

Guest Editorial

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Teaching in the Abundance Era

When I grew up, it was a must to attend classes if you hoped to do well in studies. Good books were scarce, and we couldn't afford ones that were available. If you skip classes, you better copy the topper's notes.

Times have changed. Almost any good textbook has a low-priced edition, you have Google and Wikipedia, and then you have online discussion forums.

If a teacher sees her job as a knowledge conduit, she is doomed. With easy direct access to knowledge, the conduit ceases to be indispensable. Does this mean the teacher's role has gone redundant?

On the other hand, this era of knowledge abundance has unwittingly thrown up the right questions on the role of the teacher. Why must the teacher waste her time recycling easily accessible knowledge, something that any student with initiative must find out on her own in any case?

Teacher's role redefined

We need not accept the modern classroom as the only mode of teaching known to humans. We know there existed gurukuls where the teacher's role had a wider scope. We also know technology is empowering us to deliver education in innovative ways. Khan Academy's experience suggests that videos of good lectures can be more effective than the real thing. Steve Jobs' Stanford video, Ted Talks, Wikipedia, online discussion forums, blogs and social networks have all challenged our thinking on how to engage with the curious mind.

The presence of the internet does not mean that the curious student is now well informed just as mere presence of the library did not ensure education. This is where the teacher's role begins.

I have experienced that Google is not very effective for me when I need to learn from scratch. When I have zero knowledge, I need someone who can connect me to the right books, the right sites, the right videos and even the right people. The teacher can play the role of that connector.

What makes the student go to the library instead of the cinema? Today, what makes the teenager watch a Ted Talk rather than a Katrina number? The teacher provides that inspiration.

It's an abundant world full of possibilities. Unfortunately these come garbled with distractions as well; and it is not easy to decipher the signal from the noise. This leads to choice anxiety and needless stress.

Variety of choices and a pressure to acquire the best can often lead to fleeting attention and inability to savour the depth of any single choice. We have hundreds of friends but in an era of limited time and abundance of possibilities, we don't know which friend can provide the support we need. The teacher can fill that gap, at appropriate moments.

But why should the student come to the teacher?

The teacher's new role thus changes from being a knowledge conduit to that of a connector and a coach, the one who provides direction and inspiration, without being an intrusion. Such transformation is easier written here than achieved.

Why should the student come to the teacher when in doubt? Or even respect the teacher?

In the past, erudition was enough to earn respect. Today that is par for the course. Knowledge is easy to find. In fact, the students collectively are reading more than the teacher can possibly learn.

You earn respect by creating value, value that is scarce. One rule for the abundant era: don't join the race, don't stretch hard to compete and provide what someone else is doing well. Focus on what's not there. For example, teenagers and young adults are looking for support, for direction, and inspiration; these are still hard to come by. Can the teacher provide these?

But where does the teenager look to for support? With one who can create the connect, with one who is interesting. You connect with people when you are genuinely interested in someone, when you descend from generic sermons to custom support, specific to one's context. And that's not easy.

One also needs to be interesting. Being interesting is more than interest and depth in some areas; you should also apply such knowledge in the context of your audience. It is that specific contextual connect that makes you interesting. For example, deep knowledge of how to program in Android makes you an expert, but teaching your uncle how to "chat" with his childhood friend makes you interesting.

Interesting teachers will also harness the power of the environment. They'd see how to use Facebook or mobile phones to their advantage. If students learn better in groups, the new age teacher finds a way to use that as the de facto method of teaching. Today technology makes that possible. Brain4ce (www.brain4ce.com) is trying collaborative learning, using the power of contests, communities, blogs and mentors to deliver learning in an attractive manner.

Caveat

While doing all these, we need not go overboard. Students learn in different ways, and we must not dump the current methods entirely in favour of another flavour. Some students respond to provocation, others still wait for the prescription. Each one has a different aspiration and a different preferred way to learn. Choice of learning alternatives can impact those who appear slow at first, and they may be inspired by a different approach. Passion must be mixed with patience!

Is there a real need to change?

Whether we need to change depends on the purpose of the teacher. Is it to build the next generation? Or is it to share our knowledge to produce the next set of graduates? If we look upon ourselves as nation builders, the need to change will be intrinsic and we will discard all known theories, we will just focus on how to inspire the learner. So whenever in doubt, reflect that you are building the nation's tomorrow, and you will find the right answer.

Kalyan Kumar Banerjee

From Chairman's Desk



Desirable Engineering Professor Skills

The rapidly changing demands on the Engineering Graduate capabilities and attributes translate into changed Engineering Professor skills. A recent survey and analysis by Lueny Morrell and Jennifer DeBoer reveals several interesting trends.

"The typical Professor ideally has a PhD and is very technically competent. As part of his/her

academic load, he/she has been asked to teach, maybe an undergraduate course and a couple of graduate courses, but in reality has never (or seldom) received any instruction about how to teach, and most likely is not interested in receiving any capacity building coaching in these topics". He/she is also obliged to engage in both academic as well as sponsored R&D. "Teaching and research have different goals and require different skills yet they are equally important to society". "The engineering professor of today and tomorrow needs to be a blend of the two professions, engineer and educator".

In the Survey, the respondents were drawn from Faculty/Deans, Industry and Students, who were asked to list the top five desirable attributes of Professors. There were major differences in the perceptions of the three groups of respondents. However, it was possible to synthesize the major perceptions.

The study describes the profile of the Ideal Engineering Professor of 2020 as a person combining the following qualities:

- A technical expert,
- ... with a savvy and adaptability rooted on actual engineering practice
- ... with superior communication skills

- ... recognized as an effective teacher and mentor
- ... and committed to ethical and inclusiveness abidance.

“The most important characteristics are: some knowledge of the subject in theory and practice, an ability to convey this knowledge, and the perspective to see why it is important and uphold this value. These attributes reflect the three-pronged mission of higher education institutions: educate, develop knowledge and serve society”.

A combination of academic and administrative strategies is required to develop the Engineering Professor 2020. “These could include, promoting the practice of engineering before and during the academic career, establishing career roadmaps akin to faculty interests and balancing research with teaching loads, promoting and requiring faculty capacity building in teaching/pedagogy, establishing teaching/learning institutes to provide for faculty training, strengthen industry alliances to have faculty spend sabbaticals, summer internships in industry and other activities to ensure that an engineering professor is a well balanced professional in both the engineering and pedagogy professions”.

Book Release: “Theory of Computation” Authored by Dr. Kavi Mahesh

Date: 20th January 2012
Venue: PESIT, Bangalore



A new textbook on the theory of automata and formal languages, *Theory of Computation: A Problem-Solving Approach* by Dr. Kavi Mahesh (Wiley, 2012) was released by eminent professors Dr. V. Rajaraman and Dr. H. P. Khincha at PES Institute of Technology on Friday, 20th January 2012. Speaking about the patience and perseverance required to write a book, Prof. Rajaraman noted novel features of the book such as the problem-solving approach in place of the conventional theorem-proving approach and the use of video lectures in an accompanying DVD to enhance the subject matter in the book. Dr. Khincha highlighted other innovative features in the book including *mantras* for solving problems, debugging exercises and a compilation of all the important theorems in the subject in an appendix for ease of understanding and cross-reference. Video lectures were also demonstrated in a regional language (Kannada) for the benefit of students from rural backgrounds.

About the Author

Dr. Kavi Mahesh is a Professor in the Department of Computer Science at PES Institute of Technology, Bangalore where he heads the Centre for Ontological Engineering. For over a decade now he has also been a Principal Consultant with the Knowledge Management Group at Infosys Ltd. He holds an MS and a PhD from Georgia Institute of Technology, USA and an MTech from IIT-Bombay.

Faculty Development Workshop on “Java, JEE and Application Server Concepts”

Date: 27th January 2012
Venue: SIT, Mangalore



This workshop explored Java and related topics like Changing face of Java, Java for Cloud, Real-time Java, New language features in Java etc. It also introduces to audience JEE, JSP, Servlets, JDBC and JMS.

This is of special significance as BITES and IBM are planning to create a special interest group(SIG) related to Java, J2EE and Middleware to help faculty members create and deliver better curriculum centered around these topics. IBM would also support this group by participating in curriculum development and sharing their courseware to incorporate above topics as electives in the existing CSE curriculum. The workshop conducted at SIT was well received with over 70 faculty members pertaining to BITES member institutions taking part.

Brief description of each of the session conducted is given below:

Java Concepts:

Amar Devegowda who is a senior technical leader from IBM started the workshop by explaining the audience on the changing Java trends over the past decade. Amar also shared some of the key foundational changes that Java has undergone in terms of Memory Management, Concurrency, multi-tenancy, Java ready for Cloud and other important concepts that are crucial for building Java applications.

J2EE concepts:

Enterprises today need to extend their reach, reduce their costs, and lower their response times. J2EE continues to be one of the foundational platforms that enables customers to build such enterprise solutions. Lohitashwa Thyagaraj who is the WebSphere Messaging Product Architect, started the session by explaining the need for J2EE and how JEE reduces the cost and complexity of developing ... multi-tier services, resulting in services that can be rapidly deployed and easily enhanced. This session on J2EE concepts set the tone for the rest of the sessions, since it clearly gave the basic foundation to all the faculty members.

JSP, Servlets and JDBC:

JSP Servlets and JDBC are the core components of J2EE architecture that enables enterprise applications to exchange data. While JSP technology provides a simplified, fast way to create web pages that display dynamically-generated content, Servlets perform the role of controllers that enables switching and invoking of reusable components (for eg, Beans) that is transparent to the application. JDBC on the other hand, provides a standard and vendor neutral way for applications to interact with any Databases within the enterprise.

WebSphere Application Server Concepts:

Lohitashwa Thyagaraj took the session on WebSphere Application Server concepts. WebSphere Application Server (WAS) is IBM's open-standards Java 6 Standard Edition (J6SE), Java Enterprise Edition 6 and Web services-based application server. WAS helps deploy host and manage a wide variety of applications ranging from simple web sites to powerful on demand solutions. Offers a rich application deployment environment with a complete set of application services, including capabilities for transaction management, security, clustering, performance, availability, connectivity, and scalability. Provides a robust infrastructure for SOA.

Round table discussion with Faculty members and IBM speakers:

The day was concluded with a round table discussion between the IBM speakers and faculty members. There were lots of questions and queries from the faculty members that were addressed by the IBM team.