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Connecting Thinkers…

Editors' Message

Dear Thinkers,

"Imagination is more important than knowledge. For, knowledge is limited to all that we now know and understand, while imagination embraces the entire world. And all there ever will be to know and understand" so said Albert Einstein. While trying to comprehend these two aspects of our thinking and understanding, of our subjects specifically and the world in general, we do so in relation to each other, and most often as contrasting terms. Knowledge is definite, while imagination is abstract. Knowledge involves facts, information, and perhaps skill whereas imagination is the capacity of the individual to think on the basis of sensory perceptions. Knowledge is the universal truth and is objective, whereas imagination varies from person to person and is subjective. There is also the fact that knowledge is hard facts, theories, formulae etc. but imagination is ruled by intuition.

We can go on and on trying to analyse and understand these two concepts. But the 'twain shall meet' where knowledge is empowered by imagination and in turn the result of imagination becomes knowledge again. This is what is often termed as innovation. If we are unable to imagine, the path also will be unclear; moreover what is imagined has to be tested and proved to be achievable, which again falls in the ambit of knowledge.

Knowledge cannot be static, as it changes with time, thus challenging the status quo. In that situation, unless we are able to imagine 'what could be', we wouldn't know how to move ahead. We, as researchers have to constantly strike the golden mean between the two. It is imagination which brings in innovation, which then gets converted into knowledge for the future. The very term research has 'search' for which we should be able to perceive and imagine, with the strong base of the knowledge about the subject. So while imagination is what leads to innovation, and it is the ability to 'innovate' that creates the 'wow' in our work; it is our subject knowledge and 'what we know' which acts as a foundation for our imagination and innovation. Unless we imagine, we cannot add new knowledge, and unless we acquire the knowledge, our imaginations will not turn into innovations.

Inside the Issue

SEASON'S GREETINGS

Thinklet wishes all its readers a very Happy and Prosperous Diwali.
We would also like to extend our wishes for the Karnataka Rajyotsava on November 1st.

GUIDE'S COLUMN
INCLUSIVENESS OF INNOVATION: CREATING VALUE IN THE DIGITAL AGE

Digitization—the mass adoption of connected digital services by key stakeholder public: consumers, enterprises, civil society and governments among others, is a fundamental driver of growth and innovation across sectors, globally. Digitization has helped to create an enormous global market for information and communication technologies while laying the foundation of networked readiness—a ubiquitous, vast and interconnected modern information society. There is a need for a framework that not only unifies the social benefits each of the existing enterprise based models but transcends these to bring businesses, institutions of higher education and communities' closer in more enlightened ways.

The information society: According to the International Telecommunication Union, Geneva, Switzerland, by the end of 2015, there were almost 3 billion Internet users, two-thirds of them coming from emerging market economies. The information society is best understood as a combination of tools, services and models that have changed the way communities' access innovation, worldwide in two principal ways: a) mobile-cellular subscriptions and b) the Internet. Data for 2014-205 suggests that there are 6.8 billion mobile-cellular subscriptions—almost one for each inhabitant on the planet; and there are 2.7 billion users of the Internet. With the proliferation of ICT the day is not far when digital and broadband connectivity, accessibility and affordability create a truly inclusive information society that as a global collective drives the pace of technology growth and change.

Role of universities and institutions of higher education: Access and usage of ICTs must ensure that all stakeholders—educationists, scholars, practitioners, innovators and government—work towards unleashing the value creation benefits of ICTs. This knowledge enterprise among users ought to enable them to connect with technologies in enlightened ways while it propels them to engage effectively with technology to plan and manage their lives in superior ways.

There needs to be a shift in focus from viewing ICT as an industry to an enabler of economic growth. India can leverage ICT and create a paradigm shift in the following areas of higher education to start a new wave of social, economic and rural growth. There should be a re-focus on ICT as a medium of imparting education and not on IT literacy, connectivity and digital communication only. According to UNESCO (2015), the demand for higher education has accelerated worldwide. Between 1999 and 2008, the number of students enrolled in higher education institutions (HEIs) increased by 65 million, with much of the growth being seen in East Asia and the Pacific. In fact, the global demand for higher education is predicted to expand from less than 100 million students in 2000 to over 250 million in 2025. This is likely to include the rising numbers of learners who seek to enroll in courses to upgrade their skills and qualifications.

The last decade or more technology has redefined the delivery of learning. The Open Education Resource movement offers educational materials that are freely available, suitable for all levels of education, reusable and online. Institutions of higher education cannot stop here and ought to take this model to the next level of innovation. This can only happen through greater inclusiveness where the community of scholars evolves indigenous models to disseminate learning.

Among the numerous immersive learning initiatives to engage with stakeholder groups in the society at large is The Karnataka Roads Scholar program—a pilot championed by some leading universities in the state. This innovative, field immersion program connects scholars with educational schools and business communities in all the districts of the State of Karnataka. It is further envisaged that a learning content management system to beneficiaries will bring in contact the teachers, administrators and students of different community-type colleges and develop research ideas and innovative pedagogical methods that are further embellished with other groups.

Although, initially, this program will reach out to the 30 districts in the State of Karnataka, in due course the program will be extended to the rest of South India. The next stage of the program, will build on the use of ICT to deliver educational resources in the vernacular medium to the beneficiaries through technology enabled services. At the same time this initiative will also aim at strengthening financial inclusiveness among beneficiaries to educate and guide them on the use of mobile phones to access net banking and other facilities. Institutions of higher learning also need to fund research and create new learning on several thematic areas of ICT and rural transformation such as the role of skill based training through ICT to increase jobs and entrepreneurial opportunities in rural areas; creating a network of rural-based educators and ensuring national-level access to vocational content and resources; and leveraging ICT expertise in creating multimedia enabled education methods while maintaining the quality learning and affordability.

An 'Innovation for Inclusion' Model : The existing ICT models across the globe need to take a holistic view of engaging enterprises, institutions of higher education and communities, collaboratively and inclusively. For example, in Africa, as part of a predominantly social enterprise model, Intel, among others, in providing refurbished desktop computers recycled from waste. Western models of ICT engagement focus primarily on knowledge enterprise by proliferating distance learning and blended learning modes of education such as open course resources of world-class universities that are now available as free courseware. Similarly, the third paradigm of community enterprise highlights the role of networked communities and social media through their engagement through face book, which, for example, alone hosts 1.15 billion users who converse and communicate in real time.

There is a need for a framework that not only unifies the social benefits of each of the existing enterprise based models but transcends these to bring businesses, institutions of higher education and communities closer, and in more enlightened ways. Thus, an 'innovation for inclusion', ICT-based model ought to connect key stakeholders: innovators, institutions of higher education and communities through funding indigenous innovations based on not-for-profit considerations. Frugal innovation under this paradigm produces affordable and often simplified versions of existing sophisticated technologies for use by low-income populations. There are challenges in the way of the proliferation of technology-enabled initiatives, aimed at improving the quality of life of rural communities in particular. The key challenges and opportunities require enterprises, educationists and governments to focus on the following areas, going forward. Building affordable, yet, robust digital infrastructure in rural areas will attract frugal innovation in ICT.

Institutions of higher learning and other stakeholders ought to create greater awareness and action on the access, usage and skills related to ICTs even as it purports to further the debate and discussion on how models can be co-opted to ensure that the benefits of the digitization result in definite and tangible spillover benefits: improve the quality of life of user communities, value creation, and delivery of information, technology and innovation in the digital age for the society at large, going forward.

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Energy Efficient Homes- A Step Toward Reduction of Global Warming

The world's population uses about 15 TW of power today, we probably need to generate 30 Tw power in world by 2050. If we do not dramatically reduce our carbon emission, the global warming is going to increase day by day! By using renewable energy sources global warming can be reduced, by reducing carbon dioxide emission by 50%.

One of the easiest way is to make your home energy efficient, by installing solar panels on roof top of your house. The Sun produces 1Kw per square meter. With 15 % of efficient cells, one single family typical needs 20-meter Square cells. Modules will be connected to inverter to get AC power from DC power. People are allowed to run their meters backward as the net energy metering option allows consumers to give energy back to grid when it is not needed. Even a single phase household consumer is allowed to avail net metering without much hassles of procedures and approvals! If Home energy system is producing power more than your usage you can earn bill credit. The earned credit can be utilized during pick hours of consumption! Competitiveness of Solar with conventional grid electricity depends on size of installation, annual amount of sunlight available, change in climate condition and local cost of conventional grid.

By using renewable energy sources global warming can be reduced by reducing carbon dioxide emission by 50%

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> *"Thinking should become your capital asset, no matter whatever ups and downs you come across in your life." - A.P.J Abdul Kalam*

Religious Practice and Democracy in India

Religion is a very sensitive subject in our country. It is considered to be a very personal affair for each individual. Yet there are always debates and discussions going on with respect to religion and religious laws. With a keen interest on the subject, I wanted to pursue my M.Phil on these lines. This is when I was suggested to read the book *Religious Practice & Democracy in India* by Pradeep K Chhibber and Sandeep Shastri. As the title suggests, the central idea of the book is to view how religion and religious practices have an effect on democracy in India.

It was for me an illustration of one's identity and association on the canvas of Religion.

The book is based purely on data and surveys conducted across India which gives it a validity to arrive at pan-India conclusions. There were many ideas expressed and showcased with data in the book. However, the point which stayed with me after finishing the book was that religion is not just a personal thing associated with an individual. The practice of religion as an individual goes beyond the individual and becomes an expression of one's self in the society. It is also a representation of self in society and works as an identity for each one of us. Further, it extends even beyond the personal sphere and reaches out into the political life as well. The book talks about this religious identity being used for association with other people like us in the society, and which gives a feeling of inclusiveness. It was for me an illustration of one's identity and association on the canvas of Religion.

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Learnings from a Primary Data Questionnaire

For my research on Defence Offsets and growth of Aerospace in India, I planned to collect primary data. During discussions on the draft questionnaire with my Guide, I realized that many questions needed rewording because while they were clear to me due to the domain familiarity, they did not necessarily convey the same meaning to a potential respondent, who would read it for the first time.

The journey of research, really teaches patience and perseverance, I find these learning's interesting and rewarding.

Running the questionnaire through a few peers indicated that certain questions carried multiple statements which could have opposing answers or ratings. For example: *There is lack of transparency in award of offsets work and its fulfillment*. On a relook, it dawned that a respondent may consider "award of Offsets as lacking transparency" but "not its fulfillment" or the other way around. This led to splitting or rewording many questions. Another form of question was: *Many countries have made use of Offsets. There are lessons in Offsets to be learnt from these...*On careful reading, they appeared to be independent questions and hence needed to be split.

To facilitate the ease of responses, I searched for a suitable online medium. Many free softwares were cumbersome to create a questionnaire others had only free samples but hefty charges beyond sample questions. Here, a Jain University faculty introduced me to 'Google Forms'. Using this platform was relatively easy. I ran iterations using my second e-mail ID as a mock respondent. It took about 7-8 iterations to clear many bugs and I am satisfied now of getting clearer responses due to revisions made in the questionnaire format and wordings. However, the next challenge I anticipate is to get time from the respondents to fill up the questionnaire, amidst their hectic schedules and commitments. The journey of research really teaches patience and perseverance and I find these learnings interesting and rewarding.

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The First 100 Days of My Research Journey

Well began is half done !!

This research bug inside me was on for the last few years, which got triggered during my Mission10X stint at Wipro and it finally took shape with my discussions with Jain University Research team. After the initial hesitation, *Can I/Will I/Should I* etc. questions, I finally submitted my application form in early July this year. On receiving an interview call ,I landed up at Jain University on one lazy Saturday noon. I looked like an odd man out with a formal suit, but still went through two grilling rounds of interviews. Dr. Jha and the Research panel agreed to let me into the program. To my surprise, they issued the confirmation letter on the spot itself !!

Group assignments and presentations are helping in enhanced learning and increasing our involvement

After the inauguration of the Ph.D program and the formal program briefing, classes started for the coursework in the month of August. Dr. Shastri and his team do things in signature style, with high passion and complete involvement, which made all our scholar gang comfortable and as most of us are coming into classrooms after a long gap, group assignments and presentations are helping in enhanced learning and increasing our involvement. On communication, arrangements, prompt response, encouragement - all factors, Jain University team is scoring well, clearly few notches higher than expected. In the Discipline of Management, our classes are yet to start in swing and I'm looking forward to that segment. Having faculty members who have served in the Industry is clearly going to help in matching academic and industry perspectives. The idea of having scholars from varied disciplines like Arts, Management, Psychology etc. in one classroom, is a novel idea which brings in higher creativity and better relevance holistically!!

Though, reaching in time for classes is not so easy on the weekends, especially after a week's long working hours in the corporate sector and navigating the Bangalore traffic. But freshness and newness in week after week in the sessions helped me so far not to miss any classes. Its also an opportunity to make new friends and enjoy the groups' competitive spirit, which adds as a big bonus. I would say my long research Journey is Well Began !!

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My Research Journey

The frontiers of science always had a special appeal for me since my childhood. I was very passionate about the discipline and wanted to update myself about the present status in the field of science and technology during my Bachelors and Masters studies. Therefore to fulfill the gap which is required in the field of research, I choose to pursue Ph.D. in Biotechnology and I got an opportunity at Jain University. My research journey started during August 2012. This was the time when I got back after a break from family responsibility. My research journey had many unforgettable experiences and I have experienced both good and tough times which again helped me in achieving my goal.

With the supervision of my Guide. I could always get a new idea, thought process, accumulation of information, decision making, information management, writing skills and the like, with new opportunities. In fact they have improved with time. I made a point to attend workshops, seminars and also presented my research work for which I got prizes and awards which motivated me to form a better research structure. The feedback from experts in the related field was a great exposure to improve skills during my research journey. Throughout the course, I improved my dedication, understanding capacity and also patience. I think my research journey has been full of excitement, surprises, challenges and uncertainties.

The feedback from experts in the related field was a great exposure to improve research skills during my journey.

The process of doing a Ph.D. program is almost like an emotional roller coaster. Well, from my research journey I can say that to achieve a goal, working hard, dedication, determination and being positive has to be the aim. Because of these insights I could complete Ph.D. and would like to thank the Department of Biotechnology, Jain University for giving me an opportunity and also providing me with a fellowship throughout my studies and of course my parents who played a major role in supporting me without whom I could not stand where I am today.

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My Research Journey

Once upon a time, a not so little girl decided that she wanted to be a researcher when she grew up. It's been three years since I decided that I was ready to be a grown up. Best decision ever!

Feeling inadequate is good when you're a researcher

The life of a researcher doesn't involve a lot of socialization. You don't catch up with friends or watch movies. You miss weddings and parties and get a lot of grief for the same. And yet I wouldn't trade it for anything.

There are, I believe, certain experiences that are an inherent, as well as integral part of the research journey. I find myself constantly battling with feelings of inadequacy- from the size of my sample to the duration of my longitudinal study and the extensiveness of my literature review. Everything can always been done better. And making presentations at conferences doesn't do much to alleviate these feelings, not necessarily because the quality of others' work but because somehow people think that the best kind of feedback they can give you is to tell you that you should have gone in a completely different direction. So my exploratory study and what it entails isn't critiqued, but if I'd come up with an intervention that would have been superb! Don't get me wrong, feeling inadequate is good when you're a researcher. I don't think I would do research that was half decent if it wasn't for this persistent niggling feeling that I should be doing more. It keeps me from getting complacent and cruising, hoping things will fall in place.

For all the lows this rollercoaster ride entails, the highs make it completely worthwhile. That moment when you run your data and realize that all your work wasn't for naught… That's the ultimate! It's a high that terribly addictive and terribly hard to come by.
So while I wait longingly for the next moment to roll around, I've found a change in perspective helps. I've learnt to appreciate the journey (even though sometimes I'm not sure I'll ever reach my destination). And she researched happily ever after.

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In Conversation with the Experts

In this section we bring you an interview with an eminent researcher. This month's expert is Dr. Sudhir Pai who is an experienced neurosurgeon currently practicing in Bangalore. A highly educated doctor, he has completed his MBBS, MS, and M.Ch. Dr. Pai is a well-known neurosurgeon with immense experience in the diagnosis and surgical management of general neurosurgical cases including aneurysms, neuro-oncology, neuro-trauma, pediatric neurosurgery, spinal disorders and neuro-endoscopy. He conducts routine neurosurgical operations independently which include routine and complex head injuries, microsurgical clipping of aneurysms, excision of a spectrum of brain and spinal tumors, micro discectomy for lumbar and cervical degenerative spine disease, spinal instrumentation, and peripheral nerve decompressive surgeries. Dr. Pai is a true professional and has numerous triumphant surgeries to his credit. He is also a member of the Board of Management, Jain University.

As a neurosurgeon, what has been your most fulfilling experience?
Many fulfilling experiences as I look back at my last 35 years as a neurosurgeon. Ever since I completed my studies in neurosurgery from AIMS in 1983, it has been a long journey. The most fulfilling experience comes when you see someone suddenly coming up to you with their other family members and thanking you for saving them or their near and dear ones. Honestly, many a time I would not have been able to identify them. Practically, the patient is like a child you have adopted till he or she recovers. Occasionally results might not have been as desired.

What mental preparation do you do before you commence an operation?
Especially in neurosurgery, as compared to other surgical specialties, every surgical case is different. The whole planning and execution of the procedure needs to be revisited either in text or in consultation with other team members - it could be neuroradiologist (specialized in x rays / scans of neurological disorders) or your own assistant or senior colleagues. One has also to be prepared to retract (meaning abort the planned procedure) in case one feels that things will harm the patient, if one proceeds with execution of planned procedure. It is very important to note that **DO NOT HARM THE PATIENT (Latin: Primum nonnocere)** which is part of the Hippocratic oath. Before any major surgical procedure, you need to have a proper rest the previous night and ALWAYS have a steady hands.

Would you say that each operation that you do is a learning experience for you?
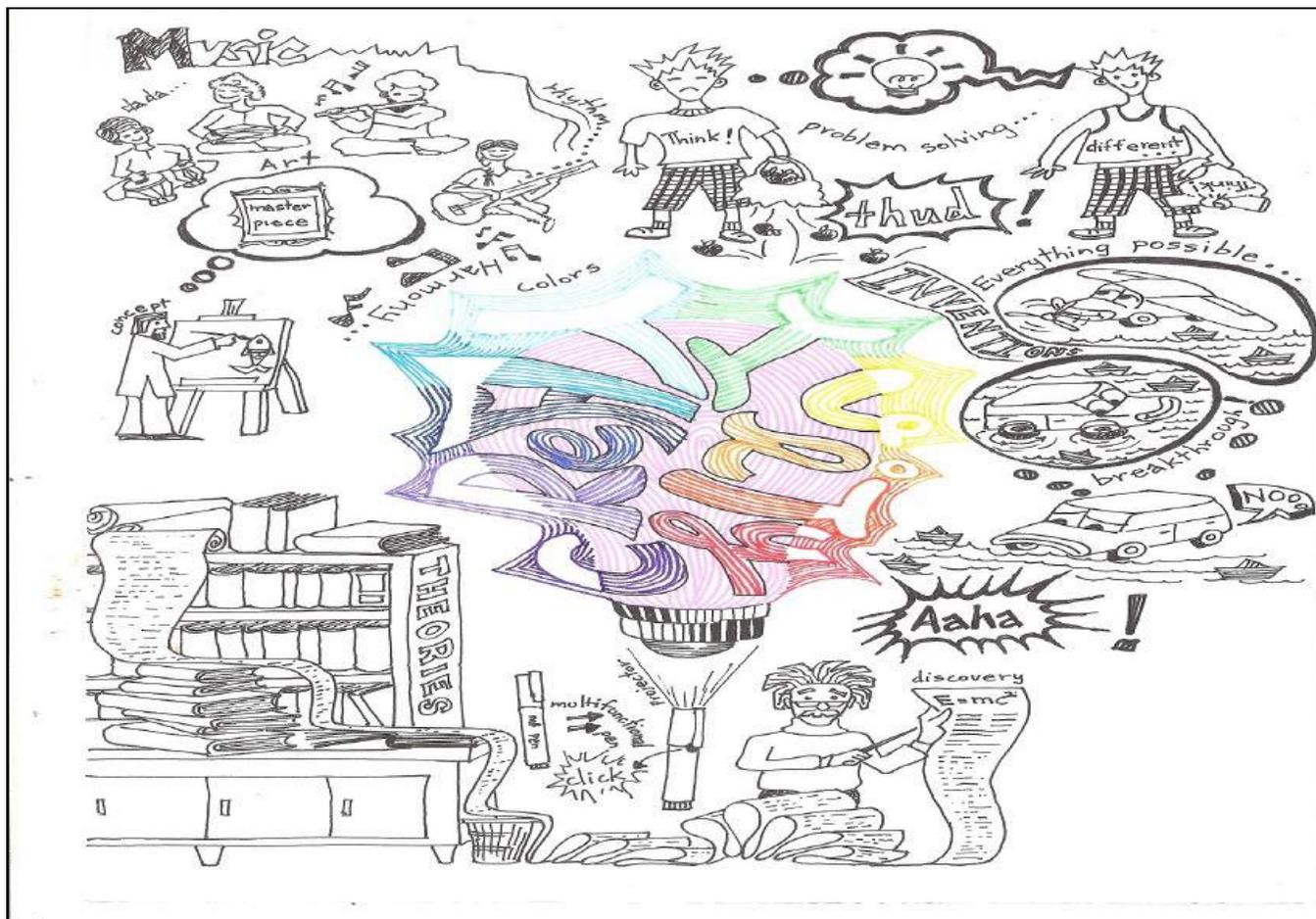Yes, every operation / surgical care is learning experience. Be it a small procedure which might have been done under local anesthesia (these days we do major brain tumour surgeries while patient is awake, and conversing with team or performing actions as requested - known, as **AWAKE CRANIOTOMY**) to a complex procedures of operating a brain tumour or vascular manformations, every time we tend learn new things. As it is known, in medicine, we should consider ourselves a student all our life, because every patient is a text book.

As a surgeon with a busy professional schedule, what do you do for relaxation?
I enjoy music, especially Ghazals (my favorite singer is the late Jagjit Singh) whenever time permits. Music is a soothing balm to your body and mind .

What is your advice to young researchers?
My advice to young researchers is -be honest in your observation, humane in your approach and interactions and above all enjoy life as well.

This cartoon has been created and contributed by Padma Priya who is a doctoral scholar in Visual Arts at Jain University. Email: kritajna2002@gmail.com

ARTICLES FOR NEXT ISSUE SHOULD BE SENT BY
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PLEASE INCLUDE YOUR NAME, E-MAIL ADDRESS AND THE KNOWLEDGE DOMAIN OF YOUR INTEREST

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