Reforms in the Teaching of Medicine
Perspectives & Challenges

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There is so much... that I don't know where to begin
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Teaching Medicine - Perspectives & Challenges

“There is so much... that I don't know where to begin”
Background

Traditionally, and by necessity, Medical Education was “teacher – centered”

1. The teacher had all the knowledge and only he knew the “secrets of the profession”:

2. He was the source of the medical educational process

3. He was the one to decide how to learn

4. The objective of medical education was:
   - to make the student acquire an essential body of knowledge (in the form of facts, concepts and skills)
   - to train him on how to use that knowledge effectively in managing health problems
With the ongoing fast and vast expansion of medical knowledge, it is becoming increasingly evident that it is not possible to teach everything.

Even if such a goal were to be attained, the rate of change in medical knowledge is so high that "taught" knowledge would be out of date by the time of graduation.
Knowledge is either

{a mountain of facts
an ever-changing stream of theories and new concepts}

The present educational system:

1. is failing to balance between these two approaches
2. is not ready to meet the future needs of medical education
Grouped in 3 main domains:

1. Curriculum development
2. Tutor development
3. Restructuring learning environment
AAMC identified five major roles for the future doctor:

1. Life-long learner
2. Clinician
3. Educator/communicator
4. Researcher
5. Manager

If these roles are accepted, then the curriculum should be designed in this direction.
GMC *

Suggests that there should be less emphasis on the basic sciences and more on:

1. ethics
2. Communication skills
3. Social sciences

With an earlier exposure to patients and their families

“few people would disagree that two years spent in the company of a corpse is not the most imaginative introduction to a profession, that more than any other, needs to develop the skills of talking to distressed people” **

*(General Medical Council: Tomorrow’s doctors: Recommendations on undergraduate medical education. Keith & Reed, 1993)*

In today’s continually changing health care environment . . .

Many observers of medicine have expressed concerns that medical students are not being adequately prepared to provide optimal health care in the system where they will eventually practice.

This view is held also by some within the Medical profession and, more specifically, The Medical Education Community.
Your task:

Design a medical curriculum which would prepare your students for the coming 40 years of medical practice.
Would you have included discussions about

- Internet for telemedicine & learning
- Genomics
- Biotechnology
- Ethics of artificial reproductive technologies
- HIV/AIDS
- Brain imaging methods

Background
To produce a graduate who has the attributes and commitment for lifelong learning and a solid foundation on which to build a clinical and professional career.

**Foundation**

- Medical knowledge & understanding
- Skills
- Professional behavior
To produce physicians who are prepared to serve the fundamental purposes of medicine.

Physicians must possess the attributes that are necessary to meet their individual and collective responsibilities to society.

If medical education is to serve the goal of medicine...
Research indicates that:

1. **at least for a short period**, students retain vast quantities of information.

2. Many of them soon seem to forget much of it, and, they appear **not to make good use of what they do remember**.

3. They experience many superficial changes - (acquiring the jargon of disciplines) - but they still tend to operate with naïve and erroneous conceptions.

4. Many students **do not know what they do not know**: they have not developed self-critical awareness in their subjects.
Cognitive Psychology

Has demonstrated:

Facts and concepts are best recalled and put into service when they are

\{ taught \ \text{practiced} \ \text{assessed} \}

In the context in which they will be used
Experiential learning

Experience

Apply

Learn

Reflection

Adapted from Kolb
Correlation between “Learning Mode” and Retention Rate

- Lecture: 5%
- Reading: 10%
- Audiovisual: 20%
- Demonstration: 30%
- Discussion group: 50%
- Practice by doing: 75%
- Teach others: 80%

National Training Laboratories, Bethel, Maine, USA
“No, not there, please. That’s where I’m going to put my head.”
Students lack a clear perspective of the context and the clinical significance of their learning in the early years of medical school. Potential shortcomings with existing “traditional” curricula due primarily to:

- **Lack of integration** in the teaching of basic sciences and the clinical disciplines.
- The “traditional” lecture (as the main instructional mode used) provides a mainly passive learning environment that promotes the memorization and regurgitation of facts in examinations.
Medical Education seems to be in a perpetual state of unrest.

Criticized for emphasizing:

- Scientific knowledge
- Biologic understanding
- Clinical reasoning
- Practical skills
- Development of character, compassion, and integrity
Many of the leading medical schools in the world have extensively revised their respective course curriculum to prepare "Today's Medical Student's" to become "Tomorrow's Doctors."
In the 1970’s new Educational strategies began to evolve

Student-centered medical education
Problem-based learning
Integrated curriculum

New era of Medical Education

Association of relevant basic sciences to clinical disciplines
Relevant-to-practice learning material, delivered in an integrated way in a setting resembling that of real practice
Formulation of curricula that limited pre-clinical knowledge only to that relevant to clinical practice
Evolution of New Strategies in Medical Education

After approximately 40 years:

Recommendations not adopted universally

No interest to change where “Teaching” is not evaluated for academic promotions

Too much work to change

Difficult to change old habits for new ones
Teaching Medicine – Perspectives & Challenges

Background

Present

Future

(Challenges)
The Challenge for Medical Education

How do we integrate medical education with the delivery of quality care so that students see and participate in the ongoing assessment and improvement of care that is:

- safe
- timely
- effective
- efficient
- patient centered
- equitable
In the old paradigm of health care

**PAST**
- Treated individuals
- Focused on the cure
- Provided episodic care
- Physician lone provider
- Paternalistic approach
- Care provider-centered
- Actions anecdotal

**TODAY**
- Asked to treat the community
- Preserve health, prevent illness
- Emphasis on continuity of care
- Working in teams
- Partnering with patients
- Patient & family-centered
- Evidence-based

**Changes in Medical Education**
In the old paradigm of health care

**PAST**
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**Actions** anecdotal → **Evidence-based**

These Changes in Health Care IMPLY Changes in Medical Education

**Future**
Medical education needs to adapt to society’s changing attitudes by attacking four major challenges

1. Practical training must be made more effective by performing tasks repeatedly

2. Develop (new) methods of assessment to reflect the focus on competencies (tasks that a qualified medical professional should be able to handle successfully)

3. Improving research standards in medical education
   (high quality, relevant research requires interdisciplinary collaboration)

4. Overcoming negative attitudes to assessment
   (changing the culture of assessment into one where assessment is informative, helps students improve their work and where the goal is not to be better than the others but to be better today than you were yesterday)
### Comparison between some of the features of the present system of Education and the future analogue

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Reigeluth CM. (1994) *The Imperative for Systemic Change*. (Educational Technology)
"I like this, Edwards. You've come up with more solutions than we have problems."
Changes in the following 3 Components

Teaching
Meet Learning Outcomes

Learning
Meet Learning Outcomes

Assessment
Assess Learning Outcomes

Designed to
“Teachers” must have a clear idea of what they want students to be able to do at the end of a unit of study.

Intended learning outcomes to students so that they can share in the responsibility of achieving them.

However, students will inevitably tend to look at the assessment and structure their learning activities to optimize their performance.
Creating a teaching environment in which students

- Are active
- Driven by their curiosity and develop documented competencies
- Develop comprehensive skills

and not spoon-fed

- not merely the ability to regurgitate facts
- beyond a physical exam
if learning takes place inside the student's brain (where teachers cannot reach), the "real" learning can only be managed by the student.

All teachers can do is to create an environment which is encouraging and supportive of students engaging in the appropriate and necessary mental activity.
“Learning takes place through the active behaviour of the student:

It is what he does that he learns, not what the teacher does.”

Tyler. Basic Principles of Curriculum and Instruction. (1949)
“Nothing that is worth knowing can be taught”

Oscar Wilde
What can we do to facilitate the shift from Teaching to Learning?

Ramsden’s 6 principles of effective teaching

1. Make the subject interesting and give clear explanations
2. Concern and respect for students and their learning
3. Clear goals and intellectual challenge
4. Some student control over learning - independence
5. Learning from students in order to improve teaching
6. Appropriate assessment and feedback
Any reform process in medical education... can only be successful if the three components of an education program are reformed simultaneously:

- the Curriculum
- Teaching strategies
- Assessment

...to ensure that each is designed to produce more effective teaching and learning

Bigg's model of "Constructive Alignment"
PAST

Courses were “departmental”

Teaching was based on the curriculum

TODAY

more interdisciplinary

Based on specialized learning objectives

Students are told what skills need to be mastered
Constructive Alignment


- Provides a specific method of implanting Outcomes Based Teaching and Learning
- Has become the framework for much quality assurance work in the UK and HK

SOLO Taxonomy
devolved by Biggs & Collins (1982)

Structure of Observed Learning Outcomes
The "Constructive" aspect refers to what the learner does:

- Students **Construct meaning** through relative learning activities
- "Meaning" is not something imparted or transmitted from teacher to learner
- It is something that learners have to create for themselves

The "Alignment" aspect refers to what the teacher does:

- Set up a learning environment that:
  - **A** supports learning activities
  - **B** is appropriate to achieving the observed learning outcomes

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Solution

Constructive Alignment

"I never teach my pupils; I only attempt to provide the conditions in which they can learn."

Albert Einstein
The Key to Constructive Alignment is that the components... especially the teaching methods used and the assessment tasks are aligned to the learning activities assumed in the intended outcomes.

**Constructive Alignment**


(Buckingham: Open University Press/McGraw Hill)
teaching & learning activities and assessment tasks are linked (or aligned) to the Intended Learning Objectives (ILO’s) by means of the learning activities stipulated in the ILO’s
Traditionally

Teachers tend to think about assessment once the learning process is over

( making an unconscious gap between student’s learning and achievement in a specific assessment task )

Constructive Alignment

Assessment needs to be thought of while delineating the "Intended Learning Outcomes" and therefore, embedded in the learning activities
Assessment

Students will structure their learning activities to optimize their performance to make sure that assessment DOES test the learning outcomes we want students to achieve.

By being strategic optimizers of their assessment performance, students will actually be working to achieve the Intended Learning Outcomes.
Solution

Assessment

If we tell students that we want them to achieve something (intended learning objectives) and then assess them against assessment criteria that do not match

They will feel cheated and will become

Cynical strategic surface learners

“Alignment” is nothing more than a matter of honesty and fairness that establishes the trust required for students to be confident that they can manage their own learning
Think Beyond “Quantitative”

“At present our assessment methods stem from the reductionist philosophy that underpins our discipline, and we are, thus, trapped by our need to compare like with like.

Until we can make a mental shift that allows us to include a more holistic approach to assessment, one which evaluates the development of individuals over time, we will continue to struggle to measure the unmeasurable, and may end up measuring the irrelevant because it is easier.”
“Thanks to yoga, I now gently stretch to conclusions instead of jumping to them.”
Conclusions

1. Improving the quality of medical education through curriculum renewal is a **continuous process**.

2. Medicine must always be responsive to “**evolving societal needs, practice patterns, and scientific developments**.”

3. **As circumstances change**, medical educators must understand the meaning that these changes have for **medical practice and medical education**, and must **renew** the medical student **education program** accordingly.

4. Learning objectives of an educational program are most valuable when the **desired outcomes can be measured**.
There are essentially two ways to learn: 

\[
\begin{align*}
& \text{by mistake} \\
& \text{by mentor.}
\end{align*}
\]

Unfortunately, 

some people never learn. . . foolishly repeating the same mistakes, no matter how painful.

Remember, 

a mistake is not final if it becomes a learning tool that changes your behavior and perspective.
Smart people learn from their experiences

Wise people learn from the experiences of others

"To steal ideas from one person is plagiarism, to steal ideas from many is research"

"Bad habits are like a comfortable bed, easy to get into, but hard to get out of."

Anon
“Setting an example is not the main means of influencing another. . . It is the only means”

Albert Einstein
We live in a rapidly changing world!

As educators,

we need to inspire the future health professionals to embark upon lifelong learning and maintenance of competency.

That will be their assurance of being able to provide their future patients with the best quality care they need 40 years from now.
“The secret of getting ahead is getting started.

The secret of getting started is breaking your complex overwhelming tasks into small (er) manageable tasks, and then starting on the first one.”

Mark Twain
Thank you for your Attention