Development of ICT tools as per curricular requirement

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Everyone likes a change in their life....
The world is changing….

- Globalization has accidentally made Beijing, New York, London and New Delhi immediate neighbors.
Accelerating time

• 5% of the existing professions change in every five years,
• 5% decrease in the professions not based on knowledge of infocommunication technology in every two years
• Exsistential perspectives of professions not based on ICT knowledge move around the average minimal wage.
Features of change in knowledge

• Learnt professional skills become out of date within 10 years,
• 32 times increase of relevant information linked to the given profession in the Internet every year
• The number of Internet connections doubles in every year,
• Continuous increase in broadband.
Metamorphosis of the role of teachers

- The role of instructors in the 20th century: father, scholar, monopolist of knowledge.

- The role of instructors in the 21st century: colleague, manager in handling information, chief coordinator controlling the “Jungle” of information.
Historical Telecommunications
Current situational problem analysis

- Over 400+ Medical Colleges
- Over 70,000 UG & PG every year
- Number of teachers.....Reducing by the day
- Student teacher ratio.......Increasing by the day
The MCI’s Vision 2015 draft

• It cites three main reasons for India’s healthcare woes: Shortage of physicians (both generalists and specialists); Inequitable distribution of resources and manpower; and, Deficiencies in the quality of medical education.

• The report has proposed reforms such as curricular reform, emphasis on primary healthcare and family medicine, and strengthening medical institutions by investing in technology.

• To systematically address the issues and develop strategies to strengthen the medical education and health care system, curricular reforms are needed so that Indian Medical Graduates match or better the international standards.

• While shortages of doctors and paramedical staff are perennial, the need to inculcate adequate skills in the faculty of medical colleges and the field doctors is acute.
In MCI’s Vision 2015, the following modifications have been made in the existing curricula to accommodate the aspirations of the defined goals and competencies:

- **Newer learning experiences** through introduction of **foundation courses** placed at crucial junctures, clerkships/student doctor clinical mode of teaching and electives
- **Early clinical exposure** starting from the first year of the MBBS course
- **Alignment and integration** (horizontal and vertical) of instruction
- **Emphasis on clinical exposure at secondary care level**
- **Competency based learning**
- **Greater emphasis on self-directed learning**
- **Integration of ethics, attitudes and professionalism** into all phases of learning
- **Encouragement of learner centric approaches**
- **Ensure confidence in core competencies so as to practice independently**
- **Assessment** of newer learning experiences, competencies, integrated learning and subject specific content
- **Acquisition and certification of essential skills**
What does this vision 2015 envisage?

• Under the draft, there will be a Curriculum Implementation Support Programme, which will assist the teaching faculty of the medical colleges to implement these changes at their own medical colleges. It is also envisaged that the tools of information and communication technology will be harnessed to enhance teaching and learning.

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CURRENT CHALLENGES

• Access to medical education
• Lack of scalability to medical education
• Also to skill based learning
• Inability to optimize teaching resources
Sustain such teachings as Lifelong learning

• Skills, competencies backing continuous studying process should be the focus of education:
  – Intelligent learning
  – Digital literacy
  – Problem solving skills
  – Communication skills
  – Social and career building competencies
The Problem

- Our system has been patterned on the traditional British system with a strong disciplinary culture!!!
- Curricula is stuffed with rare diseases and esoteric syndromes!
- Training in hospitals is only at level of tertiary care-a distance from the actual reality

Do we need such training in our country where a person comes with pain abdomen and is diagnosed as some rare disorder??
Method of instruction

- Didactic
- “Teacher centric”
- Lecture-Transmitted knowledge
- Assessment is
  - Subjective
  - Maybe unfair
  - Maybe inadequate for assessing all the competencies!!
So the summary of the problem...
• Information and Communication technology
• IT in medical education
• IT in primary, secondary and tertiary health care
• IT in Diagnostics in remote patient monitoring
• Telecom tools in scaling up education and in scaling up healthcare
• HMIS to create a paperless and filmless hospital
• Universal healthcare data for patient and physician access
• In tele-radiology
ICT

New paradigm for

- Creation
- Dissemination
- Exploitation of knowledge has evolved
ICT...what do they do???

• Enhances quality of teaching
• Enhances assessment
• Enhances integrated approach to learning
• Enhances the thinking, acting, solving and analyzing skills and other processes
ICT means in education

- Content development
- Increase in the number of computer laboratories
- Providing advantageous financial terms and conditions
- In service Teacher training
- Support for the development in informatics
ICT’s-Advantages

- Interactive communication
- Ones own pace
- Practice simulation
- Take online tests and evaluation
- Feedbacks
- Real time visualization
Colossus MKII - The heavy weight computer worth the name!!

- 35 tonnes
- 2,500 valves
- 4.5 KWt
- 2 Banks of racks, 7’6”x16’
- 16 feet apart

Thus started the revolution!!!
It had NO MEMORY!!!

It still may be debatable if today's most advanced computer does have any memory!!!
Skill development needs to include:

- Communication skills
- Managerial skills
- Emergency handling skills

This is where ICT’s come in to play a major role in medical education and health care.
Visualization

Medicine and Biological sciences have long relied on visualization to illustrate relation between Anatomy and Biological function.

- Observational surgery
- Post mortem examination
- Mental reconstruction
- Methods of examination
- Realistic surgical training prior to patient contact
- Rehabilitation and treatment procedures
- New avenues for planning and practicing surgery and diagnostics
- Telemedicine and telesurgery
E-learning- Learning that uses digital technology.

It may be used for:

- Learning experiences
- Training experiences
- Certification exp.
Teaching gadgets

- OHP
- Slides
- Tapes
- VCR
- TV
- Motion pictures
- Blackboards
- Computers
- CD ROM packs
- Scanners
- Cameras
- Video conferencing equipments
Virtual education

• Use of immersive, interactive, virtual and reality technology for distance education

• Medical instruction
• Research
• Visualizing patients with rare conditions
• The response of a patient to a disease
• Look of a disease
• Feel of a disease

At the same time no risks
The PGMET Lab
The PGMET Lab

Students practicing suturing and other surgical skills!!
The PGMET lab

Emergency life support training!!
The PGMET lab

The skill being demonstrated!!

Note the monitor, cameras and transmission from each table!!
The PGMET Lab

The Laproscopic surgical remote virtual unit
The PGMET Lab

The virtual classroom with video cameras at each station with central console for the guide!!
The PGMET Lab at MAMC

The central control room and video conferencing center

The virtual man
This virtual man can teach so much more in collaboration with a non virtual teacher!!!
What is needed

• We need to reflect! Do we need to change? If we do need a change, then what change??

• A change of attitude towards medical education

Make sure your worst enemy is not living between your own two ears.

ATTITUDE IS A LITTLE THING THAT MAKES A BIG DIFFERENCE.
The inimitable song sequence....
And the changed inimitable....
What is needed for ICT setup?

**Hardware:** That what is used for computing, handling, storage and transmitting information

- Electronic gadgets
- VCR
- TV
- Multimedia projector
- Computers

**Software:** That what is used to develop content, information, instruction and learning material
Problem

- Wide disparity of infrastructure
- Wide disparity of students learning capacity
- Wide disparity of ability for learning and grasping by students
- Wide disparity of teaching skills and training methods applied by teachers

ICT’s, whenever considered should take into account these factors and Should cater to all the groups
Cost

ICT’s should be:

• Cost effective
• Easily available
• User friendly
• Standardized
ICT’s - Disadvantages

- Dependence
- No feel
- No scare
- Maybe disrespect for complications

Media does not facilitate learning - It only helps to learner to process the information resulting in knowledge!!
Problems!

- Lack of authoritative facts at times
- Overload of information
- Lack of quality control
- Availability of state of art infrastructure
- Availability of trained manpower
- Availability of Skills lab
- Available of adequate bandwidth
- Availability of modern studios
Computer-Interactivity

- Computer based Teaching
- Computer based Learning
Teleconferencing
Web based Instruction
Telerobotics

Demand for Telerobotics
Telemedicine
ICT is for augmentation. Not for substitution!!!!

Campus Based
• Anatomy
• Radiology
• Cardiology
• Neurosciences
• Surgical specialties
• Research based scholarly activities
• Question banks
ICT-Distance learning

Off campus based

• The rising costs of education, the meagre availability of educational resources, the shortage of available time for syllabus, globalisation of education, migration of population has resulted in the off campus proliferation of this aspect of education!

Distance learning program’s
National Classroom

- The National Board of Examinations through the IGNOU and Doordarshan Gyan Darshan channel
The National Board of Examinations

• The Examination pattern of OSCE ie Objective Structured Clinical Examination has revolutionized the evaluation system and made it fair, unbiased and acceptable!!
Potential of ICT in curriculum: Enhancing Quality of Learning

**Potential**
- Motivate and engage learners
- Bring life to concepts and processes
- Foster inquiry
- Provide flexibility
- Allow application of information
- Provide access to world of information
- Bring the world into the classroom
- Offer collaborative opportunities and communication
- Offer tutored and individualized learning

**Solutions**
- Radio and TV
- Multimedia Learning Modules
- Virtual Labs
- Connecting to the Worlds
- Designing and Creating Things
Potential of ICT in curriculum: Enhancing Quality of Teaching

**Issues**
- Difficult Profession
- No One-Shot Training
- Continuum
  - Initial Training
  - Lifelong Upgrading
  - Connecting

**Solutions**
- Multimedia Training and Support System
- Training Videos
- Teacher Development Portal
- Internet Resources for Teachers
Potential of ICT in curriculum: Sustaining Lifelong Learning

**Issues**
- We all need to learn new skills
- Modern societies demand constant updating
- The “educated” can become obsolete
- Life-cycle pattern is changing

**Solutions**
- Radio and TV
- Multimedia Packages
- Online Courses
- Open Universities
- “Third Age” Universities
Potential of ICT in curriculum:
Improving Policy Planning & Management

• Management of Institutions and Systems
  – Institutions: Admissions, student flow, personnel, staff development, facilities…
  – System: Institution mapping, personnel payroll, MIS, communication, information, . . .

• Management of Policy Making
  – Storage and analysis of data
  – Construction and assessment of policy scenarios
  – Tracer studies and tracking systems
From Potential to Effectiveness

1. Educational Policy
2. Approach to ICTs
3. Infrastructure
4. ICT-Enhanced Content
5. Committed and Trained Personnel
6. Financial Resources
7. Integration
8. Piloting and Evaluation
Summarizing......

To Tech or not to Tech Education

ICT  ――► Education More Effective and Responsive

ICTs
Continuing to summarise...

- The introduction of different IC based material based learning aides has the potential of changing the face of medical education and healthcare delivery system.
- Use of IT in the healthcare domain can help bridge the shortage of doctors in the country and spread their reach beyond their local area of practice.
- Growth of IT has made vast changes in medical education system in India at both the teaching level as well as research level.
- Policy makers, physicians and those who teach physicians have to open their eyes to the opportunities, realities, and responsibilities.
- Typically, most of the hospitals in our country focus more on clinical excellence that is not how a good institution works. A good institution need to have a fair balance of clinical excellence, academics and research, which is needed to retain the talent.
“Society is becoming technology driven. It is important to understand the importance of this and look towards affordable technology. We have to think about how our institutions can set up their own incubation centres.

The biggest strength of “Make in India” is human capital. Skill development is extremely vital as I believe that science is universal but technology has to be local.” …… Narendra Modi, Prime Minister of India
• Today, the greatest challenge is to balance the information and knowledge we provide in an institution, with the harmony in life.

• Integrating technology into the classroom is definitely a great way to reach diversity in learning
We do not think anymore of the spectacle of printing every time we read a book, the phenomenon of TV every time we watch a movie, or the miracle of the telephone every time we make a call.

The ultimate success of ICTs for learning will be attained when we stop marveling about the ICTs and apply our minds and emotions to the wonders of learning."
As the information technology explodes to spread infinitely....

More important than the curriculum is the method of teaching and the spirit in which the teaching is given”

I thank you all for letting me communicate with all of you!!!

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