, Toronto, Niamey) provide interesting vantage points as we consider the need for developing a global mindset, or cultural intelligence.

By global mindset I mean a certain set of attitudinal and practical markers that help persons navigate the diverse world that we live in:

**Mindfulness**, or the ability to pay attention in a reflective and creative way to cues in intercultural settings.

**Knowledge**, or awareness of the role

of culture; how specific cultures vary and how culture impacts behaviour, including communications.

**Motivation**, or curiosity about cultural differences; a desire to learn and explore with confidence.

**Behaviour**, or developing competence in discerning and adjusting to appropriate responses in intercultural settings.

As a Canadian, shaped by a certain set of cultural values, with no real stake in American politics, the symbols and traditions of the US Presidential Inauguration have limited meaning for me. However, I have a number of good friends who are Americans and so I try to be mindful of their perspective on things without imposing my own opinion, as an outsider. Very quickly I realize that any group of Americans is likely to hold significantly different perspectives on a whole range of topics – is there really a “typical American” viewpoint?

I try to gain as much knowledge as possible about their history, social context



and political environment, so that I begin to understand their story – from their perspective. What's with this business about the Electoral College and the popular vote – an obscure bit of American politics about which we heard a lot following the election?

I am motivated to learn and ask questions, to discern how the changing in environment in America might have an impact on us here in Canada. Trump wants to build a wall along the border with Mexico, will he want to do the same with Canada? Will his views about women and immigrants really affect us drastically here in Canada?

If I am going to be culturally intelligent in regard to my behaviour, will I need to make any adjustments when travelling to the USA? Do I know in which social group it is appropriate to voice my perspective without being attacked verbally? Even the Women's March was excluding some women who didn't hold a neo-liberal political

*As a Canadian, shaped by a certain set of cultural values, with no real stake in American politics, the symbols and traditions of the US Presidential Inauguration have limited meaning for me. However, I have a number of good friends who are Americans and so I try to be mindful of their perspective on things without imposing my own opinion, as an outsider.*

perspective, but who wanted to march in solidarity against Trump's attitude toward women.

Those were all the types of issues we were discussing in my graduate class, with students from around the world

sitting in the room. These are the kinds of conversations that adjust world-views and develop a global mindset – paying attention to things from the other's perspective.

A week earlier, however, I was talking with friends in Niamey, Niger. We were talking about the illiteracy rate – among university graduates. We were talking about xenophobia toward economic migrants from surrounding countries taking jobs from locals. We were talking about lack of access to basic medical care. We were talking about food security issues for the average family. The challenge for a Westerner in this context is to resist the urge to “solve” all these concerns. Again, I need to listen, to pay attention, to learn, to ask questions and to adjust my behaviour and attitudes, as required.

What didn't come up at all? Talk about Donald Trump.



StyleCaster



*Chirag Jadhvani is a creative and articulate 16-year-old web designer and entrepreneur at Chirag Technologies and an IB student studying in Podar International School, Mumbai. He has three years of experience in website development and has been producing web videos since last one year. He focuses on achieving as much experience and knowledge as possible in the field of Computers and Web Science. He aspires to reach out to every student in his community and share with them the power of technology that he has.*



**Chirag Jadhvani**

## TECHNOLOGY IN SCIENCE, BUSINESS & ARTS

What are the attributes of a community? Many would say 'socialization'. Yeah, that's true, but in my opinion, an essential quality is a research and development made in the community. Communities encourage research and development as in their cultural practices, learning about their history and people. As a matter of fact, the Research & Development made in the given chosen field by various communities have done things possible which we never thought of by peer feedback, collaboration, learning new concepts, etc. where I learn the most of these on YouTube. YouTube is a community where even the viewers are a part. I have experienced both the roles of being in the YouTube community, and I encourage everyone just to start sharing in this vast forum about their knowledge, experience, and perspectives! Today our society endures on the research and development made by geniuses all around the world and this

article is about the research & development made from a technological aspect in science, economics, and arts where we are so much reliant on these developments. From the independent analysis, we will review various perspectives of students and teachers having expertise in their subject and what do I think about their views. Considering the opinions of personages specializing in their field and my opinion where I specialize in Computer Science will have an accurate analysis where technology plays a vital role in different areas of knowledge.

Starting with the subject which fantasizes me the most, Arts! When asked from a student (Khushi Dalal) passionate about Films and Animations about technological development talks about contrasts in technology we had back then and now. Like 3-D technology, the CGI, Animations. She has to say, everything in Film industry is about





*I can see a future where work is done by machines. Research & Development is at its peak in making it possible. Multinational Corporations and Government are lining up funds for this advancement. Here from all the fields, we can analyze that the machines are replacing humans.*

being creative! Her daily use of technology is communication, networking, research as in recipes, restaurants, etc. which is made human life a lot easier!

Being in web video production for two years, I completely agree that for being successful in the film industry, a director has to be creative. With the development of technology in the field of arts has created so many opportunities for people to use their creativity. Areas such as photography, animations, editing, web design have created new job opportunities and an inspiration for people to do what they love! Like for me web design and web video production! #BeingCreative

Coming to Business and Economics, Technological development in the field of Commerce is remarkable. There are many successful businesses which owe their success to the research & development made in technology. There are new lines such as application development created as a result of such advances. When asked from the IGCSE world topper in business and mathematics (Gantavya Pahwa), he believes that E-Commerce businesses have changed the way a market works. Other than E-Commerce there are new companies such as Uber for transport. Communication is a lot better with

iMessage and Skype. Development of GPS technology, for education use of Google Classroom.

Yeah, that's true, but I believe with the entering of E-Commerce stores, there is a shrinkage in real shop owners. The relationship established with a store owner is far more unique as there is a trust seal. Because of E-Commerce, many jobs would be created but far more will be terminated, affecting the economy. Considering the developments in GPS technology such as Google street view can be used by certain clandestine terrorist groups for planning their operation because of which this feature is banned in India. Considering online Classrooms and E-books, in my opinion, the relationship or the personal sense which we have with a teacher and book is absent which we can never ascertain with a computer.

When asked from an IB Physics, Computer Science & Math HL student (Ekaansh Roy), passionate about aerospace engineering and Computer science on what he thinks about the technological developments in Science contrasts the technology we had a century back and current, where the development made, is phenomenal. That's true. The development and advances made are at an

exponential rate. But he also considers issues such as Global Warming were bringing an end to life, and that organization like the SpaceX can save human life by migration to Mars!

Global Warming is a serious issue considering bringing an end to life and looking forward to another Ice Age; I believe in saving human life, technological developments can help in migration to Mars and coming up with other practical solutions.

From a mathematical standpoint (Shritanjay Bhatia), a student with expertise in the subject has to say that the technological developments have made graphical modeling with the help of Graphic Design Calculators and algebraic calculations a lot easier.

In contradiction I would say, the use of such calculators has decreased the feature of mental mathematics. I believe mental math is a brain exercise which makes the brain more responsive and healthy.

From a teacher's perspective, technological developments have eased the complicated task. There's more efficiency in work product, and transactions are protected and simple. But also it has made human lazy, and that machines have replaced human brains!

"Machines have replaced human brains" when I asked the professor to elaborate on what does this mean, he answered in the same context of what I was thinking. Current jobs such as in manufacturing have decreased and considering the example of calculators and mental math.

I can see a future where work is done by machines. Research & Development is at its peak in making it possible. Multinational Corporations and Government are lining up funds for this advancement. Here from all the fields, we can analyze that the machines are replacing humans. Technology has made lives better and secured. But this may also lead to destruction. Technology is useful to a certain extent which everyone says but yeah even I say the same!



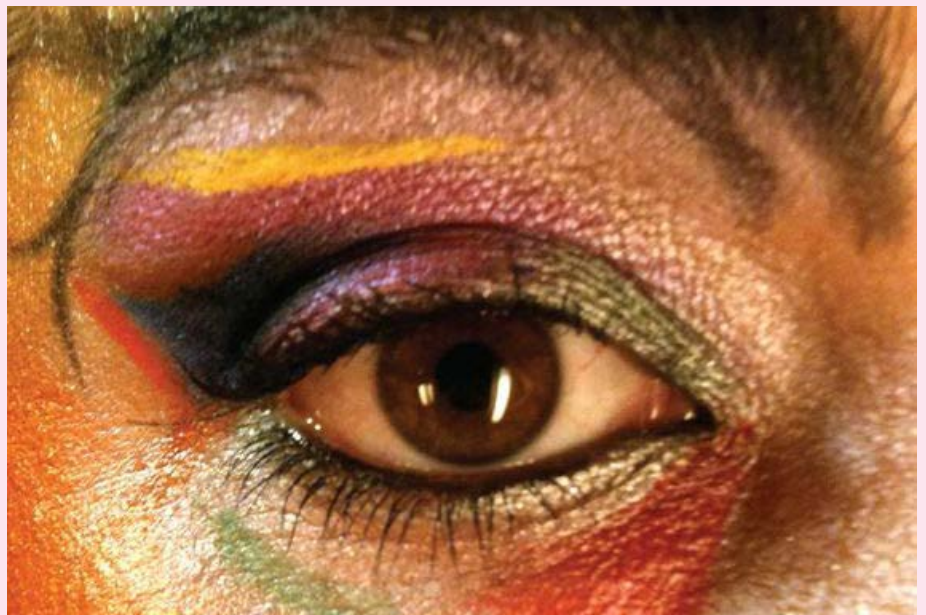
*Nancy-Angel Doetzel, PhD, is an assistant professor at Mount Royal University and sessional instructor at the University of Calgary. She is an awarding winning scholar, journalist and musician from Ontario. For her doctorate dissertation, she won a Distinguished Dissertation Award, resulting in the publishing of her two books: Cultivating Spirituality in Education; and, Old Heart Child's Eyes. She is currently conducting research about complementary medicine and writing a third book. She received her MA, HBA, HBSW, and BA from Lakehead University and her PhD from the University of Calgary.*



**Nancy-Angel Doetzel, PhD**

[nndoetzel@mtroyal.ca](mailto:nndoetzel@mtroyal.ca)

Professor and researcher Mount  
Royal University, Calgary  
Faculty of Sociology



# AUTO ETHNOGRAPHIC RESEARCH: KNOW THYSELF

## Abstract

A major goal of conducting “autoethnographic research” is to assist researchers to better understand the progressive journey of student learning in order to improve their own teaching strategies. This form of self-actualizing inquiry is a type of autographical narrative that explores a researcher’s life experiences. It is currently becoming widely used in the sociology of news media, performance studies, journalism, communication studies, management investigations and novels. In this paper, the researcher will outline how journal entries, newspaper columns, songs and diaries can all contribute to such an inquiry. The goal of the paper is to inspire other scholars to engage in this self-actualizing approach to research. Some life experiences shared within the paper will be examined and analyzed through an appreciative inquiry

lens, which encourages the intention of working towards the highest and best in one’s life. The paper will commence with a brief literature review addressing auto-ethnographic research.

## Introduction to Study

I acknowledge that no two people exist within the exact same reality, or construct duplicate meanings from their individual life experiences (Doetzel, 2011). Nobody views an event from an identical stand point, or shares a totally common perspective about life. Each of us embraces our own unique reality and versions of truth. What I share from my writings, within an autoethnography, is based on my own remembered reality, and the meanings I have attached to whatever challenges, I faced. I have written a book with a sincere commitment to present insights that I have gained from being a daughter, wife, student, journalist, friend, sis-

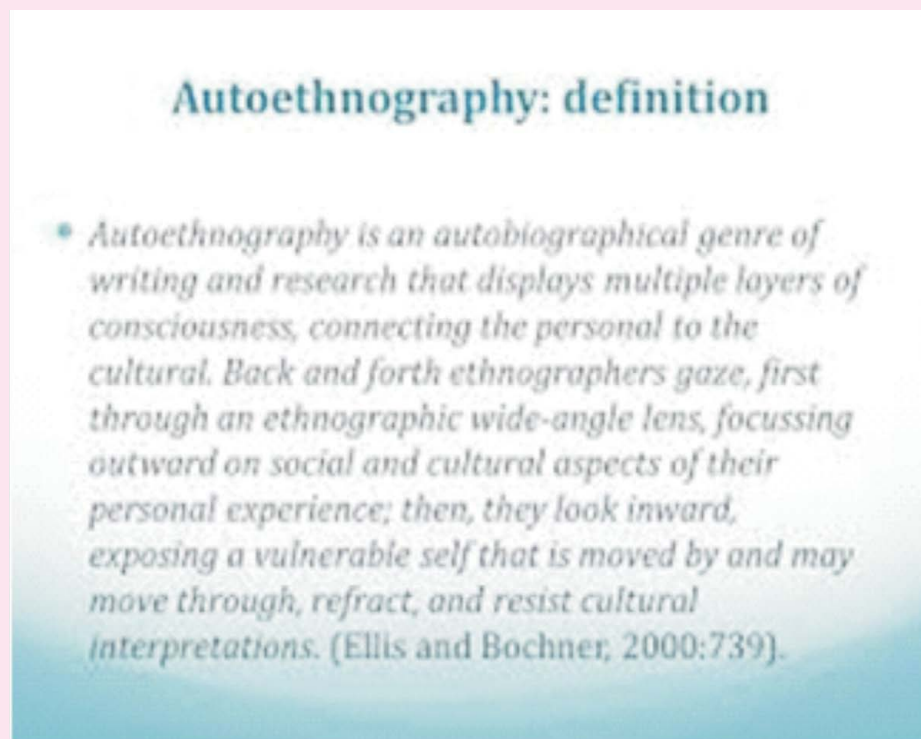


ter, educator, musician, researcher and cancer survivor. My autoethnography is heart centred and expresses my deepest felt truths. I commenced writing the book, after being diagnosed with cancer and informed that I may only have six months to live.

While on my scholarly journey to obtain my PhD, I apply teachings I received when studying to be a social scientist, therapist and educator (Doetzel, 2003). I examine my life experiences through the lens of appreciative inquiry, which encourages us to observe a glass as being half full, instead of half empty. I incorporate my newspaper columns, songs and journal entries to reveal my life story. Through my writings, I share ways I worked towards honouring my commitment in marriage, forgiving the man who took my brother's life and applying spiritual insights gained from a childhood new-death experience.

My autoethnography is dedicated to my family and friends who have stood by me during my fight to beat cancer and my scholarly journey towards obtaining a PhD. An autoethnography is a reflexive account of one's own experiences situated in culture (Fisher, 1986; Pratt, 1992; Russell, 1999). It puts in play a questioning of the "positionality" and the constitution of the self in autobiography.

Catherine Russell (1999) is convinced that, as literary genres, autobiography and ethnography both have a commitment to actuality, or factuality. She refers to Michael Fischer's (1986) discussion of the writing tactics of autoethnography as 'ethnic autobiography': they are meta-discursive, in that they draw attention to their linguistic and fictive nature. In the context of film and video making, autobiography becomes ethnographic from the moment that the maker understands his or her personal history to be part of larger social formations and historical processes, or, in other words, when the maker no longer understands him- or herself to be a 'self', as isolated ego or as solipsistic experience, but as a 'self' whose experiential self-realization occurs through intersubjectivity and intercorporeality. The self becomes understood as a staging of subjectivity, grounded in intersubjectivity and



intercorporeality. In other words, the performativity of the self becomes apparent, not in any simple theatrical sense (which the word 'staging' might seem to suggest), but in the sense of having to be repeatedly performed or played out in distinct contexts, discursively and intercorporeally: a subject in sociality and historicity, not a 'self' in isolation. Subjective identities are irreducible to a single self, and may indeed be in conflict with one another. Thus, Russell argues, autoethnography becomes both a vehicle and a strategy for challenging those forms of identity which are imposed and for exploring discursive possibilities as authentic/in-authentic subjective identities.

Russell (1999) wishes also to include a positive "self-fashioning" within the category of autoethnography, for example in such writing, filming or video recording in which the ethnographer represents him or herself as a fictional character within the narrative discourse, thereby inscribing a subjective doubleness within the text, whether linguistic, pictorial or visual in character. The imperial eye looking back on itself is also a subject in history and subject to history.

Taking into consideration some of the literature review, I commenced my

autobiography with the experience of having been diagnosed with cancer and then shared the experience of surviving a "near death experience" (Doetzel, 2010).

### **Introduction to Old Heart Child's Eyes: A Diary of Miracles**

Chapter 1: Loving to live (Doetzel 2011)

Oh God, no! A life threatening illness cannot really be happening to me! There are too many experiences yet to be lived, too many songs unwritten, too many photos not taken, too many friends I haven't met, too many stories untold, too many dances not danced, too much knowledge to be gained, too many students waiting to be taught. I feel like a helpless caterpillar attempting to dodge being trampled on and crushed before spinning a cocoon and ever reaching a full butterfly stage. I am anticipating some kind of divine intervention, to alter my circumstances. I am trying to view my circumstances through child eyes.

I love working as a photographer and reporter for a community newspaper. I am in the commencing stages of completing writing and singing songs for a new CD. I have just finished my

university master's thesis and I have been accepted into several doctorate programs. I recently celebrated a major wedding anniversary, on the shores of Lake Superior, with Ken. I am very passionate about life and aspire to live a very long time.

Tears are flooding my face as major clouds burst within my thundering heart. Fragments of my life are flashing before me like lightening casting shadows upon my future. I stare at photos of my father and brother and I feel a tugging-towards-heaven sensation. I question whether or not I am going to take a sudden flight on the wings of God's angels to join my brother and dad in heaven. Am I being called to return to my Creator, I ask myself? The thought of leaving some loved ones behind in this world, to unite with other loved ones in heaven, feels like a tug of war between two realms.

I scan the photographs on my wall reminding me of my childhood days. Pretending not to know what I knew was often a means of survival for me in a world demanding conformity to a set of norms. When not embracing my authenticity, I felt like I wasn't being true to my Creator, to my Irish / Aboriginal culture, to my elders and to myself. Now, I am wondering if I can pretend not to know what I've just been told about my illness. Can I wash it away, like an ocean wave eradicates footprints in the sand? I question whether or not my nagging passion for living every day to the fullest has been some kind of indicator that my life could be cut shorter than I ever anticipated.

I recall teachings I received about appreciative inquiry. I reflect about the best of what has been and what is. I envision possibilities of the best of what might be. I think about the best of what should be, despite the cancer diagnosis. I apply faith and hope, while envisioning and praying for the best outcome to occur. I foresee myself being healed. This realm of possibility is within me.

I read some of my reflections written in my treasured birch-bark diary. The writings demonstrate my innate yearning to hold an unconditional positive regard for others. Within my writings,

fact and fiction are bound in kind of a sacred discourse. Everywhere I went, I carried a diary, as if it was attached to my heart with a sacred golden string. I believed that someday I may revisit my past experiences, through my writings, and perhaps discover a new version of who I am now, and who I was then, and what my truth is.

My printed notes etched in a ragged diary, with the title, "Grade 3 Mean kids," tug my heart whenever I read my prose about having received "the ugliest kid award" at age 7. It was recess when my peers saw me relaxing beneath a birch tree on the school grounds. They rushed towards me laughing and then handed me a sketch of a skeleton wearing huge glasses and having one eye double the size of the other. (I was very skinny when in grade three and I did wear "coke bottle" type glasses that magnified one eye which I had poor vision in.) But, when I look back, I can recall that there were also other students who were very thin and wore glasses.

Another diary, hidden in a trunk, contains many tear-stained pages with inscribed messages, I wrote during a lengthy hospital stay. At age ten, I was diagnosed with double pneumonia and spent recovery time in an oxygen tent in a hospital during the Christmas season. I coughed continuously and sometimes at night and I would totally lose my ability to breathe. I felt as if someone was strangling me, and when attempting to scream for help, I could not speak. I felt paralyzed and helpless lying in bed in a dingy hospital room, wondering if I would suddenly fall asleep and never wake up again. One evening, I fell into a very deep asleep and then awakened suddenly gasping for air. My lungs seemed to have stopped functioning. I called out to Jesus, and felt as if He was embracing me. Suddenly, a nurse started to pound my back and it seemed as if I was able to breathe again. She mentioned that I had been choking and would need to stay longer in the hospital. I was put into an oxygen tent to enable me to breathe.

On Christmas day, I begged my doctor to allow me to go home for Christmas

to be with my family. I stayed up nearly all night long Christmas Eve with my brother and sister and then arose in early morning to open my gifts. During a peak moment of excitement, while ripping open a package containing a warm fuzzy teddy bear, I started to cough and choke and then gasp for air continuously. I could not breathe and my brother and sister yelled that my face was turning blue, as I desperately gasped for air, and appeared to be passing out. I sensed myself suddenly flying around the room, seemingly to have exited from my body, after I was no longer able to breathe. Then, I acknowledged myself looking down at a lifeless self, lying motionless on our green living room carpet, and holding on to my precious teddy bear. I could clearly see and hear my brother and sister screaming, while my mother was speaking to a doctor on the telephone, and my father was calling out to Jesus, in prayer. I was unable to move or to talk. I could see my dad lifting my limp body from the rug, turning me upside down and pounding on my back. I recall feeling a powerful jolt, as if electricity had struck me, when I heard dad singing "Silent Night." It seemed as if suddenly I was being called away from the arms of Jesus and beckoned back to a lovingly embrace of my dad hugging me. It appeared as if I had awakened from a very haunting emotional dream. I was soon rushed back to the hospital and was put in an oxygen tent again. My lungs remained somewhat congested for the rest of the school year, so I was unable to attend classes.

My memory and ability to focus in class appeared to have greatly improved, when I returned to school in the fall semester. Like some kind of rites of passage, I had taken on the look of a mature studious learner. In my school bag, I still carried a sacred diary, which contained some reflections about my illness, about what I had viewed as a dream and about my experiences of returning to school, after spending months in the hospital.

When I lost one of my treasured birch bark diaries while on route to the Holy Land many years after my lengthy hospital stay, I felt as if a part of my

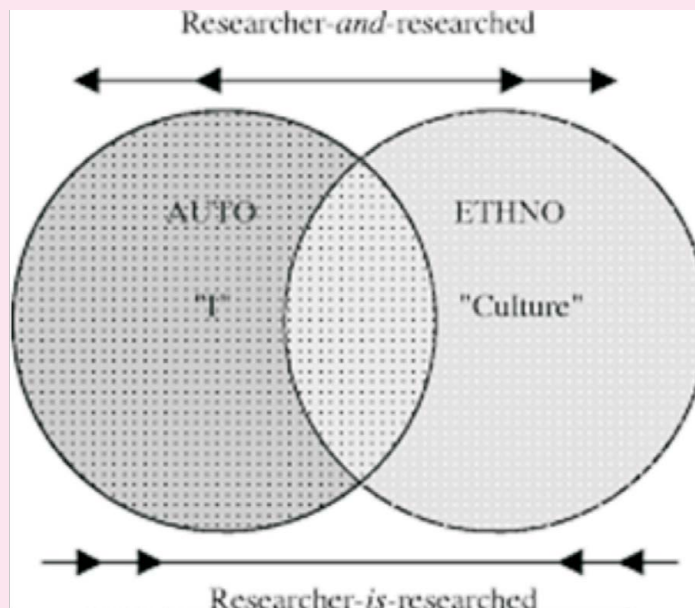


*I read some of my reflections written in my treasured birch-bark diary. The writings demonstrate my innate yearning to hold an unconditional positive regard for others. Within my writings, fact and fiction are bound in kind of a sacred discourse. Everywhere I went, I carried a dairy, as if it was attached to my heart with a sacred golden string. I believed that someday I may revisit my past experiences, through my writings, and perhaps discover a new version of who I am now, and who I was then, and what my truth is*

heart had been eradicated. I searched and searched and prayed and prayed. I thought that my sacred book may have fallen from one of my carry on pieces of luggage. Later, while touring sites where Jesus had wept and prayed, I questioned whether or not somebody was reading my diary, filled with self-revelations. I encountered moments when I felt naked at the thought of someone entering into my mind and heart through my reflective writings. I wondered whether or not some kind of mystical occurrence had taken place. If so, would my sacred diary suddenly re-appear and miraculously fall into my beckoning hands?

Now was the ideal time for me to start a new page of my diary. It was like experiencing a form of “tabula rasa” (being born with a blank slate) because I felt like my past was being erased and a fresh start was about to commence. An opportunity to let go of some of my painful history was presented. One of my major diaries was gone but so was yesterday. All I had to embrace was the untarnished moment of the present. I had observed the sun setting on my past and rising on a fresh tomorrow.

**On the cover of a new diary, I wrote:**



**We teach who we are. Our utterances are interpretive and may not represent an absolute truth. Therefore, I aspire to let my life speak. My life mission is to ignite spirit within whomever the Creator puts on my path. I believe that we may be the only book of wisdom that some people read, so we should be cautious about what our actions signify to others. It is by our actions that we indicate whether or not our intentions are genuinely heart centred. We are both spiritual and human beings, but not in a dualistic way, rather embracing two aspects of a single nature. The ways that we synergize our hearts and minds are our choice, and whatever happens to us, we can elect our reciprocity, which becomes our voice (Doetzel, 2011).**

### Implications

It is hoped that my writings can assist scholars on a journey towards writing an autoethnography or inspire readers to work towards reaching their full poten-

tial selves. Some qualitative researchers (Fisher, 1986; Pratt, 1992; Russell, 1999) have expressed their concerns and support of autoethnography. They note the possibility for autoethnography devolving into narcissism, and suggest that in autoethnography, no matter how personal, the writings should always connect to some other element of life. Throughout my writing, I was reflective of this concern. Chang (2008) warns autoethnographers should avoid the following in their writing: 1. excessive focus on self in isolation from others; 2. overemphasis on narration rather than analysis of culture interpretation; 3 exclusive reliance on personal memory and recalling as a data source 4. Negligence of ethical standards regarding others in self-narratives; and 5. inappropriate application of the label autoethnography. Chang (2008) provided me with some guide posts, for my writing. This “autoethnographic research” paper aims to assist scholars to better understand the progressive journey of their own and student’s learning.

### References

- Chang, H. (2008). *Autoethnography as method*. Walnut Creek, CA: Left Coast Press.
- Doetzel, N (2010) *Old Heart Child's Eyes: A Diary of Miracles*. Calgary, AB: Detselig Press.
- Fischer, M. J. (1986), *Ethnicity and the post-modern arts of memory*, in *Writing culture: the poetics and politics of ethnography*, edited by James Clifford and George E. Marcus, Berkeley: University of California Press, pp. 194-233.
- Pratt, M. L. (1992), *Imperial eyes: travel writing and transculturation*. London: Routledge.
- Russell, C. (1999). *Autoethnography: journeys of the self*, in *Experimental ethnography*, Durham, NC: Duke University Press, pp.275-314.

# CONTEXTUAL CHALLENGES AND SCHOOL LEADERSHIP DEVELOPMENT IN THE SMALL ISLAND DEVELOPING STATES OF FIJI

*There are a significant number of secondary schools in rural and isolated areas of Fiji. The principals in these schools encounter a number of challenges that are unique to their rural environment. This study seeks to explore the challenges faced by rural school principals and their needs and to incorporate this new knowledge into leadership development programs designed to prepare future school leaders in rural context.*



**Narsamma Lingam**  
Oceania Centre for Arts,  
Culture and Pacific Studies  
University of the South Pacific,  
Suva, Fiji  
[lingam\\_n@usp.ac.fj](mailto:lingam_n@usp.ac.fj)

## Abstract

Rural school principals in the small island developing states of the Fiji encounter a number of challenges that are unique to their environment. These challenges stem from a number of sources, from within the school division structure, from a community perspective, and from within the school setting itself. This article therefore, explores the perspectives of rural school principals in Fiji to leadership challenges they identify as characteristics of rural context. The article further seeks to examine the impact these perceptions have on future leadership development of rural principals.

This paper on the perspectives of rural Fijian school principals on their experiences was set with in a qualitative in-

terpretive research paradigm utilizing a mixed method strategy to collect data from five rural schools. The data gathering process included, questionnaires, collection of relevant documents and in-depth interviews with the principals and teachers. The views expressed by the principals were analyzed using the inductive approach. The paper presents a summary of some emerging findings on the challenges faced by rural principals in exhibiting their leadership practices while grappling with the new demands afforded by the Fiji Ministry of Education.

This article contends that Fijian principals in rural environments encounter significant challenges that are context-specific. Understanding these challenges faced by rural principals



in enacting their leadership practices is central to formulating effective leadership development programs for school leaders to lead 21st century rural schools. Preliminary findings from this research suggest that leadership training programs need to be 'contextually responsive' to cater for the needs of the existing schools in order to improve the learning outcomes of students in rural locales.

## Introduction

School leadership is widely recognized as a critical factor in the process of achieving school effectiveness and improvement (Bush & Oduro 2006; Robinson, Hohepa & Lloyd 2009). This suggests that the manifold transformations occurring in education in contemporary times make leadership development more deserving of considerable attention than ever before. In contexts where leaders have undergone no professional preparation for their role, beyond years of classroom teaching experience, they could be faced with a myriad of contemporary problems. To cope with these new demands and challenges, school leaders require relevant knowledge, skills and competencies to enable them to meet the particular circumstances of the school and also offer better service to the learners, teachers and communities they lead. In light of the increasing importance vested in school leadership, this study is a preliminary investigation of the reception of a leadership and management training programme conducted in the Fiji Islands, a small island developing state in the Pacific region.

## Literature Review

In contemporary times and in the pursuit of sustainable school effectiveness and improvement efforts, the growing complexity of education systems has placed school leaders under greater pressure for accountability. School leaders in Fiji, like their counterparts in Australia and New Zealand, are experiencing role overload, complexity and tension due to various reforms introduced in education (Cardno & Howse 2005). Schratz (2003) claims that pressure is exerted from a variety

*In contemporary times and in the pursuit of sustainable school effectiveness and improvement efforts, the growing complexity of education systems has placed school leaders under greater pressure for accountability. School leaders in Fiji, like their counterparts in Australia and New Zealand, are experiencing role overload, complexity and tension due to various reforms introduced in education (Cardno & Howse 2005). Schratz (2003) claims that pressure is exerted from a variety of contexts such as political, social and economic conditions and these have an impact on educational systems in all jurisdictions.*

of contexts such as political, social and economic conditions and these have an impact on educational systems in all jurisdictions. These new demands, challenges and external pressures warrant suitable forms of training and development for school leaders (Wong 2004; Walker & Dimmock 2006; Bush 2007). Similarly, Crow (2006) affirms that in light of the complex changes occurring within schools and the changing environment of schools, principals' knowledge and skills are likely to become obsolete and thus require ongoing training and learning. On the basis of these considerations, Lumby, Crow & Pashiardis (2008) and Bush (2008) emphasize the significance of leadership preparation for aspiring principals as well as continuing professional development for serving principals to improve their performance in all jurisdictions, but more so in developing contexts. Relying solely on previous knowledge and training can no longer satisfy the complex nature and changing role of school leaders. On this

account, Taylor, De Guerre, Gavin & Kass (2002) conclude that 'global challenges now occurring demand approaches to leadership education that are profoundly different from those that have served well in the past' (p. 353). Such pressuring demands require highly skilled and well-prepared school leaders with the necessary leadership and management tools to lead schools successfully. Otherwise they may be seen to be 'lacking as [school leaders]' (Coleman & Fitzgerald 2008).

Even though the leaders are experiencing daunting challenges stemming from dramatic changes in the work expected of them, many jurisdictions still do not require their incumbents to go through any mandatory training programme for school leadership positions. In South Africa, for example, promotion to the position is generally based on teaching experience and teaching qualifications rather than leadership potential (Van der Westhuizen & Van Vuuren 2007; Bush & Oduro 2006; Mestry & Singh 2007). In the same vein, Australia (Anderson, Kleinhenz, Mulford & Gurr 2008) and New Zealand (Cardno & Fitzgerald 2004) do not require any formal training before appointment to the school headship position. Similarly, the authors' personal and professional work experience in most of the Pacific Island countries indicates that specific training does not appear to be required for the job in this part of the world either. As a result, most of the school leaders lack suitable skills. On the basis of study findings from two countries in the Pacific region, Fiji and Tonga, Cardno and Howse (2005) proposed that change management and problem-solving skills are regarded as an essential element of any management development programme. Also, they suggested the need to 'develop higher order cognitive skills of critical reflection that relate to both individual learning and organisational learning' (p. 43). In the Fiji study, school leaders identified several such skills as problems needing attention: prioritizing visioning, interpersonal skills, empowering others and effective management

# GIRL-CHILD EDUCATION IN THE PRESENT NORTHERN NIGERIA: **HOW FAR SO FAR?**

*Asiya was born in 1975 at Kano, Nigeria, studied B.sc.ed Geography, M.ed admin & planning and about to do Ph.d viva in educational administration and planning both from Bayero University, Kano. A lecturer in the dept. of educational foundation, Federal college of education, Kano. A facilitator at National teacher's institute, kano, researcher and a trained educator mentor whose interest is seeing all girl-children giving equal right to education as their male counterparts, who's also working on improving the poor quality of basic education in her state.*



**Asiya Aliyu Ibrahim**  
Department of Educational  
Foundations  
Federal College of Education,  
Kano, Nigeria  
aseealeeu@gmail.com

*An empirical study is being undertaken on the effect of chibok girls' abduction on girl-child education in the present Northern Nigeria. The research hypothesized that there will be significant negative effect and a drawback on girl-child education in the Northern part of Nigeria where book-haram has claimed to set such drawbacks. The study sought to find possible solutions to the menace.*

## **Abstract**

It is quite disheartening that in a country where the logo claim is a giant of Africa, over two hundred plus grown up females vanished to nowhere with no ultimate source of information about their wellbeing and whereabouts. The incidence of chibok girls is really frightening and a threat to western education in Northern Nigeria. A region where this type of education is still frowned at as a doubtful one in the eyes many parents. History proved that it is with great difficulty that some parents were persuaded to send their female wards to School, their preference being marrying them off at a very tender age between 12-16 years. A look into hindrances of girl-child education into the present Northern Nigeria forms the bedrock upon which the research is based. The design is ex-post facto. Data gathering is through direct contact (interview) with parents, questionnaire is also a helpful instrument in eliciting data for the study from other categories of respondents mostly stakeholders in education. Using SPSS, findings will be depicted in form of numerical and graphical results which will utilize means, frequencies, standard deviation and regression as statistical techniques. One major expected find-

ing is that there is significant drawback of girl-child attendance in school with the figure reaching an alarming rate in Borno, Yobe and Adamawa states of Nigeria. Based on the expected finding, it is recommended that all hands must be on deck to protect the right of girl-children to education as enshrined in the National policy on education and the world conference on Education for all "EFA"

## **Introduction**

Education implies acquisition of worthwhile knowledge, skills, attitudes and understanding through morally acceptable methods in the society which a person lives.

Western education is that type of education widely known among Hausas (predominant tribe in the Northern part of Nigeria) as "Boko" and Boko's literal meaning is a "big lie", this indicates that western type of education in the olden times was perceived as not being true education in the region, this explain why it was most unwelcomed, viewed and received with hatred, opposition and rejection when it was first introduced in the area. It was thought to be a devious education, full of evils and the way of conversion of the people from their religion (Islam) to Chris-



tianity. This has led to prevention of children from attending such schools in the past.

### **Concept of girl-child**

Childhood in girls is undoubtedly a period of sensitivity that requires special care and attention. It is considered to be from birth to puberty or from birth to 18 years, the later is more agreeable. In Nigerian societies, the primary aim of educating Girl-child in all societies was no more than to enable her acquire appropriate attitude, orientation and commitment to ensure full realization of her potential to the maximum. Considering the dynamism of time and culture, some changes are inevitable which gave way to some transformation and modernization on the education the girl-child is bound to receive, but whatever education that is imported is mainly agreed on serving her needs which is preparatory for the role she has to play in later life looking after home and future child bearing practice she is bound to be confronted with.

A female child in northern Nigeria is seen more or less as a delicate entity that should constantly be under the care of males in her family, she thus passes through three stages of male care and control in her life viz;

1. Her parents and older siblings
2. Her husband and or parents
3. Her children, grandchildren and or her husband

According to tradition, she is supposed to be provided for and not contribute to the family's income, this therefore contribute greatly to the lukewarm attitude towards exposing female-children to western education in northern Nigeria. The northern society is of cause male dominated one, its concept is one such that males seen as those who will grow up to maintain the family identity and become heads are given more preferences over the females in the same family, hence the type of education and career choice among them differs. It is a normal trend in most African countries, especially in sub-Saharan Africa for a girl to be married at an age below 18. It has been observed by many researchers that women in Africa marry at a much earlier age than their non-Africa counterparts which leads to them getting pregnant too early.

IRIN Africa (2008) reported that in Northern Nigeria an estimated more than half of the girls are married before age 15, but this report is mere old fact as the situation has truly changed. Nowadays, even rural populaces are enlightened especially with the prevalence of VVF and associated diseases, poverty and the like; a great percentage of girls are married above age 15.

In most parts of Nigeria, there is a certain level of education desired for girls to attain by their suitors and parents. High level of education is often times viewed as a leading factor which lowers a girls' eligibility for marriage. This type of marriage deprive the girl-child an opportunity for personnel development, participation in community and national development, right to full reproductive health, right to education.

### **Female education in Northern Nigeria**

Formal education of women in the Northern states notably known as the northern region of the political entity called Nigeria, could be traced as far back as the 19th century when the renowned Islamic reformer and founder of the Sokoto caliphate, Sheikh Usman Bn Fodio invested in the education of girl-children. In his time, the Sheikh revived women education as enshrined in the Qur'an and Sunnah of the Prophet (SAW). He set example by educating women in his household to the highest level where his daughter is now a legacy in the History of Northern women elites' Nana Asmau Bnt Fodio was a teacher, linguist, administrator, and author of 55 works and also founder of women's education movement "Yan Taru" which still exists in today's Sokoto state.

It is a known fact that in the past, it was with great difficulty and persuasions and through the help of the then native authority that parents were forced to send their wards to western type of schools and especially females who were conscripted to various schools outside their own localities, the pupils/students then were given monthly allowance and were well taken care of, but today, the situation has changed with the reverse being the case parents now take responsibilities of seeking admission for their female wards to

various institutions, even though, story of cultural barrier as a hindrance to full attainment of educational endeavour for girl-child in the North is still very strong. This region record the highest number of out-of-school female and drop-out children.

In this poverty stricken era and prevalence of diseases, it deem pertinent to educate girl-child which is of more benefit than educating male-children. Various researchers unveiled the significant; impact of female education has on poverty reduction, disease control and provision of sustainable development over that of male education.

Adamu in Abbagana, (2013), stated that when the female-child is educated, her knowledge base is expanded. She is able to understand and undertake socio- economic, cultural and political transformations necessary to achieve development. Education of the female child is positively related to her living standard and the only effective scheme to alleviate poverty. To achieve this, is to expand the educational opportunities available to female child.

If females are educated, there is every tendency to marry late, with each passing level of education, the result being that she gains skills and competence for gainful employment which enables her to be economically viable and a productive member of the society whose contribution to National development deem vital. She will thus marry late and has fewer children.

There is a popular notion among societies in not only the North but also in other parts of Nigerian polity, that a woman's place is in the kitchen. She is thus brought up to accept her traditional role of bearing and rearing children and taking care of her husband and home, this notion is true in the minds of many northerners even in today's modern north. Some years back, the researcher conducted a study on repositioning women education in Hausa land, the case of metropolitan city of Kano, which was presented at National association of Research development, university of Port-Harcourt, Rivers state, Nigeria. It is sad to reveal the findings from the study that many of the students interviewed were into tertiary institutions mainly as a re-

sult of 4 factors,

1. Death of husband or Divorce
2. To compete with an educated wifemarried by the same husband
3. An option to business where material gain is assured after completion of educational endeavour
4. Lack of suitors for marriage. (Asiya, 2005)

Only a few percentage of the respondents from the above study have good intention for really being educated. Because of the misconception people unconsciously and persistently have the fear that if a woman is educated, she loses her femininity and she is predisposed to domineering behaviour.

### **Challenges of girl-child education in Northern Nigeria**

Before the menace of Boko Haram as an obstacle to Girl-child education in Northern Nigeria, several factors have combined to make for low enrolment of such children in schools. Prominent among include; early marriage. According to the UNICEF (2005), early marriage is both a formal and informal unions in which a girl lives with a partner as if married before the age of 18. The imposition of a marriage partner upon a child means that the childhood is lost and never regained (UNICEF 2001). Such marriage hinders educating the girl-child.

**Cultural practices:** The female-child in Nigeria from historical, social and economic view point has un-equal access to education in relation to her male counterpart. This inequality could be due to the early sex role of the girls which influence the conceptualization of their later status, and occupational inclination. In most cultures in Nigeria, the female-child only plays a subordinate role to the male child (Abbagana, 2013).

Adamu cited in (Abbagana, 2013) that the neglect of female child education is something that has to do with culture and religion but Rufai (1996) attributes the neglect to various myths including unfounded cultural belief that, educated female- children do not make submissive wives, are promiscuous and carry attitudes that are incompatible with their traditionally expected roles as future wives and mothers. Govern-

ment is still battling to convince parents in some rural areas about their wards' education when these insurgencies set to cause a draw-back in the enrolment trend.

Other factors include child labour, political constraint, poverty and misinterpretation of Religion, low self esteem.

The consequences resulting from these constraints are enormous, and do not only affect the personality in question, it goes along way to affect the family, the community and the nation at large. In fact, not educating the girl-child in reality, translates to drawing back the hands of clock of societal development. For not educating the girl-child, the community has some consequences to bear; she might become an eventual victim of human abuse and exploitation.

### **The Dilemma of Chibok girls**

On the night of 14-15 April, 2014, two hundred and seventy six (276) female students were kidnapped from the government secondary school in the town of Chibok in Borno State. Nigeria; where Boko Haram insurgents claimed responsibility for the kidnap.

Boko Haram's ideology is opposed to western type of education which they believe is the root cause of criminal behaviour in the country, but in so believing several thousands of innocent people were killed and displaced which was as a result of various attacks perpetrated by the group.

Since 2010, the group has targeted schools; killing hundreds of students, since then more than 10,000 children have been unable to attend school as a result of their activities.

Education in Borno State and neighbouring North eastern states of Adamawa, Yobe, Gombe, Bauchi and also in Kano has been fractured merely as a result of the insecurity in such areas.

On the 17th of September, 2014, the researcher's own institution (FCE Kano) was attacked leaving several staff and students dead and injured. In the same year, several institutions in the same city were attacked with the victims majorly women.

Until today, nobody has any concrete information about the chibok girls' whereabouts or what is done to rescue

them. This in fact makes several eyes blink as to the genuinity of the abduction.

Commenting on governments' attitude, one of the participants at the daily sit-out protest and one of its leaders Dr. Oby Ezekwesili who was an ex-minister of education said that people are now fully aware that Nigerians' government has no plan to bring back the girls after several months of their abduction.

"The ministry of youths development whose mandate include inculcating in the youths human rights values, social justice, equity, fairness and gender equality, has shown no disceable concern about the fate of the abducted 276 chibok girls, even as the universally recognized season of good will approaches" All Africa.com. Okupe (2014) on the side of Nigerian government stated that the issue of the Chibok girls is a national tragedy that must be borne with fortitude. Government has not given up on finding and rescuing the girls. He further stated that the chibok girls case remains a thorn in the flesh of this administration and assured that the government would have done anything possible to have them released if that were possible earlier but that the issue demands extreme caution to avoid losing the girls while describing the girls abduction as not the regular incident involving the seizure of one or two persons, hence their rescue must be handled with utmost care. Now the questions in minds of many northerners and needed answers include;

- Why is Northern Nigeria the only victim in the country when it is the region lagging behind as far educational development?
- What is the fate of western education in Northern Nigeria when it has been declared as forbidden type of education by the insurgents?
- What will be the status of one young ones especially girls education when it was already faced with challenges?

There are so many questions worth asking and needed answers.



## Research Methodology

The study is an empirical one using survey design. The instrument for data collection was the questionnaire and

interview which were designed, validated and pilot tested to investigate the effect of Chibok girl's abduction and related activities on girl-child educa-

tion in Northern Nigeria particularly in Kano State.

The population comprised all students of tertiary institutions in the metropolitan Kano, parents and pupils/students in primary and secondary Schools. All female lecturers and teachers in the schools listed. A sample of 287 students, 50 female lecturers and teachers in primary and secondary schools, and 50 parents was drawn via simple random sampling technique where proportionate procedure was used for sample selection. Altogether, a sample of 387 subjects was used.

The data collected for this study were assembled, using SPSS, data was processed and presented as cross tabulations and bar graphs.

Sample was drawn according to the population of the schools especially regarding questionnaire distribution among students of tertiary institutions; Bayero University has the highest number of participants about 16%, with school of technology and that of nursing recording the lowest number of respondents.

Table 1. Summary of respondents by institution

S/No.	Name of Institution	Frequency	Percentage
1.	Bayero University, Kano	40	16.9
2.	Northwest University	10	4.2
3.	Federal College of Education, Kano	30	12.7
4.	School of Management Studies	20	8.4
5.	School of Technology	12	5.1
6.	School of Health Technology	20	8.4
7.	School of Hygiene	25	10.5
8.	School of Nursing	15	6.3
9.	Aminu Sch. of Islamic & Legal Studies	35	14.8
10.	Sa'adatu Rimi College of Education, Kumbotso, Kano	30	12.7
11	<b>Total</b>	<b>237</b>	<b>100</b>
<b>Interview</b>			
1.	Primary Schools Pupils	25	50
2.	Secondary Schools Students	25	50
	<b>Total</b>	<b>50</b>	<b>100</b>

Source: Field survey, 2014

Table 2 Respondents' view on whether to continue western education in northern Nigeria as a result insecurity

### Respondent's view on whether to continue western education in northern Nigeria as a result of insecurity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	61	15.8	15.8	15.8
	Yes	295	76.2	76.2	92.0
	Undecided	31	8.0	8.0	100.0
	Total	387	100.0	100.0	

The table shows that after the abduction of Chibok girls and attacks on western type of schools, majority of the respondents still held firmly the belief that western education should not be scrapped with 76.2%, about 15.8% opined it should be stopped while 8%, are undecided.

**Respondent's view on whether to continue western education in northern Nigeria as a result of insecurity**

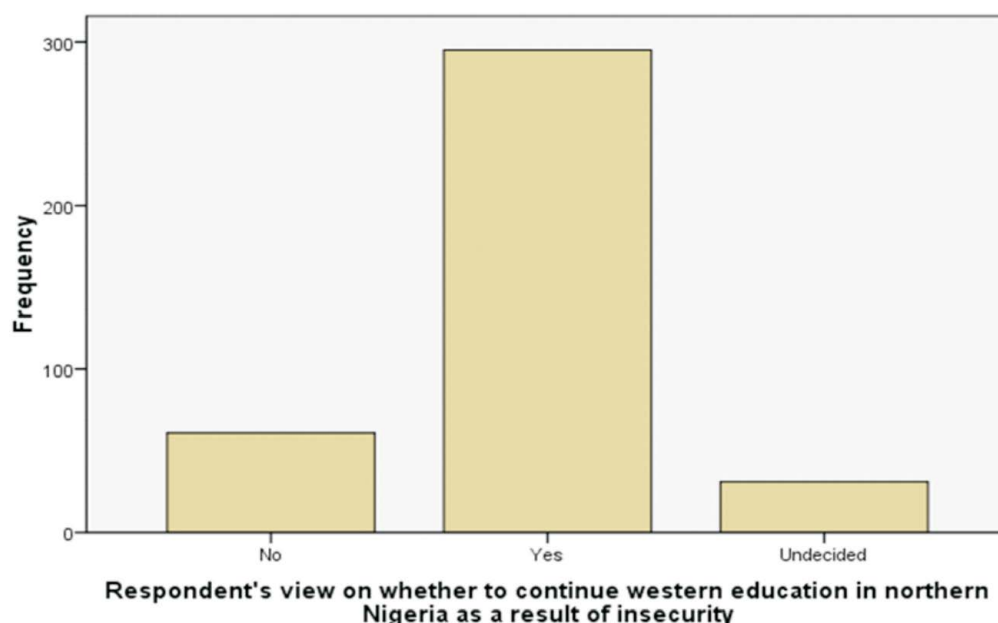


Table 3. Respondents' view (students whose schools were attacked only) on whether to go back to their schools after the attack.

**Institution \* Respondent's view ( students whose schools were attacked only) on whether to go back to their schools after the attack Crosstabulation**

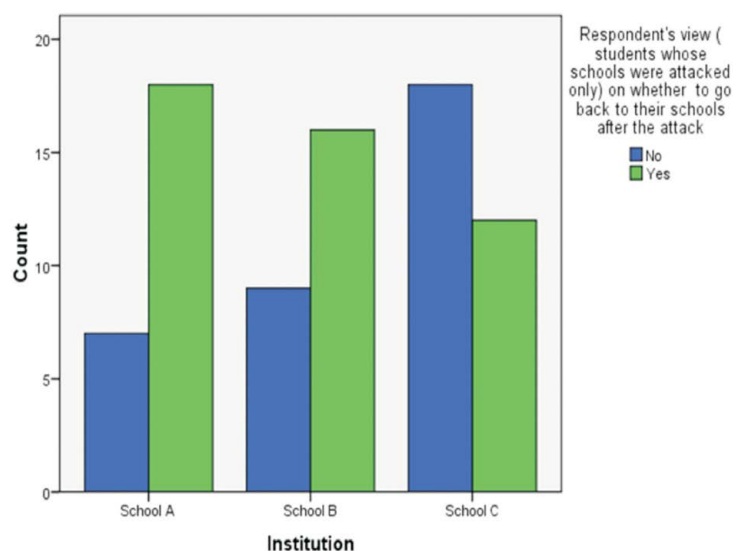
		Respondent's view ( students whose schools were attacked only) on whether to go back to their schools after the attack		Total
		No	Yes	
Institution A	Count	7	18	25
	Expected Count	10.6	14.4	25.0
	% of Total	8.8%	22.5%	31.2%
School B	Count	9	16	25
	Expected Count	10.6	14.4	25.0
	% of Total	11.2%	20.0%	31.2%
School C	Count	18	12	30
	Expected Count	12.8	17.2	30.0
	% of Total	22.5%	15.0%	37.5%
Total	Count	34	46	80
	Expected Count	34.0	46.0	80.0
	% of Total	42.5%	57.5%	100.0%

Source: Field survey, 2014

From the table above, data revealed female students of Federal College of Education Kano, were more scared perhaps because of all the attacks, FCE Kano was more deadly, many female students were killed, a female lecturer

shot and many others injured, FCE has 22.5% of the female students not wishing to return back to school, but the situation in school of hygiene is favourable to some extent as only 8.8% of the sample have no wish to continue their

**Bar Chart**



Source Field survey 2014

education, the percentage is slightly high in school of management studies 11.2% of the students were afraid to continue schooling. Altogether, a total of about 42.5% have no wish to return back to school for now.



Table 4 Parent's view on whether to withdraw their female wards from schools

Parent's view on whether to withdraw their female wards from schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	14	28.0	28.0	28.0
	Yes	28	56.0	56.0	84.0
	Undecided	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

Parent's view on whether to withdraw their female wards from schools

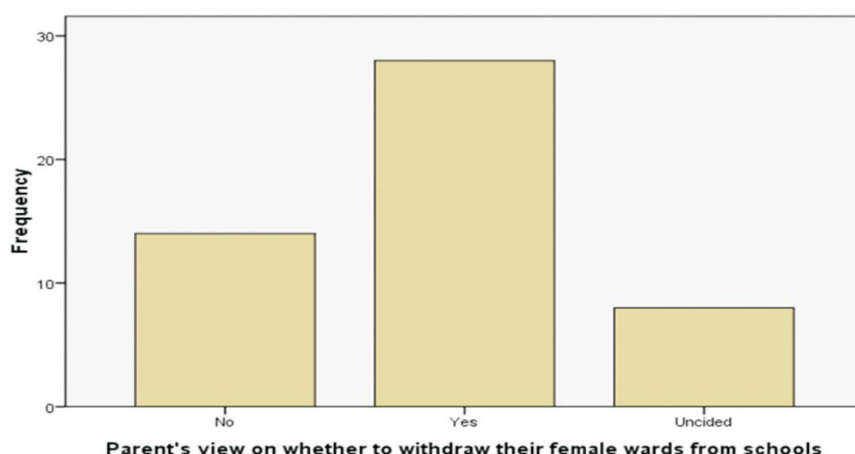


Table 5: Parents' view on alternatives for schooling if they have or about to withdraw their female wards from schools.

Parent's view on alternatives for schooling if they have or about to withdraw their female wards from schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Marriage	37	74.0	74.0	74.0
	Street Hawking	1	2.0	2.0	76.0
	Child Labor	5	10.0	10.0	86.0
	Send them abroad for schooling	2	4.0	4.0	90.0
	Undecided	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Source: Field survey, 2014

It is evident from the data gathered that more parents have been scared, hence opined that they are not in support of their children going back to schools 56%, about 28% agreed with continuation of their daughters' schooling, 16% are yet to decide.

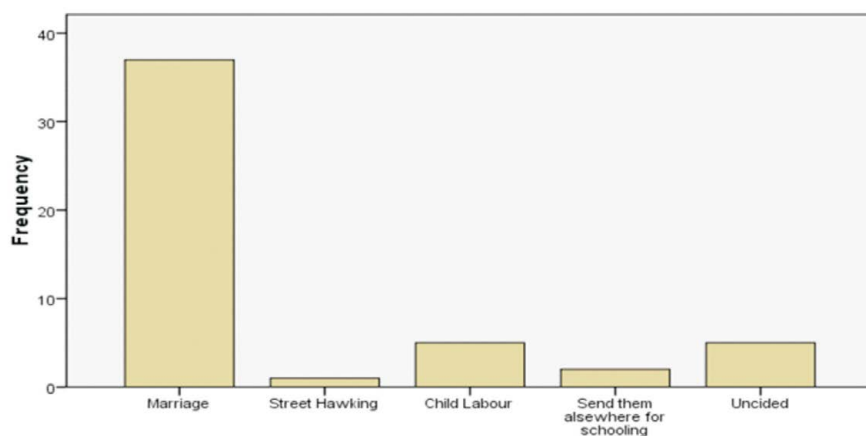
The table revealed that majority of the parents about 74% are in favor of marrying their daughters when only few about 4% could afford to send them abroad or elsewhere in the country for schooling. Street Hawking and business are least favored only 2% because parents are now enlightened about the dangers of such acts. 10% of the subjects here prefer sending the girls to work as house helps for self-support and income to the family.

### Discussion of Research Findings

Findings of this piece of work indicated a drawback to girl-child education as a result of the insurgencies which cause insecurity in most northern states, hence, for several months children could be seen wandering around every nook and cranny of the region because of either fear or closure of their schools, it happened that some female lecturers and teachers are planning to resign from their jobs. Parents have no strong faith in the security of their children, though they are in favor of not scrapping western education but are unwilling to send their children to school. Of the students in tertiary institutions; many have already withdrawn themselves or forced to withdraw by family members.

One of the group of students studying

**Parent's view on alternatives for schooling if they have or about to withdraw their female wards from schools**



**Parent's view on alternatives for schooling if they have or about to withdraw their female wards from schools**

philosophy of education the researchers has taught recently were the direct bomb-blast victims in a lecture theatre at FCE Kano majority of whom were never seen back especially the female students.

Pupils in primary schools and students of secondary schools all over Kano opined that they need to be educated but are now afraid of schools. The scenario in schools is one such that it is laced with lack of composure/concentration, fear, absenteeism, abscondment from the students and teachers alike. Encouraging female education was realized to be inevitable given the level of ignorance pervading the women in this part of Nigeria especially the rural dwellers.

Several approaches were adopted for the prospects of girl-child education by the federal and state governments including awarding scholarships to pupils and children from poor homes, reducing school fees, providing free learning materials and school uniforms to female students, free-feeding for all pupils at lower and upper basics all with the intent of motivating the children and discouraging the parents from withdrawing them from school.

UNICEF, UNESCO, USAID and other agencies have designed programs variously to ensure the girl-child in developing parts of the world is opportune to acquire functional education.

## Summary and Conclusion

The effect of Chibok girls' abduction in Borno state, the mass killings of staff and students and bombings of schools in Yobe, Adamawa, Gombe, Kano and other parts of Northern Nigeria, spell

doom for the girl-child education.

## The following formed summary of the work;

Government has essentially not been seen to be proactive in the situation of Chibok girls' abduction and girl-child education in Nigeria.

Nigerian government is doing nothing firmly to ensure that schools are adequately secured.

Government has not offered any worthwhile support for the growing number of displaced youths grappling for survival in displaced persons' camps, hence no provision for schooling.

When the dust of the whirlwind of misconception incidence of western education nearly settled, a more bewildering maze of occurrences happening one after another causes threat and confusion among the Northern Nigerian students and their parents on the future status of western education in the North. There is growing fear that the situation may revert back to old times when girl-child was denied her birth right of being educated.

Conclusively, a survey into current happenings especially concerning education in the Northern part of Nigeria deem vital in this world of educational boom. Education is seen as a necessary instrument for the up-liftment of the standard of any society. In this past few years in the Northern Nigerian societies, education is suffering a threat of serious decay and collapse. With the insecurity in the region, many schools were forced to close down, pupils and students were withdrawn by their par-

ents, students in tertiary institutions either have withdrawn themselves voluntarily or are forced by relatives and spouses.

## Suggestions for Remediation

Girls-child education in Nigeria has been one of the most neglected areas, thanks to the awareness campaign by various agencies; it has now been identified as needing a very urgent attention. These campaigns should be mounted in rural and semi-rural areas as it were done in the old times using projectors.

- Gender inequity should be discouraged.
- There is need for security, peace and harmony as these are necessary elements before any educational program could take-off.
- The abducted girls should be returned safely back to their families.
- The government should put a stop to these violent activities.
- Girl-child education should be re-strengthened.
- More research should be conducted on girl-child education in Northern Nigeria

□

## Reference

- Abbagana, K. K. (2013). *Female-child Education: a critical issue for National Development in Nigeria*. *Journal of Education and leadership development*. Vol 5, No. 2 pp1-8
- Action Health Incorporated. (2011). *Insights into early marriage and Girls Education in Northern Nigeria*. AHI, Lagos, Nigeria
- Action Health incorporated. (2014). *Matan kwarai; insights into early marriage and Girls' education in Northern Nigeria*. Retrieved from [www.actionhealthinc.org](http://www.actionhealthinc.org) on 17th November, 2014.
- Asiya, A. I. (2005). *Repositioning women education in Hausa Land; The case of metropolitan Kano*. Paper presented at National Association for Research Development (NARD), University of Port Harcourt Rivers State.
- Rufai, A. J. (1996). *Guide to Girl-child Education in Borno state*. Maiduguri : Awosami Press Nigeria Ltd.
- UNICEF (2001). *Early marriage: child spouse*. Retrieved at [www.unicef.org/childmarriage](http://www.unicef.org/childmarriage) on 17th november, 2014
- UNICEF (20015). *Early marriage: A harmful traditional practice*. Retrieved at [www.unicef.org/childmarriage](http://www.unicef.org/childmarriage) on 17th November, 2014.



*Dr. April Strom has taught mathematics at the community college level for over 18 years and she is currently serving as the Principal Investigator for a \$9M NSF-funded project titled the Arizona Mathematics Partnership. She has also worked extensively on other grant projects as a researcher and lead curriculum developer. Dr. Strom received her Ph.D. in Curriculum & Instruction (emphasis in Mathematics Education) from Arizona State University (2008).*

*Scottsdale Community College,  
Scottsdale, AZ, USA  
april.strom@scottsdalecc.edu*

*Dr. Scott Adamson graduated from Northern Arizona University with a Bachelor's degree in mathematics education and started his career at Payson High School. After three years, he moved to Chandler High School and completed a Master's degree in Mathematics Education from Northern Arizona University. For the past 19 years, he has been teaching students at Chandler-Gilbert Community College. In 2005, Dr. Adamson completed the doctoral program in Curriculum and Instruction with an emphasis on Mathematics Education at Arizona State University.*

*Chandler-Gilbert Community College,  
Chandler, AZ, USA  
s.adamson@cgc.edu*



**April Strom,  
Ph.D.**



**Scott Adamson,  
Ph.D.**

# DEVELOPING MATHEMATICAL MEANING - IN THE CONTEXT OF MULTIPLICATIVE SITUATIONS

*In this report, we discuss ways teachers have leveraged key developmental understandings (Simon, 2006) formed during professional development activities focused on multiplicative reasoning. Research has shown that helping teachers build deep understandings of mathematical content they teach through meaningful activities can improve teaching practices and ultimately increase student achievement in mathematics (Hill et al., 2005). Our paper discusses a professional development trajectory focused on a unifying theme – multiplicative reasoning – and how teachers' new ways of thinking provided a conceptual springboard for making sense of other multiplicative contexts.*

## INTRODUCTION AND THEORETICAL FRAME- WORK

Through our work with teachers, we have learned that past professional development (PD) opportunities for mathematics teachers have primarily focused on strategies and methods for teaching, rather than developing meaningful content knowledge for mathematics. Yet, research has shown that a powerful way for improving the teaching and learning of mathematics is to engage teachers in activities that not only deepen their understanding and conceptual knowledge of the mathematics they teach, but also focus their lens on student thinking in the context of mathematics (Silverman & Thompson, 2008). Consistent with Ma's (1999) conclusion, we believe that if teachers

develop a profound understanding of the fundamental mathematics that they teach, then they will be better prepared to engender these mathematical practices in the students that they teach.

With this in mind, we implemented a research-based PD experience for middle school mathematics teachers that included modeling the Common Core State Standards and Standards for Mathematical Practice (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) through the unifying theme of multiplicative reasoning. Vergnaud (1994) argues that multiplicative reasoning plays a significant role in the development of conceptual understandings of multiplication, division, fractions, proportions, ratios, rates, rational numbers, and lin-

ear functions. He refers to these ideas as ingredients for the multiplicative conceptual field (MCF), which he defines as a complex theory that is comprised of concepts (tools for analyzing situations) that become meaningful through situations (things that require multiplicative operations). The multiplicative situations are then analyzed through these concepts. This reflexive relationship between concepts and situations serves as the mathematical foundation for our investigation with middle school mathematics teachers. Furthermore, Vergnaud contends that MCF theory must allow the role of language and symbols in the development of multiplicative reasoning to remain prominent and at the forefront of one's learning.

In our review of current curricular materials used in school mathematics, we have discovered that these materials are seriously lacking of an emphasis on multiplicative thinking even though the CCSSM include ideas built upon the ability to reason multiplicatively. Building a solid foundation for thinking multiplicatively entails deepening the language used to interpret, describe, and make sense of situations where multiplication is inherent. As early as Grade 5, the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) emphasize the need for students to think about multiplication as “times as large as.” For example, recognizing that  $5 \times (6 + 8)$  is five times as large as  $6 + 8$  provides a springboard for making sense of the distributive property where  $5(x + 8)$  can be thought of as five times as large as the quantity  $x + 8$ . We can also conceptualize the expression  $5(x + 8)$  as five copies of the expression  $(x + 8)$  such that we have  $(x + 8) + (x + 8) + (x + 8) + (x + 8) + (x + 8)$ .

While the language of “times as large as” is quite powerful in making sense of multiplicative situations, we have found that first focusing on more primitive language, such as “copies of”, can foster one's ability to conceptualize the notion of “times as large as.” Furthermore, we have found that when teachers have made sense of their own thinking relative to the notion of “copies of” in various contexts, they are then able to reason about other multi-

plicative situations with more conceptual constructions of the mathematics. These are a few of the findings we have discovered in our work with teachers when the focus of professional development is on multiplicative reasoning.

In this report, we present some of our findings that demonstrate how professional development experiences for teachers designed around a central mathematical theme – multiplicative reasoning – can improve teachers' ability to reason about more advanced mathematical ideas contained in the multiplicative conceptual field. We will present evidence based on video data of teachers' working in a school-based learning community.

## Why a Focus on Middle School Math?

Research has shown that middle school is the gateway to high school course taking and college enrollment (Hill, 2007; Riley, 1997; Silva & Moses, 1990). In particular, completion of Algebra II in high school is strongly correlated with success in college as well as future earning potential (Adelman, 1999). We therefore believe that students possessing a solid foundation in middle school mathematics are more likely to experience positive outcomes in high school mathematics, further preparing them for success in mathematics beyond high school.

Consistent with Ma's (1999) finding, we believe that increasing teachers' content knowledge by attending to

the meaning of the mathematics they teach will lead to improved students' achievement. By specifically targeting middle school mathematics teachers and focusing on deepening their content knowledge, we can significantly improve middle school students' mathematics achievement and at the same time greatly impact students' readiness for their high school, college, and career experiences.

## RESEARCH AND IMPLEMENTATION FRAMEWORK

The design of the PD experience for this study originated from the network of pedagogical content knowledge described by An, Kulm and Wu (2004, see Figure 2). The focus of this abridged framework is on students' learning from the perspective of teaching as a convergent process focused on knowing students' thinking. The process consists of 4 aspects: “building on students' mathematical ideas, addressing students' misconceptions, engaging students in mathematics learning, and promoting students' thinking mathematically” (p. 148). Through the PD experience, teachers grappled with mathematical ideas based on how students conceive and misconceive the underlying ideas embedded in the mathematics. Teachers collaborated to develop their mathematical knowledge, and they focus on understanding students' thinking while keeping students' prior knowledge in the forefront.

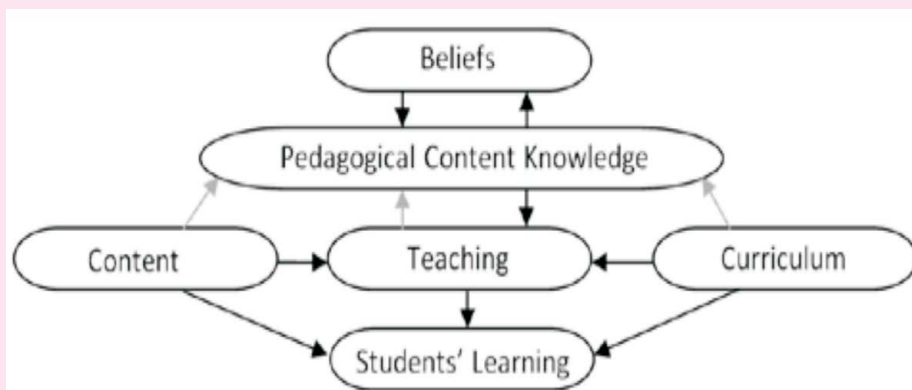


Figure 1. Network of pedagogical content knowledge (abridged) (An, et al., 2004). Using this framework that guided the teachers' PD experience, we designed our research to address how the PD focused on content and students' thinking contributed to teachers developing stronger conceptions of multiplicative reasoning. In short, we focused on answering the following research question: In what ways does a professional development experience focused on multiplicative reasoning contribute to the mathematical knowledge for teaching of middle school mathematics teachers?



## Multiplicative Concepts – A Sample Activity

To develop teachers' ability to think multiplicatively, the PD facilitator posed the following activity, called the Broomstick Activity, inspired by the work of Thompson and Saldanha (2003):

You have three broomsticks: The red broomstick is 3 feet long. The yellow broomstick is 4 feet long. The green broomstick is 6 feet long. How much longer is the green broomstick than the red broomstick? How much longer is the yellow broomstick than the red broomstick?

These questions require teachers to consider the various meanings of the phrase “how much longer” in both an additive interpretation and a multiplicative interpretation. In the case of the broomsticks activity, we can think about the green broomstick as measuring 3 feet longer than the red broomstick (additive). But we can also consider the green broomstick as measuring 2 red broomstick lengths, thus the green broomstick is twice as long as the red broomstick (multiplicative).

When confronted with these questions, many teachers first use the additive comparison by interpreting “more” as representing an amount added to the original length of the broomstick. After reflection, teachers began to realize that “more” can be interpreted in another way, namely as a multiplicative comparison of broomstick lengths. Afterwards, teachers are then asked to complete the following statements by filling in the blanks:

The green broomstick is \_ times as large as the yellow broomstick. The yellow broomstick is \_ times as large as the green broomstick. The yellow broomstick is \_ times as large as the red broomstick. The red broomstick is \_ times as large as the yellow broomstick.

Throughout the PD experience, teachers encountered additional activities designed to stimulate divergent thinking where a multiplicative comparison is necessary for making sense of the posed situations. These activities were presented to the teachers during additional workshops and learning community sessions, which were called Collaborative Community of Learners (CCOLs). The purpose of our investi-

gation was to study teachers' thinking of multiplicative situations during the CCOL sessions to better understand how the mathematical content from the workshops transferred to other ideas teachers grappled with during these sessions.

## METHODOLOGY

Sixty-seven middle school teachers in seven participating school districts located in the Southwest were recruited to participate in PD focused on building teachers' content knowledge and mastery of the Common Core Standards for Mathematical Practice. In our investigation, we focused on one CCOL group composed of 5 teachers from the same school facilitated by a workshop facilitator. On occasion, 2-3 undergraduate students also attended and participated in the CCOL discussions. All CCOL sessions were videotaped over the course of one academic year for a total of 18 contact hours.

The videos from all CCOL meetings of this group were viewed to discover how teachers used the language of “copies of” and “times as large as” in multiplicative contexts relative to the mathematical ideas the group discussed. Specifically, we wanted to analyze how teachers leveraged their understanding of multiplicative comparisons from the broomsticks activity when they discussed ideas of division, the distributive property, proportions, and constant speed.

## RESULTS

After analyzing the video data of the CCOL sessions, we found compelling evidence of teachers continuing to make sense of their thinking about multiplicative situations while connecting their thinking to other – and sometimes more advanced – mathematical ideas not explicitly addressed in the PD workshops. We found that the teachers who were able to conceptualize multiplicative contexts in terms of “copies of” or “times as large as” were then able to appropriately formalize their ways of thinking about the situation. However, those teachers who did not consider multiplicative contexts in this way often had difficulty reasoning through the situation. For example, consider the case of Jane and Tami who discussed the meaning of constant speed in the context below:

I was walking to school today. Assume that I walked at a constant speed during the entire trip, and also suppose that during one part of the trip I walked 50 feet in 11 seconds. How far do I travel in 7 seconds?

To make sense of the task, both teachers used a proportional correspondence diagram to illustrate their thinking. However, Tami's thinking did not involve multiplicative (or proportional) comparisons. Rather, she decided to partition the distance segment in 10 pieces because she found dividing 50 into 11 parts too computationally difficult. She then counted by fives a total of seven times. An excerpt of her description follows:

Tami: I made my 11 seconds and I divided them into 11, whatever, segments, then I marked off the 7, so the 7 out of 11, and then I had my 50 and I counted by 5's and then I marked off at the 35 point, that was 7.

When Jane, another teacher in the CCOL, asked Tami why she counted by 5's for the distance segment of 50 feet, Tami responded by saying “because it was too big, too many numbers.” Jane then pointed out that Tami had, in fact, partitioned her distance into 10 segments, rather than 11. Then Jane followed up by asking “So if you did 7 out of 11 here (referring to the time segment), don't you need to do 7 out of 11 there (referring to the distance segment)?” Tami responded with “maybe”, then she asked Jane how she would do it.

Jane: But I said I needed 7 copies of that 1/11th of 50. Facilitator: And what's so special about the 1/11th?

Jane: Because this is 11 seconds, so if I'm taking 1/11th and I want to know what 7 copies of that is, then if I take this one and divide it into 11ths, then if I want 7 copies of that, so I'm making the equal proportion of 7/11ths of this (referring to the time segment) to 7/11ths of that (referring to the distance segment).

In this example, Jane was able to leverage her ways of thinking and the new language of “copies of” to make sense of the proportional correspondence between distance and time when thinking about constant speed. Figure 2 below is an illustration of Jane's thinking of constant speed.

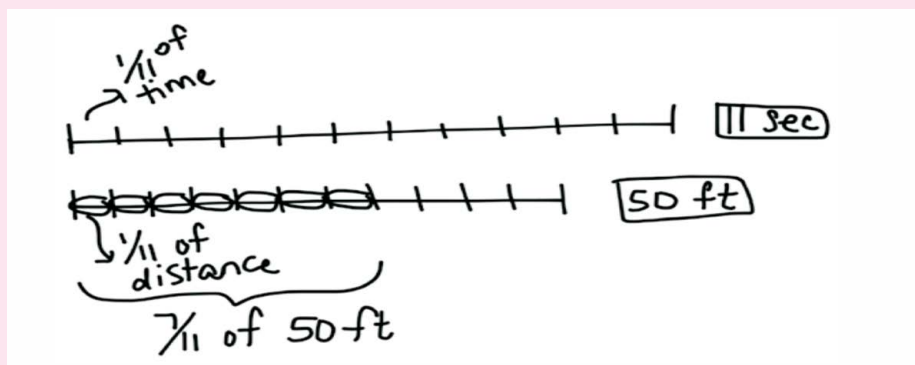


Figure 2. An illustration of Jane's thinking.

Like in Jane's case, we have more data of teachers across different CCOL sessions, showing evidence of their ability to reason multiplicatively using the language "copies of" in many different contexts, including proportional relationships, average rate of change, and even the distributive property. However, Tami's ability to use MR was not fully developed to allow her to use the same number of regular partitions (copies) for both the distance and the time in order to respond to this task appropriately.

Our findings suggest that the language of "copies of" can be leveraged when making sense of multiplicative situations, especially when building robust notions of the meaning of "times as large as." Furthermore, our findings also suggest that once teachers are able to develop their multiplicative way of thinking in situations, they are then able to transfer these new ways of thinking to other multiplicative situations.

## DISCUSSION AND IMPLICATIONS

Based on our findings and our work with teachers, we have realized the importance of developing language to help teachers make sense of mathematical tasks and situations, specifically those involving multiplicative comparisons. Many teachers did not have the mathematical tools or content knowledge necessary for conceptualizing and making sense of situations mathematically; rather, they tended to rely on their procedural knowledge when reasoning through multiplicative contexts. As a result, we believe that professional development with in-service and pre-service teachers should be focused on the unifying theme of multiplicative reasoning in order for teachers to devel-

op new ways of thinking and making sense of the mathematics embedded in K-12 curriculum. As Ma (1999) found, we believe that when teachers develop a profound understanding of the mathematics they teach, they will be well positioned to stimulate productive ways of thinking in the students that they teach.

The implications of the findings for this study are: (1) The importance of meaningful language, such as "copies of" in developing teachers' (and students') ways of thinking about multiplicative situations, should be at the forefront of teaching and learning of mathematics, (2) The teacher professional development programs should focus on mathematical content where teachers have opportunities to create meaningful ways of thinking about the mathematics they teach, and (3) Further research in the area of language relative to multiplicative reasoning should be conducted to develop theory about the teaching and learning of multiplicative ideas.

In the future, our research efforts will focus on tracing the evolution of teachers' multiplicative reasoning through semi-structured task-based interviews to study how teachers reason through critical tasks. Although we have evidence to suggest that ideas learned through activities in the PD experiences, such as the Broomstick Activity, are leveraged by teachers when working through other related situations, we do not yet understand how the ability to reason multiplicatively is fully developed in teachers and how thinking evolves from using the language of "copies of" to "times as large as" and beyond. Our future work will focus on investigating the trajectory of multiplicative reasoning to construct a conceptual framework for use in future professional development activities.

## Acknowledgements

Research reported in this paper is being supported by National Science Foundation Grant No. DUE-1103080. Any conclusions or recommendations made are those of the authors and do not necessarily reflect official positions of the NSF.

## References

- Adelman, C. (1999). *Answers in the Toolbox: Academic Intensity, Attendance Patterns and Bachelor's Degree Attainment*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
- An, S., Kulm, G., & Wu, Z. (2004). The Pedagogical Content Knowledge of Middle School Mathematics Teachers in China and the U.S. *Journal of Mathematics Teacher Education*, 7, 145-172.
- Hill, H., Rowan, B., & Ball, D. (2005). Effects of Teachers' Mathematical Knowledge for Teaching on Student Achievement. *American Educational Research Journal*, 42(2), 371-406.
- Hill, H. (2007). Mathematical knowledge of middle school teachers: Implications for the No Child Left Behind policy initiative. *Educational Evaluation and Policy Analysis*, 29(2), 95-114.
- Ma, L. (1999). *Knowing and Teaching Elementary Mathematics*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics*. Washington, D.C.: authors.
- Riley, R. (1997). In math and college-going, middle-school makes all the difference. *Middle School Journal*, 29, 3-7.
- Silva, C. M., & Moses, R. P. (1990). The algebra project: Making middle school mathematics count. *Journal of Negro Education*, 53, 375-391.
- Silverman, J., & Thompson, P. W. (2008). Toward a framework for the development of mathematical knowledge for teaching. *Journal of Mathematics Teacher Education*, 11, 499-511.
- Simon, M. A. (2006). Key Developmental Understandings in Mathematics: A Direction for Investigating and Establishing Learning Goals. *Mathematical Thinking and Learning*, 8(4), 359-371.
- Thompson, P. W., & Saldanha, L. (2003). Fractions and multiplicative reasoning. In J. Kilpatrick, G. Martin & D. Schifter (Eds.), *Research companion to the principles and standards for school mathematics* (pp. 95-114). Reston, VA: National Council of Teachers of Mathematics.
- Vergnaud, G. (1994). Multiplicative conceptual field: What and why? In G. Harel & J. Confrey (Eds.), *The development of multiplicative reasoning in the learning of mathematics* (pp. 41-59). Albany, NY: SUNY Press.



# ENQUIRY INTO THE INVESTMENT CLIMATE OF IOWA

*Jainam Jain is currently pursuing his A Level course at Tridha International. He finds Mathematics, Statistics, Physics and Economics really interesting and fun! You'd either find him fooling with friends or you could catch him cycling and running or watching films and plays. Also, he wishes you have a good day!*



**Jainam Jain**

This is an enquiry into the current investment climate of the state of Iowa and its effectiveness in fostering entrepreneurship, promoting economic development and creating new investment opportunities in Iowa. The working hypothesis is that there is a favourable investment climate in the Corridor and an increasing number of available opportunities to invest in. This study is done for the Cedar Rapids Metro Economic Alliance and the Iowa Economic Development Authority. The author was working as an intern with TransWebGlobal and LBA Foundation during the month of October 2016 and collected data, conducted interviews etc for this study during that time.

Investment climate is the general atmosphere as influenced by economic, legal, political and social factors which could directly and indirectly influence the performance of an investment. It is the economic and financial conditions in a country that affect whether individuals and businesses are willing to lend money and acquire a stake in the

businesses operating there. The quantity and quality of investment flowing into Iowa, or any region, depend upon the returns that investors expect and the uncertainties around those returns.

There are many factors that affect the investment climate of a region. These include:

poverty, crime, infrastructure, education, workforce, national security, political instability, regime uncertainty, taxes, rule of law, property rights, government regulations, government transparency and government accountability. If a developing country has a bureaucratic and corrupt government with high levels of regulation, and if the government's provision of infrastructural and financial services and its control over crime is inefficient, then the return on the investment are likely to be low and uncertain with high levels of risk, and one would not expect growth, accumulation of wealth, and investment in such regions. On the contrary, with good governance and business environments, returns are

high and stable, leading to greater investment into the region.

Iowa was formed during the 1960s in the corn belt which resulted in the formation of their main economic sector and Iowa's primary crop. Iowa was agricultural economy until the depression, after which it became a region heavily involved in manufacture. Since 1985, there has been an emerging service sector in Iowa and has been increasingly contributing to the state's output. There are many government authorities and organisations appointed to improve the economic position of the state and to foster entrepreneurship and investment.

The primary research methodologies employed are questionnaires sent to businesses in Iowa and expert interviews. Additionally, secondary research includes articles, studies and reports on investment climate have been utilised. Studies such as Improving city competitiveness through investment climate: Ranking 23 Chinese cities (January 2004) and Investment climate study of ASEAN member countries (March 2011) have been used. Techniques similar to these studies have been used to create a complete, well-rounded and unbiased report. One questionnaire is a detailed survey about the business—the factors involved in its success and the importance of the community, the people and the setting, in helping shape the business. The second survey collects information on the barriers to investment in Iowa. Each barrier is specifically catered to Iowa and can be ranked from prevents-investment to negligible/not a barrier to investment. Certain factors were also examined in the survey and rated from 1 to 10, with 10 being the highest. The expert interviews were with heads and/or founders of reputable organisations in Iowa. The state of Iowa has one of the finest high schools such as Kennedy high and Washington high. The state has a high school graduation rate of 92.1% in 2014, the highest in united states. Iowa students also have the 6th highest SAT score and 2nd highest ACT

score compared to other states in the united states. Education is important for imparting skill and knowledge in the youth which will be a part of Iowa's workforce in the near future. The education also makes students skilled which results in "a lot of raw talent and the ability to get work done" says Eric Engelmann, Executive Director, New-BoCo; Founder & Board Chairman, Geonetric; Board member, Scrum Alliance. He is one of the first people involved in bringing about change and increasing entrepreneurship in Iowa. The state of Iowa has initiated research to promote economic development for the state. It spends more than \$774 million annually on research at universities; moreover, there is \$249 spent on research and development at the academic level per capita. In addition to this, organisations like West Wind Education Policy (WWEP), are "working to make education more inclusive and ensure that it is not divided because of inequalities." says Circe Stumbo, Founder and President, West Wind Education Policy. Through the use of focus groups and data analytics, WWEP works with the state and districts to assess the effectiveness of

current policies and on the inception of new policies.

Mr. Engelmann; Mr Alphonse O'Bannon, Founder and Executive Director, LBA Foundation; Head coach, Trans web global and Transitions Lab Prep School; and Mr. David Tominsky, Managing Director at Iowa Start-up Accelerator; have businesses based in Iowa because of the low cost of living and ease of business. Iowa has the 9th lowest housing cost in the country. Also, cost of doing business in Iowa is 6th lowest in the country, 2015. Annual wage rates are, \$41,840, 18.2% below national average wage rates, \$44,096. This lowers cost of production and increases profits. Since Iowa was a state heavily involved and dependant on manufacturing, the state has 8th lowest average retail price per kilowatthour of electricity at 8.15 cents/KWh. Furthermore, the output of the manufacture exports of Iowa have grown 78% between 2005 and 2015. Iowa has been recognised as emerging region of business by many sources and its conditions help promote growth, employment and the flow of money in the economy.

□

## Bibliography

Iowa Economic development Authority  
<http://www.iowaeconomicdevelopment.com/WhyIowa>

MidAmerican Energy Announces \$1.9 billion Iowa investment  
<https://www.youtube.com/watch?v=1-yGEY586Dk>

Business enquiry survey  
[https://docs.google.com/forms/d/e/1FAIpQLSeGEP\\_fBUNPxsTZVQUSHb-1COo5H-OjNk4U-k4-AJyX-93z5j4A/viewform](https://docs.google.com/forms/d/e/1FAIpQLSeGEP_fBUNPxsTZVQUSHb-1COo5H-OjNk4U-k4-AJyX-93z5j4A/viewform)

Barriers to investment survey  
[https://docs.google.com/forms/d/e/1FAIpQLSdj3Vcw-JlNy5Tv\\_yjS62gV-mhj5au-V66jpWJ8gtcGcufDCzpw/viewform](https://docs.google.com/forms/d/e/1FAIpQLSdj3Vcw-JlNy5Tv_yjS62gV-mhj5au-V66jpWJ8gtcGcufDCzpw/viewform)

## Works Cited

Urata, S. and M. Ando (2011), 'Investment Climate Study of ASEAN Member Countries', in Urata, S. and M. Okabe (eds.), Toward a Competitive ASEAN Single Market: Sectoral Analysis. ERIA Research Project Report 2010-03, pp.137-204. Jakarta: ERIA

Dollar, David and Wang, Shuilin and Xu, Lixin Colin and Shi, Anqing, Improving City Competitiveness through the Investment Climate: Ranking 23 Chinese Cities (January 2004). Available at SSRN:<https://ssrn.com/abstract=530744> or <http://dx.doi.org/10.2139/ssrn.530744>



# SEP - A LIFELONG LEARNING EXPERIENCE.....

*BA - in Geography*

*\* MA - in History*

*\* B.Ed*

*\* Diploma in Counselling  
and Guidance*

*\* Trained as Master Trainer in Mental  
Health and Life skills by DPS Society*

*\* in teaching profession for 24 years*

*\* working in DPS*

*Faridabad since 1995*



**Ruchika Sarkar**  
Teacher DPS Faridabad

A chilly Sunday morning, an aromatic cup of Darjeeling tea, the morning newspaper and the lazy winter sunshine streaming through the glass window wrapping warmth around me.....

It is indeed satisfying to sit back and wait for the day to unwrap, to wait for life to walk in through the hallway, to pamper me, to arouse me, to enlighten me to the world around.....

As a teacher life has taken me through myriad journeys, but as I lie on my couch today reminiscing the past- the SEP experience comes upon me as a cherished memory, cajoling my thoughts to carry them back to Cedar Rapids , IOWA and the cozy corner below the staircase at Kennedy High School. An American 12th grader walks up to me as he finds me waiting for my students and sits with me to share his experience

of learning the Chinese language. We were strangers a moment ago, but his endless chatter draws me into an enlivening conversation.

A tenth grader, a member of the Kennedy High Orchestra who plays the Viola comes upon me with a big smile only to strike an endless friendship which keeps me alive with enthusiasm even today.

What connections do we have coming from two corners of the globe, but I believe where humanity lives relationships get built.

The world seemed so small, as I interacted with the 10th graders in their geography class, as they came up with their curiosity of India only to learn more about our country.

The endless opportunities for our students to contribute in classrooms and bond with the shadow students was



indeed fulfilling. The students were let loose with break times to only spring back to learning as they huddled around for the diverse workshops in the evening and then gearing up for the selection of the special cuisines that were lined up to pamper their tastebuds.

The SEP chapter was uniquely spruced up with a dash of interesting visits. Learning the 'Art of Leadership' at the Kennedy workshop in a farmhouse retreat, traversing the bylanes of the

University of IOWA and Co College, visits to Art Museums, being drenched by emotions in a Dramatics Workshop, racing the adrenalin on the stands to watch soccer live and stretching muscles on the trampoline coupled with lazy scenic tours of the parks and waterfront, all added up to provide a lively American learning for our students.

The challenge of managing punctuality in a tightly packed schedule, being alert to pack up assignments on time, keep the team spirit alive at all times

and sneak out to rehearse at midnight to prepare for an Indian cultural show for the Kennedy High team, all added spice to the high energy program.

Packed into the suitcase of the student experience are the tensions of meeting deadlines, the excitement of each day with new experiences, the pleasure of shopping, the enthusiasm of squeezing in movie time, enjoying diverse cuisines from Indian to Mexican to Thai and Continental, not to forget the mess up and then setting things right - it all added up to great learning and maturing in a short span.

The SEP management team led by the versatile Director, the scholarly Academic head and the sprightly Academic Co-coordinator left us enthralled with their organization and hospitality.

I am Indian - extremely Indian, but today I enjoy my Darjeeling tea alongside my coffee... which SEP USA has gifted me with... very fondly. As I look ahead I pray that more and more students keep their doorway open to welcome the SEP as it walks into their lives through the hallway.....to surprise them ..... pamper them.... arouse them and enlighten them to the world around and finally help them discover their enriched inner selves. ....



# AMERICAN MATH COMPETITIONS

*An engineer and MBA by training, a teacher by happy accident, Shajid Merchant is the founder of Edukraft and Academic Director of TLPS. He has over 15 years of experience in teaching Mathematics, Economics and Business Management to IB, A Level and IGCSE students in Mumbai.*

*shajidmerchant@testprepcourses.in*

*“Math leads to awesome careers,” is so true in today’s time, when so many of us are making an excellent living in STEM fields. Growth in several economies around the world is expected to come from STEM-related jobs. To succeed in STEM-related majors in freshman year, students need a strong quantitative foundation. Have you ever wondered why top schools like Yale, CalTech, MIT, Stanford and so forth prefer to see AMC and AMIE scores of applicants?*



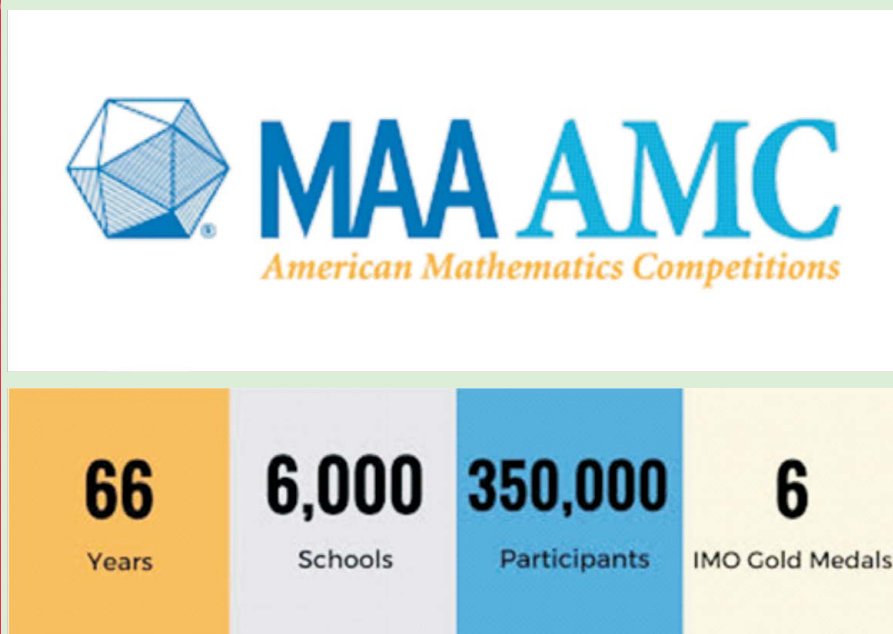
**Shajid Merchant**

Math is as old as civilization. There have been discussions among experts on how to teach math. Some experts believe in rote learning, and there are others who believe in imparting conceptual knowledge. The former argue that efficient calculations are essential in math, so rules, formulae, and tables should be memorized. The latter want to relate math to the real world to teach it.

AMC is a contest based on the idea of ‘approaching a question differently.’ This method motivates students to think. When preparing for an AMC contest, students need fundamental knowledge of numbers, algebra, geometry, trigonometry, probability and so forth. Equipped with this knowledge,

they approach a problem in different ways. Suppose the question is to find the area of the triangle defined by three coordinate points in a Cartesian plane. Someone can solve this problem using the Shoelace theorem; another student can solve this problem by finding the length of the sides of the triangle using the three coordinate points and then using Heron’s formula, and someone else can find the angle between any two sides using Cosine rule and then find the area of the triangle. There are immense possibilities of solving the question using different approaches. This method is a more open-minded way of learning math, and it goes beyond rote learning and conceptual drilling. I will call such an approach the ‘Creative





Question Solving Method.’ This method is used to teach at top schools in the US, and sadly many Indian students fail to adapt to this method and drop out of STEM classes in top schools like CalTech or Stanford. These schools, therefore, wish to know in advance if the students were exposed to the creative ways of solving math questions, as well as their scores. Higher scores help these schools gauge the ability of the students to survive in STEM-based courses.

Advocated by the Mathematics Association of America, the purpose of the AMC is to strengthen the mathematical capabilities of students studying in grades 8-12 by recognizing and rewarding excellence in the discipline. For 100 years, MAA has been a leader in advancing the mathematical sciences. For more than 66 years, the contest has helped thousands of students to learn the creative approach to solving math questions. In 1950, approximately 200 schools in the New York area participated in the contest. Today, the competition has grown to over 350,000 students attending annually, in over 6,000 schools. In 2016, out of the 1400 students admitted to Massachusetts Institute of Technology (MIT) 1200 had 80+ score in AMC 12.

AMC has three assessments: 8, 10 and 12. AMC 8 is a 25 questions contest which has a 40-minute duration. All

questions are multiple choice, and topics include interpretation of graphs, basic geometry, percentages, basic probability and so forth. Students who are in grade 8 or below and less than 14.5 years old on the day of the contest are eligible to take part in this test. AMC 10 and 12 includes 25 multiple choices which are answered in 75 minutes. Students who are in grade 10 or below and less than 17.5 years old on the day of the contest are eligible to take AMC 10, and students who are in grade 12 or below and less than 19.5 years old on the day of the contest are eligible to take AMC 12. Both contests have questions from algebra, geometry, trigonometry, probability and so on. However, the difficulty level of the questions differ.

Around 30-40% of the questions appearing on AMC 10 & 12 exams are from Discrete Mathematics, a branch of mathematics which is not included in middle and high school mathematics. It is not included in any of the standardized tests either. This branch of mathematics is growing in significance in today’s world as it finds its application in computer science and big data analytics.

Today’s world needs sophisticated math minds. “Money is where there is math,” and I am 100% confident about this. What is required is to generate a kid’s interest in the subject. One of the best ways of doing this is to start at

a young age. If kids are motivated to participate in AMC 8 and other similar contests at a young age, they will develop an interest in the subject. The earlier they start, the better it will be for them. Latecomers miss out on developing a creative mind to solve math questions and will be more likely to struggle in high school and college since they have less time to catch up. I have come across several students who are good at math in middle school but struggle when it comes to high school math and standardized tests like the ACT and the SAT.

Schools need to promote AMC and similar contests. They should make parents aware of their existence. Many parents are so vulnerable that they have no idea about these contests and only realize what their children have missed very late. Parents are also required to do their research to find out about various math contests and good training institutes. These can develop interest and ability to solve math problems in different ways and allows kids to be more creative. The training will also help them in middle and high school math. I have seen parents panic when their child does not fare well in middle school math. They provide them with the best tutors, even paying exorbitant sums. However, they spend no time in looking for options that can build a strong foundation and interest in math.



# ARRIVAL

*A 17-year-old film aficionado and bookworm residing in Mumbai. Is a proud student of SVKM JV Parekh International School where she pursues her IB Diploma. Spends most of her time writing and taking photographs of all things beautiful.*

**Director:**

*Denis Villeneuve*

**Cast:**

*Amy Adams, Jeremy Renner, Forest Whitaker, Michael Stuhlbarg, Tzi Ma*

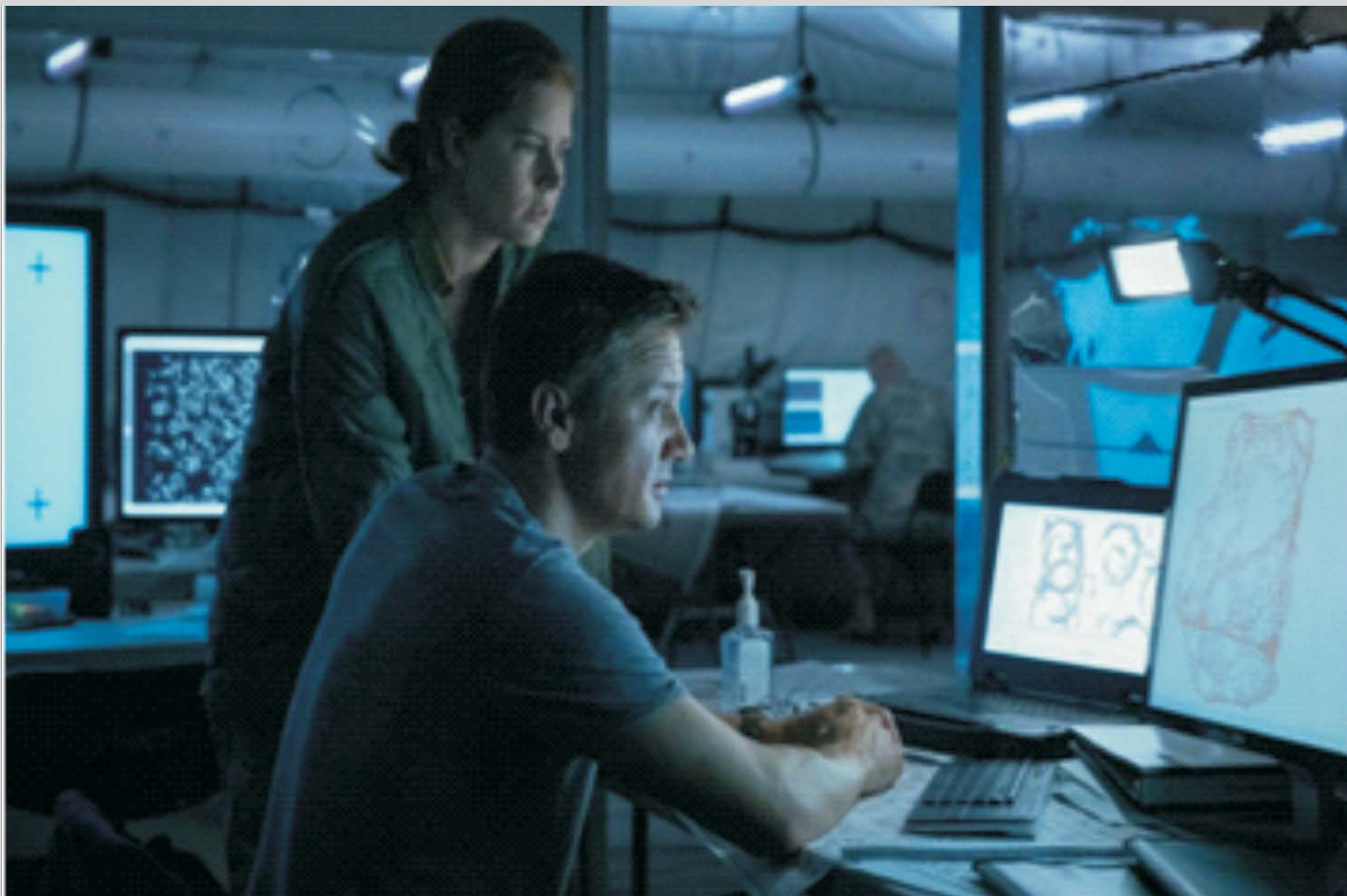


**Timiha Kunj**

Arthur C Clarke once famously said, “There are just two possibilities: that we are alone in the universe, or we aren’t, and both are equally terrifying.” Well, the film *Arrival* by Denis Villeneuve definitely gives us a glimpse of the latter with Jóhann Jóhannsson’s breath-taking music compositions and Amy Adams’s stunning Thespian performance. Villeneuve brings to the audience a Sci-fi thriller of the unexpected Arrival of the Aliens in different locations around the globe. It depicts professor Louise Bank’s (Amy Adams) efforts to discover a way to communicate with these extra-terrestrial beings and restore peace. The film is based on Ted Chiangs novella “Story of Your Life.”

Unlike most alien invasion films full of special effects, *Arrival* strays far from its genre while still remaining firmly entrenched in its fantastic, sci-fi premise is one of many impressive feats the film pulls off. It also dives into the depths of emotions that is rare in most sci-fi films. Along with this it also explores the complexity of linguistics and very importantly the nature of time. It leaves the audience to ponder the implications of life, death, time and love. In fact, there are times when the film blends complicated concepts in the film, for example establishing communication with life forms that can’t comprehend and relay information the way humans do is handled in a way that’s both intelligently presented and fascinating to





watch unfold on the screen.

*Arrival* is both a treat for the eyes and ears with its artistic cinematography by Bradford Young accompanied by the scores of Johann Johansson, that have almost spiritual overtones, with its Tibetan horns and quiet chants of ‘Om’. The human characters’ first interaction with the aliens is wonderfully cinematically crafted, that keeps the audience at the edge of their seat. The revelation of the Aliens at the first interaction was absolutely overwhelming for the character that is wonderfully depicted to the audience by the actors. For example, Adams does a remarkable job of adding depth to her character, and seems to find ways to make her linguistics expert feel like more than the typical academic. Her reaction to the aliens feels authentic to her character that has gone from imparting knowledge to a classroom full of students to entering an extra-terrestrial spaceship and deciphering their language.

Villeneuve, unlike in his film *Enemy* does not have an open ended finale in *Arrival* and is one the audience didn’t expect. It is here that we delve into the



true purpose of the extra-terrestrials which is a jaw dropping reveal that gives the tragedy in Louis’s life a twist and requires rewatching to find all the breadcrumb’s left from the beginning of the film.

*Arrival* encapsulates a fragment of why I love films. To me it illustrates

how only films can make the impossible possible such as deciphering alien language and having supernatural abilities with a dash of reality to it. However, not a single part of you believes it’s staged until you see those credits roll.



# MATH IN MOVIES DISPATCHES FROM **BOSTON AND MUMBAI**

*Several studies have concluded that the best way for an individual to imbibe, process and eventually convert any information available out there into acquired knowledge, is through audio-visual learning. Put together a series of still images and the phi phenomenon creates a photoplay. Add voice to those images, you have what are lay man terms, a motion picture or a movie.*



**Yash Shetty**

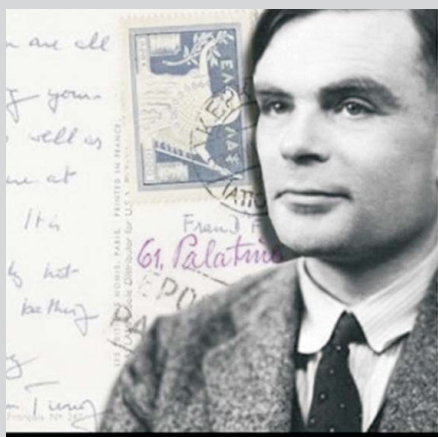
Freshman, major in Mathematics and Finance at Northeastern University

“As a student of Mathematics, I am constantly in the process of trying to persuade people to my sway, finding amusement in this game of numbers, variables and logic that my discipline of study is. A subject dreaded for its complexity, here I present a selection of Photoplays (movies) from a list curated by the Department of Mathematics at Harvard college, that will most certainly ignite a passion for mathematical nobility in the hearts of many a young individual. After all, legend has it that even the great contemporary mathematician Yāshāpati, was in fact inspired by the movies on this list.” Yash Shetty



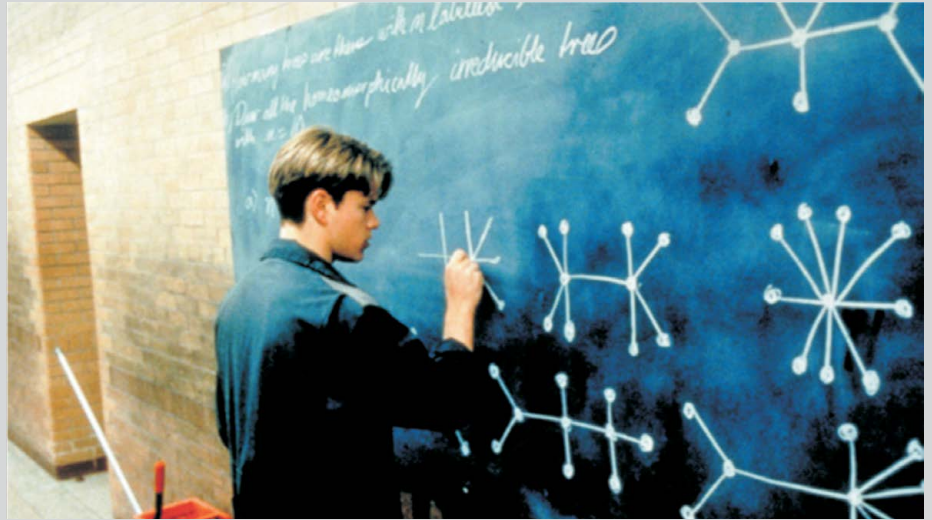
**Sanjana Jobalia**

(Sanjana Jobalia is an 11th grade student studying in the JNIS IB section. Previously, Sanjana studied IGCSE and topped her school in her board exams. She is currently studying psychology and is very interested in the subject.)



**Breaking the code:** “Sometimes it is the people who no one imagines anything of, who do the things that no one can imagine.” The original bio-pic on Alan Turing, the father of modern Computers, follow the English Mathematician as he performs his blood soaked calculus and deciphers the figuratively unbreakable German Enigma Code.

**Goodwill Hunting:** *A wayward young man struggles to find his identity, living in a world where he can solve any mathematical problem. Question is, will he be able to solve the problem brewing deep within himself?*



**Moneyball:** *If you ever want to win the world series, you must have some sort of competitive advantage. Enter conditional probability.*

**Agora: Alexandria, 391 AD:** *Hypatia teaches astronomy, philosophy, and mathematics. With the rising tide of Christianity and the political chaos that ensues, all institutions of learning and government itself may crumble. Hypatia, however, has no interest in faith; she's concerned about the movement of celestial bodies and "the brotherhood of all".*



**The Time Machine:** *Testing his theories with a time machine of his own invention, Alexander Hartdegen is hurtled 800,000 years into the future, where he discovers that mankind has divided into the hunter - and the hunted.*



### Fermat's Room:

*Four mathematicians find themselves in a shrinking room that will crush them if they do not discover in time what connects them all and why someone might wish to murder them.*



### Sanjana writes

**A Beautiful Mind:** A Beautiful mind is the thrilling real story of how Jonathan Nash, winner of the Nobel Memorial Prize in Economics, came to be. Right from the time he arrives at the Princeton University, Jonathan is adamant on publishing an original idea. A few years later, he is invited to the Pentagon to crack encrypted enemy telecommunication. Nash can decipher the code mentally, to the astonishment of other decrypters. However, as this secretive work starts to play on his mind, Jonathan is faced

with the harsh reality...or fantasy. How did Nash come from working at the Pentagon to winning a Nobel Prize? Watch the movie and find out.

**Real genius:** Mitch Taylor has no idea what he is in for when he arrives at the Pacific Technical University and meets professor Jerry Hathaway who is secretly building a laser for the CIA. However, Hathaway, being the crook that he is, is making his students do all the work for him as their semester project. Matters slowly unravel as mean high school tricks turn into sophisticated experiments where Mitch and his friends realise the importance of de-

stroying their own lazer. Will he be able to? Only the T.V can tell.

**Calculus of Love:** Imagine spending your entire life in pursuit of the solution to an unsolved problem: The 250 year old Goldbach Conjecture. The answer was so close to AG Bowers but still so far away... until, he received a string of suspicious letters which would change his life forever. Based on the greed and corrupt nature of man, The Calculus of Love enables us to see through the desire for the solution to look at the simple equation...and the secrets surrounding it.





# HONOURS PROGRAM A QUICK OVERVIEW

*Sharmin Merchant is the Principal of Transitions Lab Preparatory School in Mumbai. A science teacher by accident but a principal by choice, she loves to inspire young minds, facilitate learning and deepen knowledge and understanding of her students. You can reach her by email at [sharmin.merchant@transitionslab.com](mailto:sharmin.merchant@transitionslab.com)*



**Sharmin Merchant**

*I wanted to talk about some of the academic competitions our students are participating (and have been for last several years) this academic year. We had, in previous years, exceptional success with some of my students reaching top spots in the world. I am happy to see more students from around India started to do the same. This academic year I am happy to report that we have over 1000 test takers from India and we are providing testing support exclusively in South Asia, Middle East Asia. I am also including an interview with one of the top performers in AMC Mr. Eashwar Shivraj, a high school student from Bangalore India.*

American Scholastic Math Association (ASMA) is a first examination to start the journey of your Honors Program. The contest has many interesting questions that leave the students thinking. These contests also prepare students for middle and high school mathematics as they include application based questions. Students also sharpen their skills to answer math section of standardized tests like The ACT and the SAT. All in all the experience that students have taking these contests is awesome and helps them

benchmark themselves not only with peers in the schools but students globally as students from over 40 countries participate in these contests. Every participant receives a certificate and the student or students with the highest cumulative score receive the

## **HIGHEST-SCORING STUDENT AWARD. CERTIFICATE**

American Math Competitions (AMC) has gained importance in the undergraduate school admission process, and so the numbers of students taking these exams are growing every year.

Contest	Month	Number of questions	Duration	Maximum marks	Grade
ASMA Junior / Senior - 6 test	October to March	7 per contest	35 minutes per contest	7 per contest	IX - X
ASMA Senior - 6 test	October to March	7 per contest	35 minutes per contest	7 per contest	XI - XII
American Math Contest - 8	November	25 multiple-choice questions	40 minutes	150	VIII
American Math Contest - 10A	February	25 multiple-choice questions	75 minutes	150	IX - X
American Math Contest - 10B	February	25 multiple-choice questions	75 minutes	150	IX - X
American Math Contest - 12A	February	25 multiple-choice questions	75 minutes	150	XI - XII
American Math Contest - 12B	February	25 multiple-choice questions	75 minutes	150	XI - XII
Pascal Math Contest	March	25 multiple-choice questions	60 minutes	150	IX or below
Cayley Math Contest	March	25 multiple-choice questions	60 minutes	150	X or below
Fermat Math Contest	March	25 multiple-choice questions	60 minutes	150	XI or below
Euclid Math Contest	April	10 questions full solutions	150 minutes	100	XII or below
Fryer Math Contest	April	4 questions full solutions	75 minutes	40	IX or below
Galois Math Contest	April	4 questions full solutions	75 minutes	40	X or below
Hypatia Math Contest	April	4 questions full solutions	75 minutes	40	XI or below
National Biology Competition	April	50 multiple-choice questions	75 minutes	50 (1/3 negative marking)	XI or below
Sir Isaac Newton (Physics)	May	12 multiple-choice questions	120 minutes	12	X, XI and XII
Gauss Math Contest	May	25 multiple-choice questions	60 minutes	150	VII and VIII
Avogadro Exam - Chemistry	May	40 multiple-choice questions	75 minutes	40 (1/4 negative marking)	X, XI and XII
Beaver Computing Challenge	November	15 multiple-choice questions	45 minutes	90 total marks	VII, VIII, IX and X
Economic challenge	April	35 MCQ	60 minutes	100	10th and 11th
Psychology challenge	May	Essay			High School
History challenge	May	Essay			12th grade
English writing competitions	March to June	Story, science fiction, essays			High School

Table 1 – Details of the contests and competitions our students are participating

There are three contests AMC 8, 10 and 12 and it is recommended that students should participate in all three of them. There is some preparation required to take these contest but any effort is worth it especially Ivy League schools, and to schools in the US like MIT, CMU, CalTech and others are expecting to see AMC and AIME scores of applying students. Certificates range from top scorers to participation. University of Waterloo/CEMC – U

Waterloo is Canada's largest and most recognized outreach organization for promoting and creating activities and materials in mathematics and computer science. Their math contests for grades IX to XII are pretty fascinating and comprises of 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 Chem-

istry 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), economic essay and writing competitions in Harvard, Yale, Math Challenge in MIT, essay competitions for psychology, history and English students.





## Define your love for Mathematics.

I have loved mathematics from a very young age. I recall factoring 4-digit numbers from the number-plates of cars at a very young age. I enjoy participating in math contests and have been participating in online and offline contests from primary school.

## Your relationship with the AMC contest.

**I took my first AMC-8 in 4th grade along with my brother who was then in 8th grade. I have been taking the AMCs regularly since then and 2017 will be my 9th year. I have also qualified for the AIME each of the last 3 years. I look forward to the AMC/AIME contests in Feb/March every year much as an athlete would look forward to a tournament.**

## Where have you been challenged the most while preparing for or giving the AMC?

The last five questions are always the hardest. I find geometry, especially 3-D geometry, the most challenging.

## What makes the AMC different than any other curriculum/contest in your experience?

AMCs are much more challenging than school math. Topics such as number theory and counting are not covered in the school curriculum at all. Even the coverage of geometry in school is shallow. Frankly, I learned all my math until 10th grade from the Art of Problem Solving (AoPS) books and AMCs were the main purpose. As a consequence, my school math required no work at all. Only in 11th and 12th grades I have had to learn calculus and analytical geometry since these topics are not covered in the AMCs.

## How do you prepare for the AMC?

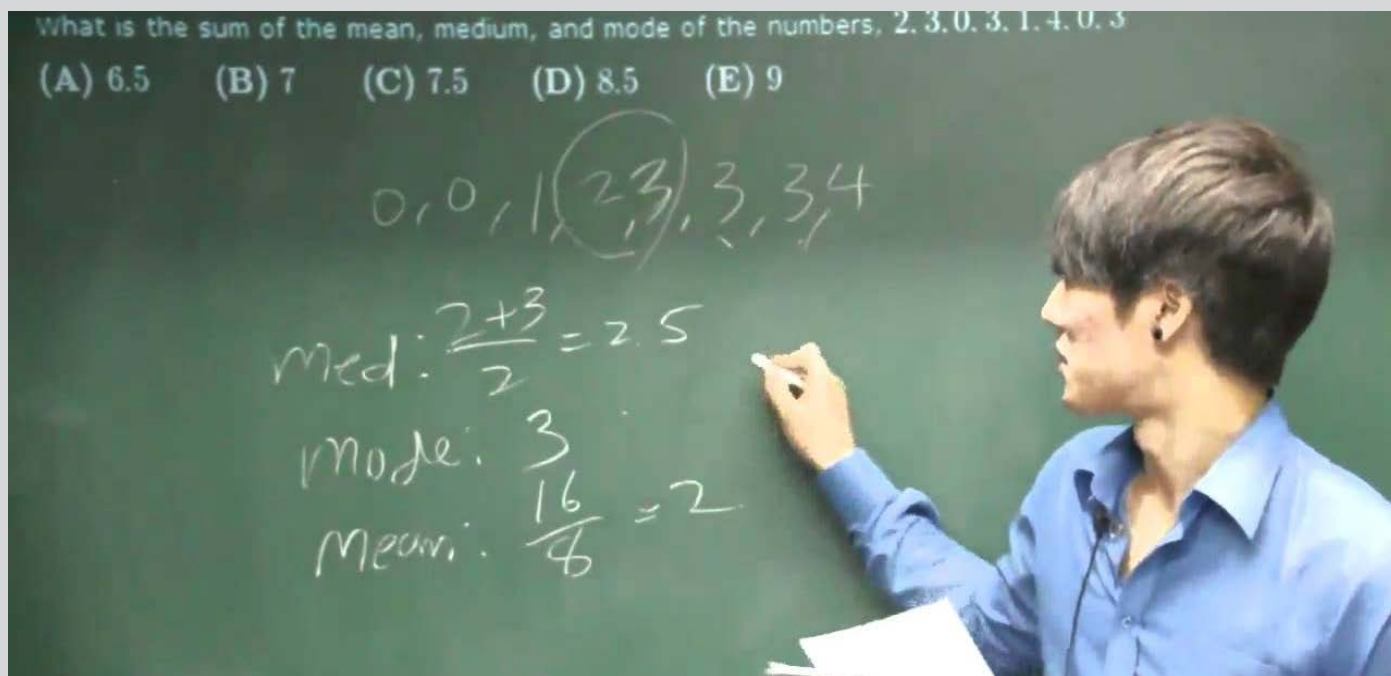
I studied the AoPS textbooks covering Algebra, Geometry, Number Theory, Counting and Pre-calculus, as well the two "red" problem books, to learn the material through the year. I take the online AMC Advantage courses offered by MAA. I also review the solutions of the last 5 problems from previous years discussed in the Math Jams conducted by AoPS.

## Why should a student take the AMC?

Why should a tennis player take part in Wimbledon? It's the same reason. Math is a sport. It's for fun. And competition with other mathletes is more fun.

Are you looking forward to developing your career in Mathematics? If so, what are the advantages because we've got so many students who show interest in Mathematics but due to lack of guidance or motivation lose their track.

I intend to pursue a career in science and major in Physics and/or Mathematics. I intend to complete my PhD and take up research full-time as a Professor. I want to do this because this is what I like most, and for no other purpose. But if I can apply my knowledge and solve problems that are useful to society, that would be a bonus.





# CEDAR RAPIDS

**#6** Top City for Living  
the **American Dream**

-Smartasset.com

Top 50 Overall **Best  
Run Cities in America**

-Wallethub.com

**Best Run City in Iowa**

-Wallethub.com

**14<sup>th</sup> Best City Services**

-Wallethub.com

**#1 Best Place in  
America to Raise a  
Child**

-Smartasset.com

**5<sup>th</sup> Best City in America  
for Young Adults to  
Get Rich**

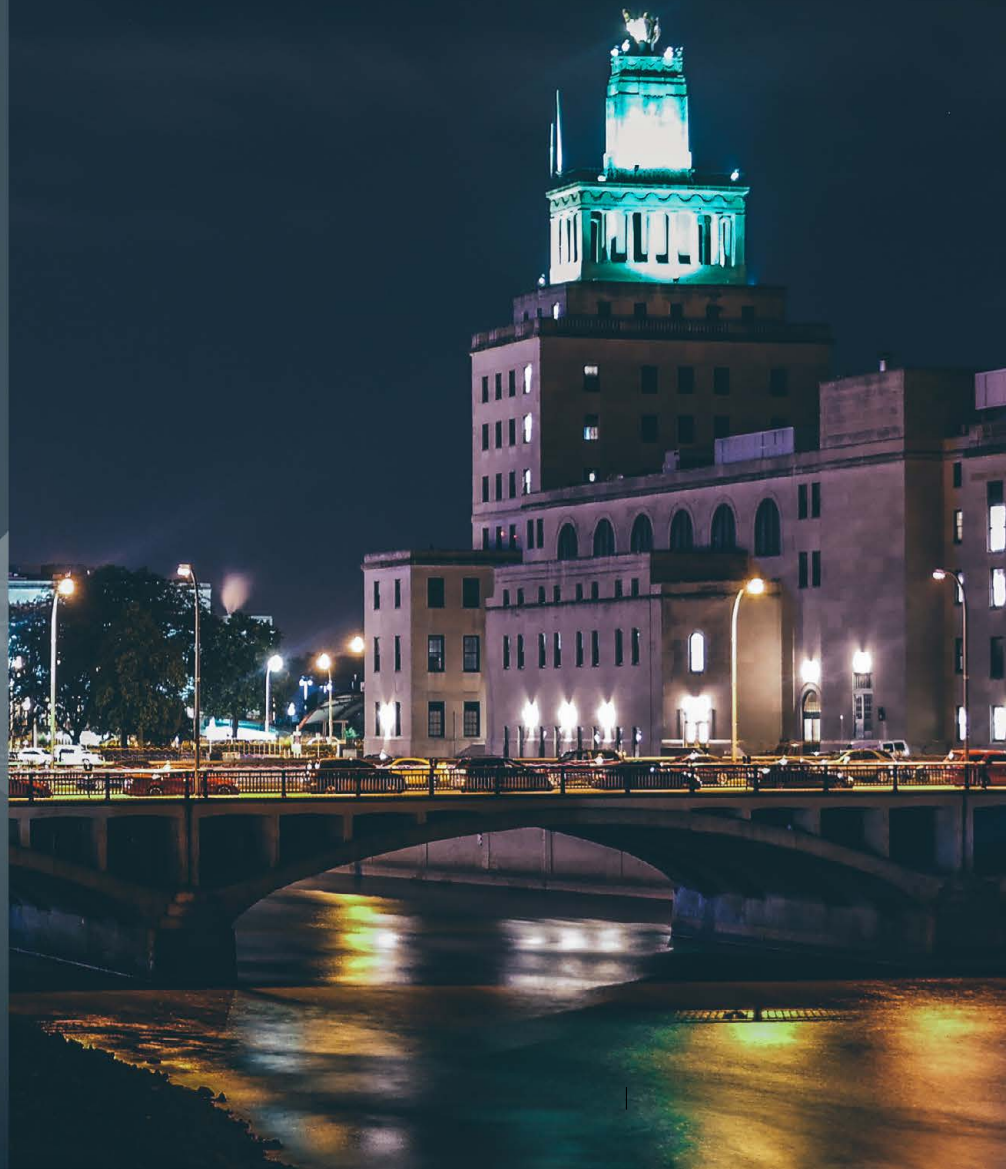
-Moneyunder30.com

**All-America City**

-National Civic League

"Cedar Rapids is proud to support student enrichment programs. We welcome all to experience the culture, arts, fun and diversity in the City of Cedar Rapids."

– Cedar Rapids Mayor Ron Corbett





# AMERICAN MATHEMATICS COMPETITIONS



Take a seat at the AMC,  
the leading Mathematics Competition  
for middle and high school students.

SAVE  
THE  
DATE

International Mathematical Olympiad  
Rio de Janeiro, Brazil  
July 12-23, 2017

MAA MathFest  
Chicago, IL  
July 26-29, 2017

HELP  
YOUR  
STUDENTS  
NETWORK

Apply for an MAA  
Departmental Membership to  
help your math students build  
careers and research



1529 18th St. NW  
Washington D.C. 20036-1358  
P: (202) 387-5200,  
P: (800) 741-9415  
F: (202) 265-2384  
E: [maahq@maa.org](mailto:maahq@maa.org)

