

Presentations in Medical Education

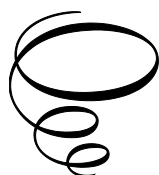
Presentations in Medical Education

By

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**Cambridge
Scholars
Publishing**



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This book first published 2021

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

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ISBN (10): 1-5275-6475-4

ISBN (13): 978-1-5275-6475-6

To my mentor in Medical Education

The Late Professor Emeritus Stephen Abrahamson, PhD, ScD

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ABBREVIATIONS

AAMC:	Association of American Medical Colleges
AMA:	American Medical Association
AMC:	Australian Medical Council
AMEE:	Association for Medical Education in Europe
ANZAME:	Australasian and New Zealand Association for Medical Education
CIPP:	context, inputs, processes, products
CME:	continuing medical education
CPE:	continuing professional development
GCC:	Gulf Cooperation Council
GMC:	General Medical Council
GMOA:	Government Medical Officers' Association
GPEP:	General Professional Education of the Physician
IIME:	Institute for International Medical Education
LCME:	Liaison Committee on Medical Education
MCQ:	multiple choice questions
MHPed:	Master of Health Personnel Education
MPL:	minimum passing level
NTTC:	National Teacher Training Centre
OSCE:	Objective Structured Clinical Examination
PBL:	problem-based learning
RTTC:	Regional Teacher Training Centre
SAITM:	South Asia Institute of Technology and Medicine
SLMC:	Sri Lanka Medical Council
WFME:	World Federation for Medical Education
WHO:	World Health Organization
UAE:	United Arab Emirates
USM:	Universiti Sains Malaysia

FOREWORD

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Raja Bandaranayake takes us, in *Presentations in Medical Education*, on a memorable journey through presentations he made at conferences over a period of 43 years. A number of books have been published on medical education in recent years. This one, however, is unique in a number of respects. It provides a historical perspective but at the same time addresses topics of educational interest today; it is both anecdotal and at the same time covers facts not widely known. It does not attempt to systematically cover medical education but addresses themes of particular interest to Bandaranayake which, as it happens, are themes on today's agenda in medical education. By sharing with us his experiences as a teacher and educator and reflecting on them he provides an interesting and different insight into today's issues on medical education.

In his first chapter, *The History of Medicine*, Bandaranayake looks at the lives of two prominent medical educators – Hippocrates and Penfield, and at Penfield's search as to why Hippocrates burned the books in the library of a rival medical school. He draws lessons for the development of medical education today, including the inculcation of ethical values, the creation of an appropriate learning environment congruent with the future practising environment, the fostering of enquiry and creativity, and the reinforcement of theory with practice.

In the second chapter Bandaranayake highlights facilitating learning as a central theme of the chapters in the book, regardless of whether they are concerned with curriculum planning, integration, postgraduate education and continuing professional development (CPD), or faculty development. Facilitation of learning is seen as a key responsibility of the teacher. Themes addressed in the chapter, including the importance of self-assessment, adapting learning for the needs of the individual student, and preparing students for CPD, are very much on today's agenda.

In chapter three Bandaranayake provides a fascinating account of the evolution of problem-based learning, starting 1883 or before. He addresses the evaluation and implementation of problem-based learning with remarkable insight. Some schools cited as having adopted PBL, have now moved away from the approach. It is worthwhile acquiring the book even if the only chapter you read is this one on problem-based learning.

Chapter four addresses the important issue of assessment, a key driver of students' learning. This is one of Bandaranayake's personal interests. He makes the important distinction between collecting evidence and making decisions on the basis of this. While assessment practices have moved on since his 1978 talk, the basic principles and a useful list of questions to ask about assessment are today as sound as they were when he first promoted them. He suggests that assessment of student learning is the field that generates most interest and enthusiasm amongst medical teachers; he could also have added most controversy. His description of assessment as estimating a student's level of ability in a given area through "multiple biopsies" is in line with a programmatic approach to assessment, now the focus of much attention.

In chapter five, *The Curriculum*, emphasis is given, as set out in his 1999 presentation in Kuwait, to the need for relevance in medical education and to the move to competency-based education. He identifies what has remained as a myth in competency-based education, that the focus is only on minimum competencies. As an anatomist he argues when thinking about the curriculum that while relevance is closely linked to usefulness, this should not be restricted to clinical applicability. He reaffirms that basic medical science departments, rather than upholding disciplinary allegiance should be guided by institutional goals which are in turn related to the health needs of society. Bandaranayake also anticipates the increased interest in selection of medical students for entry to medical studies.

Returning to the theme of relevance, chapter six looks at integration as a strategy that can contribute to more meaningful and relevant learning and at the importance of vertical integration. In his lecture in Seoul in 1994 he argued that we need to move on from merely paying lip service to the concept of integration. We have seen increasingly the implementation of fully integrated curricula with many of the identified problems overcome.

Chapter seven introduces what continues to be a difficult area – CPD and recertification. Much attention has been paid in medical education to the undergraduate curriculum and some attention to postgraduate training.

Relatively neglected, however, has been CPD. Given that doctors may practise for 30-40 years after qualification, this is an area where there is a need for more research and activity.

The important issue of curriculum evaluation is addressed in chapter eight. As noted, programme evaluation is important to all the stakeholders, including accreditors, curriculum managers, teachers, researchers, students, and the broader community. As Bandaranayake mentioned in his address in Malaysia in 1986, the main objective of a curriculum evaluation must be the assessment of whether students have been prepared for the practice of medicine in the most effective and efficient manner possible. With many changes taking place in medical education, curriculum evaluation is today even more important. While performance of students in examinations can contribute to a curriculum evaluation, it is essential that the examinations are valid and reliable tests of the expected curriculum learning outcomes. A common practice in many schools has been to judge the effectiveness of the curriculum on the performance of students in national examinations. Bandaranayake argues that national examinations are perhaps the single most powerful deterrent to curriculum innovation. Sadly, this continues to be the case.

The need for faculty development has now been almost universally accepted. This was not always the case. In chapter nine Bandaranayake traces the recognition of the need to train healthcare professionals as teachers from the work of Stephen Abrahamson and George Miller in the USA in the 1960s. The objectives of a teacher training programme, as set out in the chapter, continue to be relevant. As a response to the information explosion in medicine, technology developments, and changes in healthcare delivery over the last 20 years there has been, as envisioned by Bandaranayake, a rapid development of training programmes in medical education, many awarding formal qualifications.

Chapter ten reports lessons learned about education innovation and change from a series of case studies conducted by Bandaranayake. The focus is now no longer on problem-based learning, and emphasis is on competency-based education and practice-based learning. However, the barriers to and factors supporting change remain relevant. That innovation can be achieved through incremental change rather than through an “all or none” approach, as I have highlighted in the SPICES curriculum model, remains appropriate and an approach to be commended.

The recognition of international standards for medical education is the theme of chapter eleven. Bandaranayake describes how his original doubts about the feasibility of international standards abated with his work with the World Federation for Medical Education (WFME) and the Institute for International Medical Education (IIME). While work with IIME has not progressed, WFME is about to produce its third edition of *Standards for Basic Medical Education* at a time when there are increasing numbers of medical schools in many countries and when bodies such as the Educational Council for Foreign Medical Graduates (ECFMG) in the USA require that doctors entering the country have graduated from a school accredited by a national accrediting agency approved by WFME.

The final chapter looks at private medical education. Bandaranayake reported in 2012 the significant increase in the privatisation of medical education. This global trend has continued with more private schools than government schools in many countries. In the chapter Bandaranayake discusses the pros and cons of privatisation of medical education and these arguments are still relevant today. The main disadvantage of private medical schools is seen to be the poor quality of training provided to the students if monetary gain takes precedence over an effective education programme.

This foreword provides no more than a brief overview of the issues covered in *Addresses in Medical Education*. I strongly recommend the book by Raja Bandaranayake to you. It is both an inspiration and a joy to read.

PREFACE

Spanning a period of forty-four years from 1970 to 2013, I have had the privilege of being invited by institutions and organizations to address learned audiences of health professions educators and students in twenty-six countries. The presentations numbered 113 in all, though a considerable degree of overlap of topics was inevitable.

One fact that became evident when these presentations were reviewed after they were put together was that I had sometimes contradicted myself. I make no excuses for this, as I too learned much over this long period, which made me change my views. An example of contradiction was the issue of international standards in medical education. Early in my career I was opposed to the concept of international standards, as I believed firmly, and still do, that standards should be related to the particular health needs of a country. In time, however, as I worked on the World Federation for Medical Education (WFME) Task Force on International Standards, I came to realise that there were many common areas across countries which necessitated the stipulation of international standards in undergraduate medical education. I insisted, however, there were other areas which were specific to a given country, and national standards were also required. Furthermore, the Task Force agreed that some international standards could not be met by a given country because of local difficulties. Thus the original set of international standards was laid down at two levels: basic standards, which all schools should satisfy, and quality improvement standards, which all schools should aspire to.

The reader should view each address presented in this collection in relation to the year in which it was given. With hindsight, the reader could well disagree with a view presented at a given time, and this is quite acceptable. Medical education is a growing discipline, and one cannot be too dogmatic about one's views. However, the basic principles of learning remain constant across the ages and form the foundation on which opinion should be based.

I crave the indulgence of the critical reader who is naturally bored by repetition. This collection of addresses contains much repetition of ideas. It must be remembered that these addresses were meant for different

audiences, and given at different times. Once again, I make no excuses for these repetitions, as the primary aim of each address is to enable students to learn better, and teachers to help them do so.

My gratitude is primarily directed to all those individuals, too numerous to mention, who helped me grow over the years in the field of Medical Education. Foremost among them is the late Professor Emeritus Stephen Abrahamson, whom I have to single out by name, as he was always my mentor and guide. My thanks are extended also to all those who patiently listened to me during these addresses. Finally, to my friend and colleague, Emeritus Professor Ronald Harden, my sincere thanks for reading the draft and writing a succinct Foreword to this book, which conveys to the reader what is to be expected in each chapter.

CHAPTER 1

THE HISTORY OF MEDICINE

“If men could learn from history, what lessons it might teach us”
—ST Coleridge, Table Talk, 1835

I have for long, ever since I was a high school student, been interested in History. I remember doing two projects for the History class entitled *The Glory That Was Greece* and *The Grandeur That Was Rome*. It seemed to me to be quite natural, therefore, that after I had graduated in Medicine, this historical bent came to the fore in searching for a problem which I could investigate for my PhD. My internship in the Neurosurgical Unit of the Colombo General Hospital, under the supervision of Dr Shelton Cabraal, had created in me a predilection for the Nervous System as an area of interest. This led me to some of Wilder Penfield’s work. I was pleased to note, in my review of some of Penfield’s work, that he too had an interest in History in spite of what must have been a busy life as a Neurologist and Neurosurgeon. His particular interest in History was focused on the life of Hippocrates.

In 1979 I was invited, through the good offices of Professor Charles Engel, Chairman of the Department of Medical Education at the Faculty of Medicine in the University of Newcastle in New South Wales, Australia, to deliver the Dean’s Lecture. I had already sent him the title of my paper (*From Hippocrates to Penfield*) before I arrived in Newcastle. In introducing me and the address I was about to give to the audience, Professor Engel commented that the title sounded very much like a train journey, and was looking forward to hearing what I had to say about this journey.

I had used this title for one other address before I spoke in Newcastle, and that was for my last address to the Kandy Society of Medicine in 1976 in Sri Lanka, shortly before I left my beloved motherland to seek new ventures in Sydney, Australia. I have used the same or similar title on a few occasions since the Dean’s Lecture in Newcastle. A list of such addresses is included at the end of this

chapter. Each lecture was modified to suit the theme of the occasion on which I was giving it as well as the nature of the audience. The essence of the lecture, however, remained the same.

The lecture was, in fact, like a train journey progressing backwards in time. Wilder Penfield was famous for his pioneering work in Neurology and Neurosurgery, not only in the prestigious Neurological Institute in Montreal, but in many other countries. Less known, however, was his great interest in the life and times of Hippocrates. The talk deals essentially with the methods used by Penfield to get as close as possible to the truth regarding the life of Hippocrates, and the lessons we can all learn for health professions education from Penfield's methods.

This topic receives pride of place to be included as the first chapter in this collection for two reasons: it was the topic for one of my first public lectures and it shaped my thoughts significantly in my work in medical education since. In 1994 I was invited to give one of the Plenary Addresses on the opening day of the Annual Sessions of the Association for Medical Education in Europe (AMEE) in Athens, Greece. It was a remarkable opportunity for me to select this same topic for the address in the country of Hippocrates himself, and I titled it *Hippocrates to Penfield: Lessons for Medical Education*. On my way back from the podium after delivering the address I was pleased to hear a whispering comment from my dear friend and renowned medical educator, Professor Janet Gale Grant, that it was a most erudite lecture.

What was to follow was even more remarkable. In 1996 I was invited by the late Professor Spyros Marketos, Founder President of the Hippocratic Foundation of Kos, who probably had been in the Athens audience, to present the same lecture in the Island of Cos itself at the inaugural meeting of the Foundation held in conjunction with the Annual Meeting of the International Conference on the History of Medicine held that year in Cos. It was indeed a privilege and an honour to talk about Hippocrates in the island made famous by the Father of Western Medicine himself, through his teaching and practice which laid the foundations of Western Medicine. That lecture was the beginning of an interesting but short association with the International Society for the History of Medicine, which makes it a point to hold their annual sessions in exotic and interesting cities in the world. This address is reproduced below in full.

Hippocrates to Penfield – Lessons for Medical Education

(An address given to the Hippocratic Foundation of Kos during the Annual Conference of the International Society for the History of Medicine, Cos, Greece, 1996)

Some years ago, when I was invited to deliver the Dean's Lecture at the Newcastle Medical School in Australia, I chose to title my lecture *From Hippocrates to Penfield*. In his introduction, the chairman, Professor Charles Engel, remarked that the title sounded very much like a train journey between two stations! What I intend to present here are, in fact, some thoughts on a journey backwards in time. In fact, I wondered whether the title should, more appropriately, be *From Penfield to Hippocrates*. In presenting my thoughts on this journey backwards in time, I will reflect on some implications for medical education. In an indirect sort of way, I wish to address the nature of inquiry, the search for that elusive truth which we are inevitably engaged in, in all our activities. But I will view this search for truth from a different perspective to that of scientific inquiry which we are accustomed to.

It would be presumptuous of me to introduce, to this audience, Hippocrates, the Father of Modern Medicine. Indeed, I consider myself privileged to present this address on the very island in which he taught his disciples the practice of medicine, under the celebrated plane tree. It may rightly be said that the marriage of science and medicine had its origin in Hippocrates, who introduced to medicine one of the most powerful tools of science, that of critical observation. Until then medicine had largely been based on superstition and guesswork. It was Hippocrates who stressed upon his disciples the need for careful observation, for critical analysis and for meticulous recording for posterity. It was strict adherence to this practice of observation, analysis and recording that resulted in the great body of writing, the *Corpus Hippocraticum*, in which are to be found the roots of modern medicine. The Hippocratic Oath with which physicians are, or are supposed to be, familiar was a product of his teaching and practice. It is a matter for regret that such little emphasis is given to medical ethics in the crowded curriculum of today, though the teaching of ethics is a trend which is increasingly becoming apparent, particularly in countries where the public are increasingly becoming aware of their rights. Very often the young student or intern learns codes of conduct from the example set by teachers or superiors - and that is often a cause for concern!

Much less known about Hippocrates is the suggestion of historical scandal associated with his name. It has been alleged that he was responsible for burning the library of medical manuscripts of the rival school at Cnidus on the neighbouring mainland.

This is where Penfield comes into the picture. Wilder Graves Penfield was a distinguished Canadian neurologist and neurosurgeon. Born in Spokane, Washington in 1891, he became a naturalized Canadian citizen in 1934, had an early interest in literature and was a Rhodes scholar under Sir William Osler, who is said to have had a profound influence on him. Graduating from Johns Hopkins Medical School in 1918, he commenced a career in Surgery in 1921, and was Head of the Department of Neurology and Neurosurgery at McGill University in Montreal from 1928 to 1954. During his tenure he was largely responsible for founding the world-famous Montreal Neurological Institute, and became its Foundation Director in 1934. Undoubtedly his most famous and numerous writings have been on the subject of epilepsy. However, much less known about Penfield's attainments are his historical novels. His second career as a novelist began with a story which his mother had commenced but had not been able to complete before her death. The story was based on the Old Testament tale of Abraham and Sarah. Penfield was inspired to complete the story during a wartime medical mission. In doing so he visited Abraham's birthplace, the buried but excavated city, Ur of the Chaldees, in what is now known as Iraq. The result was the historical novel which appeared in 1954 under the title *No Other Gods*.

In 1960 an unostentatious book titled *The Torch* appeared on the shelf. The work, a biographical novel about Hippocrates, was a fascinating blend of fact and fiction; the facts gleaned by Penfield's careful study, the fiction based on his views of how the great physician would have behaved in the situations called for in the story. As with his earlier novel, Penfield explored this part of the world carefully before he wrote the novel.

My interest in the relationship between Hippocrates and Penfield began in 1972 in Los Angeles, where for an academic assignment I was required to react to the biography of a prominent medical educator. Interest in the neurosurgeon having been sparked during a neurosurgical internship, I decided to look at the life of Penfield. Yet all my efforts to find a biography of Penfield were doomed to fail as there was none available at the time. On the suggestion of Professor Earl V. Pullias, educationist and historian, I read *The Torch*. That experience had a profound influence on me. My reaction to the novel was a dual one - on the one hand, a reaction to the life and times

of Hippocrates; on the other, to the life of the author himself. To be able to learn so much about Hippocrates, while obtaining an insight into Penfield, was indeed an invigorating exercise.

What interested me most were the methods that Penfield used in his own search for the truth. Significantly, before writing both his biographical novels, he visited that part of the world where each of his subjects lived - Iraq in the case of Abraham and the Eastern Mediterranean in the case of Hippocrates. Undoubtedly, Penfield obtained most of his facts about Hippocrates from numerous writings. I would like to react, however, to another method that he used to get closer to the truth. To use his own words:

"To be understood a man should be seen in his own environment. After he is gone, the environment is all that is left to investigate" (Penfield, 1953, 17)

He visited Cos and the surrounding area of the Aegean Sea on two occasions. On the second of these he had the good fortune to see a vision of Asclepius, the god of healing. His description of the backdrop against which he saw this vision is as vivid as the vision itself, as related in his address to the Congress of Neurological Surgeons in 1953:

"I've seen the sky and the water, the birds, the trees, the flowers that Hippocrates saw. I've smelled the air and felt the wind that he felt. I've read his writings and studied the lives of men he might have met" (Penfield, 1953, 18)

The vision that he saw while in intense thought in Rhodes formed the basis of his novel, and helped fill in the gaps in the historical data. He went on to build a story around it, and in doing so showed up some of the factors which had a tremendous influence on his life.

Some excerpts from *The Torch*, words he puts into the mouths of his characters, particularly Hippocrates, are worthy of mention as they are so profound, yet simple, for all of us who practise and teach Medicine to ponder over:

On learning:

"(Truth) is written in the nature of disease. I want my disciples to learn to observe, to watch the working of nature and disease with me, and so come to understand. That is science." (Penfield, 1960, 337)

On teaching:

"The teacher who makes no false claim to final knowledge, but who instead sets out the evidence for others to consider, discovers himself much unsuspected truth." (Penfield, 1960, 283)

On practice:

"The physician's responsibility is to the sick, not to the person who promises to pay for his time. This is a difference between medicine and a trade." (Penfield, 1960, 313)

On family life:

"You are the wife of a teacher of medicine. You will not be rich, but I have no doubt you will be happy." (Penfield, 1960, 334)

Reading through these lines one could just imagine what a source of silent strength Helen Penfield must have been throughout the years of achievement that outwardly belonged to her husband, Wilder Penfield.

I would like to return to the method used by Penfield to get closer to the truth - that of intense thought in the environment in which his subject lived. This brings us to that important question: 'How do we learn?'

In his book *The Encapsulated Man* Royce (1964, 11-19) identified four epistemological approaches used by man in the search for reality. They are the:

1. **rationalistic** approach, using the '*thinking*' process on a logical-illogical continuum;
2. **intuitive** approach, using the '*feeling*' process on an insight-no insight continuum;
3. **empirical** approach, using the '*sensing*' process, on a perception-misperception continuum;
4. **authoritarian** approach, using the '*believing*' process on an ideology-delusion continuum.

Each of these four ways of knowing, or epistemological positions, includes the other three to some extent, but depends primarily on the process

involved in that particular position. Thus the empiricist depends primarily on observation; if it cannot be observed it does not exist. The intuitionist knows by immediate or obvious apprehension. The rationalist refuses to accept anything as true unless it is logical. Those who depend on the authoritarian approach accept authority and retain it only if truth claims are viable. All other approaches must depend, to some extent, on authority, as an individual cannot prove everything by himself all the time. The empirical approach to reality is the most powerful when it comes to matters of fact; it was the method of Hippocrates, so aptly portrayed in the words put into the mouth of Hippocrates by Penfield in *The Torch*:

"But beware! Don't trust the wings of poetry or of philosophy when investigating the facts of nature and man and disease." (Penfield, 1960, 177)

We, who are brought up in the scientific tradition, depend on the rational-empirical approach. The religious man adopts an intuitive-rational approach, while the artist and the poet use an intuitive approach, in the search for reality. Royce's thesis is that each of us becomes "*encapsulated in our own epistemological cocoon*" by conditioning and acculturation, projects a knowledge of ultimate reality from our own limited perceptual framework, and refuses to use the other approaches to reality. As 'true' scientists we tend to discount Penfield's vision in intense meditation as abnormal. We fail to make optimal use of the various approaches available to us to arrive at the truth.

Why do we behave thus? We are conditioned by the environment we find ourselves in. For many of us that environment is a scientific one from a very early stage in our education. We have been conditioned into a scientific society, and draw our norms and criteria from that society. Once conditioned to a particular way of thinking, we limit the use of our senses and of our imagination. Our intuitive feelings undergo disuse atrophy because we rarely have had the opportunity to use them. We then proceed to reject the work of the poet and of the artist as the ravings of the romanticist, rather than an intuitive expression of reality.

Royce makes a case for 'un-encapsulation'. He sees the need for the specialist to break through the cocoon of encapsulation, as otherwise he would see only glimpses of the truth through the perforations in the capsule. The first step is for the specialist to realise that he is encapsulated. Only then will he be able to make deliberate attempts to exercise those faculties which have long been in disuse, and approach reality from different perspectives.

What lessons can we learn from all this for medical education?

The historian attempts to recreate the past by projecting himself into another place and time. In so doing he uses all the methods at his disposal to get closer to the truth - the truth that is already a thing of the past. In medical school we learn to function in an environment of the future. Not only is formal education in itself a long drawn-out process, but also its product continues to be of service to future society for several years to come. Slow though the process is, changes in society bring about changes in health needs. Should we then not try to predict the future environment in which the product of the school practises or applies what is learned? Then, should we not attempt to create or manipulate the environment in which learning takes place in such a way that it resembles, as closely as possible, that environment in which the future professional uses such learning? Just as much as Penfield placed himself in an environment which maximised his learning about the life of Hippocrates, the medical educator should maximise students' learning for the future by placing them in an environment in which such learning would be optimal. This is why it is so important for us, as educators, to study trends in health care. Countries go through cyclical changes in health care. If studied closely these cycles are similar across countries, though not synchronous. The diseases of affluence, rampant in the West today, are already beginning to plague Eastern societies. Prediction of tomorrow's health care needs is necessary for those responsible for planning medical curricula today.

A growing trend in medical education is the increasing emphasis being placed on the community, as distinct from the individual patient. While this is much more evident in developing countries than in developed countries, the latter too are increasingly realising the need for such emphasis. What better place is there to learn about the health of the community than the community itself? In Iran medical students live in a rural community for at least two months, learning from the *behvarz* (community health workers). They are placed in an environment where their learning about rural communities is maximised. The community has become the classroom. That is one meaning of the word *integration*, a word much used, often misused and sometimes even abused.

Not only should the physical environment created for learning be appropriate, but so also should the 'psychological environment'. By this I mean the psychological processes which the student is called upon to use in learning should be similar to the psychological processes that are likely to be used in practice, i.e. in the application of that learning. Medical schools are increasingly using a problem-based approach to teaching and learning medicine. This practice is indicative of an attempt to maximise learning by

creating a psychological environment as close as possible to real life, as the doctor is always solving problems in practice. The student learns not only the process of problem-solving but also the content in a more meaningful fashion, even before they have had any exposure to the basic medical sciences. I am not decrying the value of the basic medical sciences. Being an anatomist, primarily, that is furthest from my mind. After all was that not the foundation upon which Hippocrates built his practice of medicine? What I do say, however, is that the basic medical sciences can be learned, and remembered longer, in the meaningful context of clinical or community problems.

The next lesson for the medical educator has to do with motivation. What was it that motivated Penfield to learn more about Hippocrates? The cynic may say it was monetary - to ensure royalties for his book. But he could just as easily have achieved that from the comfort of his armchair in Montreal. No - there was something that disturbed him, something that was not congruent with the character of Hippocrates. Penfield found it hard to believe that a man, whose foremost mission in life was to search for and propagate the truth, would resort to such a dastardly act as burning the library of a rival medical school. That incongruity was Penfield's motivation to learn - to know more about the truth. The task of the teacher is to disturb, to an extent, the equilibrium of the student's mind, to raise within it doubts and questions - not too much, but just enough to rouse the student's curiosity to find out for themselves. In the words of Hippocrates:

"What brings a worthy disciple to the teaching physician? It is most often the urge of pity and the desire to comfort. It is curiosity too, no doubt, about the human body and disease." (Penfield, 1960, 192)

How often do we encourage students to use their personal experiences, the questions they would like to ask themselves, about their body, its functions and disorders, as starting points for learning?

"Seeing how much there is to learn, how much to understand, the urge is born in him to discover in nature a new science." (Penfield, 1960, 193)

Motivation is a prerequisite for learning, and intrinsic motivation is far more effective than extrinsic motivation.

Penfield first placed himself in the appropriate environment, and then kept turning over and over in his mind this one smear to the great physician's reputation. The answer dawned on him, in visionary form as he recounts (Penfield, 1953), and then he had the central thread for his story. I will not

tell you his answer lest it detracts from your enjoyment of this excellent book, in case you have not read it already - let me raise your intrinsic motivation to read it!

The lesson here for the medical educator and the student is that the non-critical, unquestioning acceptance of authority, of dogma, often results in superficial learning and retards progress. Students must learn to critically examine what they hear and read. The conventional lecture with little opportunity to question, the traditional examination where students regurgitate responses expected by the examiner, the paucity of opportunities to critically review what appears in print - all tend to produce a conforming student, one who accepts authority without question. Rationality is suppressed, intuition is discouraged and perception is dulled, while the words of the *guru* become the order of the day. The teacher, rather than be exposed to questioning and run the risk of displaying ignorance, takes the easy way out.

"But if we go on with critical mind, knowledge will grow from error as well as with success. And so, little by little, truth will emerge and wisdom will come to those who practise the art." (Penfield, 1960, 338)

We must encourage and provide the opportunities for our students to use all the methods at their disposal in their search for the truth. They would then not only learn, but learn how to learn.

Learning is coloured by one's previous learning and experience. The new medical student, agog with the excitement of seeing his first patient, sees but a rigid cadaver lying on a cold slab in the anatomy dissecting room. When two years later he crosses the road to the teaching hospital, the liver he visualizes in his live patient is still the firm mass with well-defined borders and surfaces - that was his first impression of the liver and that's the one that lasts. I do not decry the value of dissection, merely question its exclusive use in teaching gross anatomy. The concept of living anatomy is inadequately emphasized in our curricula. Just imagine the impression that would be created in the preclinical student's mind if a surgeon teaches the arrangement of the biliary apparatus in the context of a patient with obstructive jaundice; or if a physician teaches fluid and electrolyte balance in the context of a dehydrated patient. The reinforcement of the basic medical sciences by the clinician should be immediate, in the preclinical years, rather than be postponed to the clinical years when much of it is forgotten and has to be relearned.

In summary, what I have tried to do is to examine the lives of two prominent medical educators and the relationship between them. In doing so, I have tried to draw lessons for the development of education in the medical school of today. The deliberate inculcation of ethical values in our students; the provision of opportunities for using their perceptual and intuitive skills; the creation of a learning environment more congruent with their future practising environment; the fostering of inquiry and creativity; and the timely reinforcement of theory with practice - all these are the responsibility of those of us who are entrusted with the noble task of educating the doctor of tomorrow. It is not a task to be treated lightly, or given lower priority to others with more immediate materialistic gain. Nor is it secondary to our mission of preventing and curing illness, as it is part and parcel of that mission. Let us treat it as such lest this noble profession revert to the trade of the pre-Hippocratic era.

"Don't be discouraged that the light of our knowledge is so feeble, the darkness of the unknown so vast. Keep this torch lit. Hand it on, a torch for all time" (Penfield, 1960, 334)

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CHAPTER 2

LEARNING AND TEACHING

“Homines dum docent discunt”

[Even while they teach, men learn]

—Seneca, *Epistulae Morales* 7, 4 BC-AD 65

If one were to ask me for one word which defined my career as a medical educator, I would say it is *learning*. Irrespective of whether one considers learning as a noun or as a verb, all our efforts are directed towards that one purpose, the facilitation of learning. That is the teacher’s primary responsibility towards his students, and in fact defines the act of teaching. Learning has been defined as a change in behaviour, and the teacher’s task is to facilitate that change in desirable directions. Teaching is thus facilitating a change of behaviour. I believe that learning is better defined as a change in the *potential* to behave in desirable directions, rather than a change in the behaviour itself, as the latter depends on many factors and is unpredictable. Teaching then becomes facilitating a change in the potential to behave in a desired direction.

Let me illustrate my point with an example. An individual who is a habitual tobacco smoker may learn, from his peers, elders, health professionals or counsellors that this habit is injurious to his health. As a result of his learning he has changed his potential to behave. However, he may continue to smoke tobacco in spite of this learning, as other factors may influence his behaviour. While the potential has changed, his behaviour has not. The teacher’s task is to help bring about that change in the potential to the best of his ability, but the decision to behave in a given direction is the learner’s.

The centrality of learning means that all the activities we undertake as teachers are directed towards it. The way we plan curricula, assess our students, organize and manage the educational institution or set down standards for recognition of educational programs are directed towards the central purpose of student learning. Thus, all the chapters in this book have learning as their central theme.

Enhancing the Study Skills of Medical Students: a Pedagogical Perspective

(International Conference on Problem Based Learning, National University of Singapore, Singapore, 2003)

Introduction

For more than five decades now, much emphasis has been placed on the improvement of the pedagogic skills of medical school teachers, with the aim of improving the quality of student learning. However, less attention has been paid to the development of study skills among medical students. Teachers can do much to enhance their students' study skills, as what ultimately matters is the way students learn, rather than how teachers teach. The transition from high school to medical school is a difficult phase for most students. There is a fundamental difference between high school and university. In the face of an explosion of knowledge in Medicine, medical students have to be particularly selective in what they learn and how they learn it. This address will focus on how the medical teacher can play a crucial role in facilitating the transition from school to university and developing effective study skills in their students.

Factors influencing study skills enhancement

The nature of study skills enhancement is influenced by many factors, the most important being the influence of established principles of adult learning. These principles will be emphasized in the next section, when I deal with the desirable values and attributes which the teacher should attempt to inculcate in the student.

Another factor is the philosophy of the curriculum. For example, if a school values discovery learning and its concomitants, the teacher would be obliged to assist students' study in such a way that they are placed in situations where they are required to 'discover' knowledge by themselves, rather than through exposition. If a school values integration, then the teacher should set study tasks which call upon the student's ability to link newly acquired learning with previous learning and with parallel learning.

The student's motivation to learn plays an important role in the way a student's study skills may be enhanced. As individual students may have different motives for learning, the teacher has a role to determine what