

Medical Education today: What would Flexner think of it?

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*ANZAME 2010, July 2010,
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Introduction

This year is the centenary of Abraham Flexner's 1910 report 'Medical Education in the United States and Canada' (1). He is often considered to have had a greater impact on medical education than the rest of us put together! Was that good for medical education, good for health care? Was he a 'Good Thing'? We shall put the question later.

Abraham Flexner

We shall follow Flexner's own education experience and philosophy that prepared him to be able to make such a powerful critique of medical education. His recent new Biography "Iconoclast" (2) tells the story.

He was born in 1866 in Louisville, Kentucky, in the latter stages of the American Civil War. His parents were German Jewish immigrants.

The family was large but not prosperous. In 1884 when he finished school his elder brother Jacob financed Abraham for two years of college at the new Johns Hopkins University in Baltimore. This inspired choice gave him vision and contacts. The Johns Hopkins Medical School developed later as the model for the Proper Basis of Medical Education in his 1910 report. On arrival he failed the entrance exam in Mathematics Greek and Latin and only got in because the President talked to him and thought he showed promise. He was selected on personal qualities rather than academic marks! So presumably he would approve of policies on admission policies with the same intent even though he put a lot of emphasis on strong preparation in the sciences. He studied widely but not in science and not in medicine. His intellectual relaxation in later life was the study of ancient Greek.

He returned home to be a school teacher, and gained a reputation for innovation. In 1892 a prosperous father asked him to educate his lazy son and that led him to open a new school, 'Mr Flexner's School'. He did away with class routine and didactic teaching and adopted an open approach in which students were encouraged to learn by active

discovery with ample time for practical work and discussion with staff. He was stern to those who did not work and generous of time and encouragement to those who did.

He did no cramming. Yet his pupils gained places in the best of colleges and universities. This drew him to the attention of Charles Eliot, President of Harvard University and others, all later influential and supportive of Flexner's work with the Carnegie and Rockefeller Foundations.

Flexner delayed his own further higher study to provide for brothers and sisters. His brother Simon, a scientist and pathologist and later the Director of the Rockefeller Research Institute urged him to cut loose. In 1906 he took a year of Graduate study at Harvard, Berlin and Heidelberg and took the opportunity to compare education at all levels with that of America.

In 1908, he published his stern analysis in a book 'The American College: A Criticism' (3). This won him further recognition and some notoriety for the directness of his commentary. It brought him to the attention of Henry Pritchett, President of the Carnegie Foundation for the Advancement of Teaching and this in turn led to his being asked to review medical education.

The state of Medical Education in 1908.

Medical education in America had grown without a secure frame of reference, some through apprenticeship, some through proprietary schools set up for profit by clinicians with no scientific foundation or adequate facilities. Some schools were attached to universities but there was rarely serious academic oversight. Individual State Medical Boards established admission standards, largely ignored, and set a qualifying examination which was factual, largely predictable and easy to cram for. Flexner's own elder brother, a pharmacist, enrolled in Medicine at Louisville University, attended two short courses of lectures and was registered as a medical practitioner. Some universities had taken the matter seriously, drawing upon overseas experience, English and French for improved clinical teaching with clerks and dressers in medicine and surgery. A few, Johns Hopkins the leader, had established the German system of strong research base teaching in medical sciences and full time academic appointments in clinical medicine, where research active clinicians were not distracted by lucrative private practice. Many schools had foundered but 148 were still active. The country had far more doctors than the population needed even with the rapidly expanding migrant population. There was no organized postgraduate education. Some doctors went for further training in Europe and some of these, together with those who had been recruited formed an important part of the group looking to improve the standards of medicine and of medical education.

A plan for action.

The American Medical Association Committee on Medical Education (CME) and the American Association of Medical Colleges (AAMC) shared a concern about the chaotic state of affairs. In 1904 the CME published standards for entry, and curriculum, visited

some schools and published exam results, but to little effect. They had no mandate to enforce change; members of both organizations would protest change and State Boards were weak.

In 1908 CME and AAMC asked The Carnegie Foundation for Advancement of Teaching to undertake an independent review of all medical schools, with a view of eliminating those not meeting CME standards. The President, Dr Pritchett, decided an outsider with wide understanding of education in principle and in practice and at all levels should be invited and he appointed Abraham Flexner. A non medical reviewer was not welcome to many, especially in medicine, but Pritchett's decision stood.

The making of the Report

The framework of the report was decided ahead of time by Pritchett, Flexner, AMC and AAMC. Both at the beginning and throughout the review Flexner consulted widely, including with leading Deans such as William Welch of Johns Hopkins and his own Brother Simon, by now Director of Rockefeller Institute for Medical Research. Many of the principles articulated by Flexner were derived from these others. Indeed there was from some a later concern that their contribution had been overshadowed by Flexner's personal repute.

Chapter Headings of the Flexner Report

Part 1.

- *Historical and General*
- *The Proper Basis of Medical Education*
- *The Actual Basis of Medical Education*
- *The Course of Study: Laboratory Branches*
- *The Course of Study: The Hospital*
- *Financial Aspects*
- *Reconstruction*
- *Medical Sects*
- *The State Boards*
- *The Postgraduate School*
- *Education of the Negro*
- *Education of Women*

Part 2. Individual Review of 155 schools in US and Canada

Although a member of the CME was appointed to work with Flexner he did most of the review visits alone, visiting all 155 schools in a period of 18 months. He traveled

by rail and by road, arrived often without notice but well briefed from published documents. At each visit he discussed aims and resources with senior staff and clinicians, focusing on:

- Status and Affiliation
- Entrance Requirements
- Student numbers and entry requirements
- Teaching Staff
- Resources (Funding)
- Laboratory Facilities
- Clinical Facilities

In Part 2 of the report he presented succinct summaries for every school, state by state together with a proposal for reconstruction in each state. He recommended all but 31 schools be closed or amalgamated with others. His financial analysis demonstrated schools to be woefully funded for education along the lines of his recommendation and would never be affordable without government or philanthropic help. Proprietary schools were completely out of that league and should be shut down.

The style of his comments left no room for doubt. Look at this about the two schools in the State of Oregon:

“Neither of these schools has either resources or ideals; there is no justification for their existence. The entire coast is oversupplied with doctors by immigration; unless something better can be made than can be thus readily obtained, the state will do well to let the field lie fallow.

Portland (University) has no right to allow a local group of doctors to exploit its name in the conduct of a low-grade proprietary institution.

The Salem school is an utterly hopeless affair, for which no word can be said.”

Following the Report

Carnegie published the report and distributed it widely. 30 schools had already closed before its release. Flexner was now acknowledged as ‘The Master of Surveys’. Rockefeller Foundation, based on family wealth from Standard Oil had already placed a priority on health and readily accepted the challenge to reform medical education. They appointed Flexner as its main advisor. He rapidly became the supreme point of reference in America for all matters in medical education, progressively assumed control of Rockefeller policy and grants. Soon no important development or key appointment was made without first seeking his advice. His report had stated that the 148 schools in America spent in total just over \$4 Million each year. Over the next decade or more he steered \$600 Million (\$6 Billion in modern terms) of Rockefeller funding, often

supplemented by matching grants to selected schools. Grants were contingent on implementing the policies in his report, endorsed by the Rockefeller Board. These included schools being integral parts of universities, owning or controlling the policy and running of the teaching hospitals, the appointment of full time academics to be the lead educators in the clinical setting, and the appointment of research based scientists in both basic science and clinical departments. For students he insisted on rigorous academic preparation in the sciences. He was unyielding and forced schools to comply. “No compliance, no money”. His was the biggest money in town, far more than government could provide. He was also a master of persuading other donors to join in.

At first funding was concentrated on the schools already progressing along the approved path, and mostly private schools. Later he pursued the Board to supplement government funding and to be flexible in expectations of schools in socially disadvantaged states in the South. He later supported schools designated for black students. America was still largely segregated.

He continued to contribute to wider university matters through major reviews of medical education and of Universities in Europe and America and by invitation making substantive contributions to university policy and medical education in Europe and America.

What would Flexner think of Medical education now?

I cannot here summarize the full report. Instead, I shall draw upon the report to deal with the question posed, of what Flexner might think of medical education now. What would he think of us as medical educators?

The full facsimile text can be found on the internet (1).

Flexner did not present his analysis as the answer for all time; they would be relevant for perhaps the next twenty years. Changes in knowledge, capacity of medical care, and social priorities would all require regular reappraisal of medical education.

So I have selected for consideration some of the ‘big ticket’ items in medical education that shape our present time.

1. Science

In 1910 the sciences fundamental to Medicine were expanding rapidly, lately microbiology and biochemistry, pharmacology, radiation and atomic physics. Yet to come were detailed physiological biochemistry, cell biology and molecular genetics. Population and social sciences and the principles of epidemiology and statistics were already deployed in tracing epidemics and the study of the impact of social conditions on health. The volume of content in 1910 was already too much to learn in the

undergraduate time. What Flexner emphasized was not the content but the scientific method. He quoted John Dewey (4):

“Science has been taught too much as an accumulation of ready made material which students are to be made familiar, not enough as a method of thinking, an attitude of mind, after the pattern of which mental habits are to be transformed.”

Flexner emphasized that it was impossible to learn everything as a student, and that as a practitioner he would continue to learn for the rest of his professional career. But he would do this best with a foundation of critical reasoning:

“A professional habit definitely formed upon scientific method will convert every detail of his practicing experience into an additional factor in his effective education”.

2. Teachers and teaching

As in ‘Mr Flexner’s School’ he shifted the emphasis from teaching by the teacher to learning by the learner. And for medical education he asserted:

“Out and out didactic treatment is hopelessly antiquated; it belongs to an age of accepted dogma or supposedly complete information, when the professor ‘knew’ and the students ‘learned’.

“Teachers of modern medicine, clinical as well as scientific, must, then, be men of active, progressive temper, with definite ideals, exacting habits in thought and work, and with some margin for growth.

The student is throughout to be kept on his mettle. He does not have to be a passive learner just because it is too early for him to be an original explorer

Flexner would find now, 100 years later, that dense content and didactic teaching and passive learning still hold sway in some schools and creeps back in those which started with their rejection. He might be disappointed but not surprised. Even the best of the schools upon which he relied to demonstrate excellence, Johns Hopkins paramount, he found later to have slipped in the face of conflicting priorities.

3. Problem Based Learning

My first awareness of Flexner I owed to preparing a critique of the McMaster curriculum and its problem based learning, based on my close involvement with its early development (5). I cannot recall his being mentioned in the extensive discussions that

drove and tormented the early days of planning and the Flexner Report is only mentioned once in the history of McMaster (6) and nothing about his principles of education.

But as I read the report it seemed to lay out the very principles that we had actioned in problem based learning (7). Flexner equated the process of hypothetico-deductive reasoning in research with the process of diagnosis and management in clinical medicine:

“The main intellectual tool of the investigator is the working hypothesis... wherein is it irrelevant in bedside practice?...he too [the physician] frames his hypothesis now called diagnosis...the sick man’s progress is nature’s comment and criticism.”

And he espoused the same approach for learning both for the sciences:

“From the standpoint of the young student... the old, known and understood are all alike new to him; and the teacher seeks to ...carry him through the process of the thinker, and not of the parrot.”

and for clinical medicine:

“The facts are locked up in the patient. To the patient, therefore he must go....into close and active relation with the patient: close by removing all hindrance to immediate investigation; active in the sense, not merely of offering opportunities, but of imposing responsibilities”.

It was to achieve this quality of learning and active intellectual challenge that drove his insistence that teachers should be active researchers. But although firmly insisting on this principle when negotiating funding it is a relief to find that there was some other contribution to make;

“Not all teachers will be genuinely productive scientists. There is room for men of a different type – the non- productive assimilative teacher of wide learning, continuous receptivity, critical sense and responsive interest, purveyors and distributors through whom new ideas are harmonized and made current. They preserve balance and make connections”

But relief was not liberally available:

No room for...the scientifically dead practitioner, whose lectures, composed when he first took his chair, like pebbles rolling in a brook, grow smoother and smoother as the stream of time washes over them

So he would be pleased to see the principles of the approaches of problem based learning, enquiry based learning, learning by discovery, active learning and self directed learning. Problem based learning works as does research, starting with a presentation of a clinical problem (or public health or whatever else might be the starting point) and the students

discuss and develop their hypotheses and determine how to learn more to test their hypotheses, and proceed in a reiterative sequence.

But would he always be pleased with the implementation? Principles can be foiled by implementation that ignores the rigorous pedagogic basis of their success. He would be concerned if non-expert tutors or insufficient interaction with experts led to a blunting of intellectual rigour. I was surprised to find that in 1995 that I wrote this about McMaster:

“It is one of the most difficult tasks of a tutor to judge the scientific rigour of a discussion. It is possible for a tutorial group to build a construction of facts and concepts with pieces of information culled from a variety of dogmatic sources, and to feel that the problem under study has been well analysed. The student may learn the scientific stories about the topic, and may do so with interest and a sense of their relevance to medicine, but gain only a limited insight into the basis of knowledge in science.”(5)

4. Science or Humanity of Medicine?

Flexner is often berated for his emphasis on science as if it were the whole basis of medicine, leaving no place for its humanity. If that is how medicine has become it is not to be blamed upon Flexner. Speaking of an expanding expectation of medical care beyond the direct curative and episodic he observes:

“Such enlargement of the physician’s horizon is otherwise important, for scientific progress has greatly enlarged his ethical responsibility. The physicians function is fast becoming social and preventive, rather than individual and curative. Upon him society relies to ascertain, and through methods essentially educational to enforce, the conditions that prevent disease and make positively for physical and moral wellbeing. It goes without saying that this type of doctor is first of all an educated man”.

And about the means to fulfill that wider responsibility:

“Fundamental sciences are the instrumental basis of medical education...but can hardly serve as the permanent professional education. ...he needs a different apperceptive apparatus to deal with the other, more subtle elements. Specific preparation is much more difficult...the requisite insight and sympathy on a varied and enlarging cultural experience.”*

* What does Apperception mean? It means:

1. Conscious perception with full awareness.

2. The process of understanding by which newly observed qualities of an object are related to past experience.

Is this not Reflective Practice and Reflective Learning so frequently cited as a means to empathic understanding of patients needs and to professional growth?

In later years Flexner and Rockefeller promoted the university study of the Humanities. But he found himself disappointed that as medical education progressed in large strides it left the study of humanities out of its view.

Flexner uses the word ‘apperceptive’ again when he discusses the adaptation of the learning of sciences to the application and use in clinical medicine.

“Undergraduate instruction will be throughout explicitly conscious of its professional end and aim. In no other way can the sciences belonging to the medical curriculum be thoroughly kneaded. An active apperceptive relation must be established and maintained between laboratory and clinical experience.

There is no cement like interest, no stimulus like the hint of a coming practical application”.

So he would approve of integration and of the inspirational value of early clinical experience. But he would be severely on guard against loosening the contact between student and scientific expert, and of the beguiling risk of dealing only with clinical phenomena and avoiding a deep understanding of mechanisms and the means of scientific enquiry. Recent consideration by the General Medical Council has led in the latest 2009 edition of Tomorrow’s doctors (8) in a curtailing of a too liberal educational approach if it takes students away from the rigorous interaction with expertise. Such separation was never intended at McMaster.

5. Community Based Education

This follows in principle directly from the need for an apperceptive approach to the causes of ill health in communities. Reformers in public health such as Edwin Chadwick (9) had long displayed the crucial importance studying the social causes and responsibilities for ill health and to do so by going into the community. William Osler, who spent part of his boyhood near where McMaster now stands (and beginning his study of science with net and microscope round the swamps of Coote’s Paradise) became a leading warrior for the control of Tuberculosis and sent his student to study the home and social circumstances of all his patients, demonstrating that incidence, severity and mortality were all directly related to poverty housing and social circumstance (10). This is part of the enlarging cultural experience to which Flexner refers. He might have written:

“The facts are locked up in the community. To the community, therefore he must go...into close and active relation with the community: close by removing all hindrance to immediate investigation; active in the sense, not merely of offering opportunities, but of imposing responsibilities”.

He would be pleased then that many community based programmes especially in developing countries, involve service to and engagement with a community of concern. The further development of this is the theme of Social Accountability which might involve the university as a whole in engagement with its community. This was not even thought about by Harvard when I first visited some 20 years ago, having as a private institution no responsibility to the surrounding community. Harvard and most other schools have now changed radically and students benefit from a widened perception of their role and professional responsibility.

In 1977 after McMaster I took responsibility for the curriculum of a new school at Ilorin in Nigeria. The curriculum was strongly oriented to the community and students spent one month every year living in a village, studying their health, beliefs and environment, becoming a part of the community and assisting in public health improvement (11). Years later, in 2008 I met up with a group of early graduates. They recalled with great appreciation how this experience deepened their insight into the values and circumstance of poor communities and the impact it had on their own professional growth and orientation.

5. Accreditation

This year 2010 is the 25th Jubilee year of the Australian Medical Council. I was the founding chair of its Accreditation Committee. AMC has published the history of its now extensive responsibilities (12). Flexner would, I think approve of both our principles and our practice. And well he might, for his analyses of the 155 schools of America and Canada were the very origins of the appraisal of the subsequent LCME system and our own in Australia (13).

Flexner said of the ethos of medical education as he found it:

“With the creation of the situation bequeathed to us consideration for the public good has had little to do”

“If the sick are to reap the full benefit of recent progress in medicine, a more uniformly arduous and expensive medical education is demanded”

His task was to put this right. The Flexner report influenced how we developed the Australian system. He would approve of the following responsibilities of AMC accreditation:

- Two aims, to accredit schools and to improve education nationally
- Written standards regularly reviewed and revised
- Public accountability by consumer participation and o
- Open publication of reports and recommendations
- Participation of all stakeholders including students and consumers
- Fully developed systems of visits and collegial discussion
- Consultation based on the schools own internal review
- Continuity of review and consultation between visits
- Close consultation with students
- Immediate feedback to the school
- International engagement

Conclusion

At the commencement of this address we took a poll:

- *Who had heard of Flexner and his Report? Quite a number.*
- *Who had quoted him? Some.*
- *Who had read the report? Very few.*

Today's address, biased perhaps, gave us a basis, at the end to ask the question,

Was Flexner 1910 'a good thing'?

The voting was unanimous for "Yes" with no votes for "No".

In this election year is this a portent?

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