

MAKING A DIFFERENCE

## **An Interview of Charles Engel**



Charles Engel is Visiting Academic at the Centre for Higher Education Studies, School of Lifelong Education and International Development, University of London, and Visiting Professor at the University of Manchester. He was also the Founding Editor of *Education for Health*. This is an abridged, edited version of an extended interview I did with him in the spring of 2004 and in later email exchanges.

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### *How did you become involved with medical education?*

In the post-First World War period, my father, one of the European pioneers of social paediatrics, stimulated my interest in education as applied to medicine. He was concerned with the lack of change in the education of future practitioners.

As, I am sure, our readers are more interested about what I did than about details of my biography let me just mention that, at the end of the Second World War, my entry into the world of medical education was through the door of “medical illustration”. At Guy’s Hospital Medical School, London, as Head of Photography in the Department of Medical Illustrations, I was involved in the production of photographic and audiovisual records for clinical and teaching purposes. I concentrated on improving standardized recording for clinical comparisons of therapeutic or surgical interventions, simplified macro-photography of the skin and colour cinematography, such as the first open heart operation performed in Great Britain.

*How did design and application of such aids lead you to the broader aspects of teaching and learning?*

In 1951 Dr Peter Hansell, head of a Department of Medical Illustration in another London medical school, and I established *Medical and Biological Illustration*, the first European journal on this topic. The journal was published by the British Medical Association, and it contributed to giving medical illustration an enhanced level of credibility.

In the early 1960s the Marconi Company was experimenting with the British Broadcasting Corporation on landline transmission of colour television. Roger Warwick, Professor of Anatomy, and I devised a programme in which colour was an essential element for teaching. We were able to report on the potential applications of closed-circuit television in medical education at a meeting organized by the Association for the Study of Medical Education (ASME) founded in 1957.

At the same time I also worked with Dr Ronald McKeith, pioneer in the treatment of children with cerebral palsy, towards the development of very short 16 mm films to demonstrate aspects of body movement. This interest led me to membership on the Editorial Board of the *Encyclopaedia Cinematographica*, based at the University of Göttingen. The Board encouraged a wide-ranging collection of short records of movement in biological subjects, anthropology, ethnography and technology.

In 1968, a paper on “Evaluation of Audio-visual Methods of Medical Teaching”<sup>1</sup> by Hilliard Jason demonstrated that the pursuit of educational effectiveness was quite important. It encouraged me to look towards change from a predominantly technical aspect and towards the rationality of application.

*How did you find out the specific aspects of medical education?*

An initial exploration at some European universities led me to obtain a grant that enabled me to visit a number of universities in the United States of America. Those five weeks in the mid-1960s, with quite outstanding hospitality wherever I went, were my induction into higher education and medical education *per se*. I was privileged to meet Steve Abrahamson at the University of Southern California, Leslie Greenhill at Penn State University and Hale Ham at Case Western University in Cleveland, Ohio who masterminded the first major innovations in medical education at the beginning of the second half of the 20th century. I was greatly impressed by their ideas and how they opened the doors to the possibilities of change in medical education.

At an international conference on scientific films in Greece, in 1965, I met an Australian science correspondent who suggested that the University of Melbourne was looking for someone with an interest in all forms of illustration to support teaching and research across the whole university. Within a few

<sup>1</sup>JASON, H. (1968). Evaluation of audio-visual methods of medical teaching. *Canadian Medical Association Journal*, 98, 1146–1150.

months my wife, my young son and I embarked on our first overseas adventure—at a time when long distance travel was still “by steamer first class by the shortest available route” (just six weeks!).

The Australian College of General Practitioners was then developing their first postgraduate examination for Australian General Practitioners (family physicians). It was a very stimulating opportunity to explore a logical progression from identifying the roles and related competences of general practitioners and thus how the attainment of the requisite capabilities might be assessed effectively, that is with validity, reliability, and sustainability.

Unfortunately, the war in Vietnam affected university income and drastically reduced its research funding. A timely offer of the foundation directorship of an experimental unit, funded by the British Life Assurance Trust (BLAT), took me and my family back to London in 1968.

In London I continued to experiment with the application in medical education of the use of audiotape recordings with illustrated booklets, rather than the then current fashion for “tape & slides”. The prototype development of an audiotape player, that could be programmed to let the listener select specific sections, brought me to the World Health Organization meeting on innovation in medical education, Madrid (1969). It also introduced me to participation in a UK government enquiry into Audio Visual Aids in Higher Scientific Education.

*Tell us more about the BLAT unit.*

The British Life Assurance Trust was financed by the UK Association of that name. The Trust created a unit for research and development of medical and health education, based at the British Medical Association.

My emphasis shifted from “medical illustration” to the continuum of medical and health sciences education. I collaborated with academics across Britain and abroad.

A physician from Northwestern University, Chicago spent some time with us designing a case study on the development and application of task-based learning in continuing medical education in cardiology for family physicians. A similar task was explored by an academic from a British university in relation to geriatrics.

A registrar (resident) in paediatrics from one of the London medical schools was seconded to the BLAT unit on a part-time basis. She developed a rational postgraduate curriculum for general practitioners who wished to become doctors for primary and secondary schools. The aim was to explore how doctors, in training to become specialists, might also develop some capability in education that they would then be able to apply in the teaching of their junior colleagues.

A Canadian anaesthetist at a British district hospital asked to be attached to the BLAT unit, in order to develop an approach that might assist his registrars from non-English speaking countries to pass their difficult specialist examina-

tion. We based their learning on a sequence of real life professional tasks, derived from an analysis of the roles of the anaesthetist. The success rate in the examination improved dramatically, and some reports carried the comment: “This candidate not only has the required knowledge, s/he also has a deeper understanding of the specialty”.

*From “Knowledge & Understanding” how did you move to “Problems & Professional Competences”?*

This experience proved to be a useful preparation for my repeated visits to McMaster University. There I met with Howard Barrows, Ron MacAuley and Vic Neufeld, who were very patient and supportive with this unknown individual from the Old World. Small wonder that Problem-Based Learning continues to be one of my key interests since those heady days of its first flowering in the second half of the 1960s.

In the early seventies I visited the WHO headquarters in Geneva, as you know. There I met with Tamas Fülöp, M.A.C. Dowling, Fred Katz, and yourself. This spawned a galaxy of educational experiences with colleagues in a wide range of countries and with other outstanding colleagues.

I was invited to become a member of a WHO Expert Advisory Panel, then called “for Manpower Development”, later changed to “for Human Resources”. The BLAT unit subsequently became one of the first WHO Collaborating Centres in Europe in that field.

In the 1960s and 1970s there was also a great interest in the specification of “learning objectives”. Much of this effort resulted in expanded syllabi that few academics and even fewer students would wish to consult. How might this excessive wealth of detail be constrained within realistic and contextual boundaries? Two American colleagues, Bill Chew, a physician, and Bob Tschirgi, a physiologist, came to my rescue. We defined what roles and tasks newly qualified doctors would need to carry out—from meeting a new patient to having to impart bad news and filling in a death certificate. This guide was subsequently used during our curriculum planning at Newcastle in Australia.

*As you mention Australia, please, tell us about your serendipitous meetings with David Maddison.*

David Maddison, former Dean of the Faculty of Medicine, University of Sydney had recently been appointed Dean of a new medical school in Newcastle (Australia). When he came to London in 1970, he contacted me at the British Medical Association. He was collecting information on “what was new in medical education and worth exploring”. We continued to meet over the next 18 months, each time he came back to London. Gradually he refined the issues that needed to be addressed. These ranged from the criteria for selecting teaching staff, as well as students, to the development of generic competences for a lifetime of professional practice—including an ability to adapt to change.

My meetings with David were the beginning of the most extraordinary experience of my professional life. Change from the conventional to something quite radically new became a specific issue, and adaptation to, and participation in, the management of change has been a particular interest of mine ever since.

When David indicated that he would be looking for someone who could and would ask awkward questions, my wife supported me in suggesting that I would love to be considered for that position. We had by then envisioned that Problem-Based Learning ought to be a key element but that this would need to be a part of a coherent, supportive educational system. My wife and I moved for the second time to Australia in 1976.

*Tell us more about what you did when you returned there.*

This exhilarating adventure began by starting a new medical school based on critical appraisal of the past and logical planning for the future.

From the outset David Maddison insisted on avoiding power vested in conventional departments. The formation of a small number of “Divisions” was soon replaced by “Disciplines”, with very limited funding, that served primarily as the home for academics with similar interests.

Matrix management would enable task-oriented committees to call on colleagues from any of the “Disciplines”, not as representatives of that Discipline, but for their potential contributions to that committee’s task. This arrangement was fundamental for encouraging interdisciplinary education and research. One such committee was charged with the task of student selection, not only for “efficiency of throughput”, selecting those who were most likely to graduate in minimum time, but also for “effectiveness” in their career as doctors. Selecting students for their potential as future practitioners led to the development of methods that would assist in identifying personal, as well as intellectual, potential.

*Was “community orientation” included at that early stage?*

The short answer is “Yes”. Community leaders, local medical practitioners and senior government officials were invited on to the Faculty Board and committees, e.g. the Student Selection Committee.

While many local members of the medical profession participated as small group tutors and were accorded university privileges with clinical academic titles, all professors were appointed as expert advisors to the local office of the Department of Health.

From the outset emphasis on community orientation called for representation of the local community on the Board of the Faculty and thus also as members of the pairs that were to conduct standardized interviews with prospective students. The Discipline of Community Medicine and the Department of General Practice were established.

We devised our student selection process as a long-term experiment by selecting one half of each annual intake from candidates whose secondary

school examination results would traditionally not admit them to the study of medicine. These students were to be selected by written psychometric tests and standardized interviews with one academic and one member of the community, one a man and the other a woman. The other half of the student intake was to be admitted according to the traditional criterion of very high secondary school examination results. However, the candidates undertook the same test and interview. All candidates participated in the selection process, so that the results were available for subsequent comparison of the students according to their respective route of admission to the medical school. This led the Selection Sub Committee to establish an experiment that enabled us to compare the progress of these two cohorts across twenty years.<sup>2</sup>

The methods were progressively refined. The system has more recently been changed to admit both types of candidates according to their performance in the selection tests. All Australian medical schools have now adopted similar selection procedures.

*How was the “community-orientation” connected with “active learning”?*

The curriculum was designed to satisfy contextual, integrated, cumulative and active, collaborative learning.

Problem-Based Learning in small groups was introduced from the very start of the curriculum, together with contact with patients, in the community and in the health system from the first year of the course. Community-based experiences were to continue throughout the five-year course, with secondment to small country communities at intervals during the course.

*How did the student assessment system reinforce the educational orientation?*

The assessment supported the above criteria through frequent formative assessment and infrequent certifying assessment. Learners had repeated opportunities for attainment of the requisite level of performance, together with demonstration of peaks of excellence, not only under examination conditions, but also under every day practice conditions.

A separate Monitoring Sub Committee also reviewed the perceptions and recommendations of the previous term by students, small group tutors and other staff. Instead of reliance on questionnaires, each student cohort participated in a Nominal Group session, which ended with the students' recommendations for improvements.

The combined report was made public and sent to the Education Committee for review of the recommendations on how such changes might be effected and to take appropriate action. This end-of-term experience was also designed to

<sup>2</sup>POWIS, D. & ROLFE, I. (1998). Selection and performance of medical students at Newcastle, New South Wales. *Education for Health, 11*, 15–23.

foster capability in adapting to change, as well as in participating in managing change.

One additional aspect was the conscious endeavour to foster an enabling, supportive *educational environment*, for example, by encouraging the use of first names by staff as well as by students.

These, then, were some of the key elements in the construct of the System to be implemented.

These arrangements lead to the participation of our school in the founding of “The Network” in 1979 at the Jamaica meeting sponsored by Tamas Fülöp from the World Health Organization.

*What supported and what hindered, from within and from outside, the creation and maintenance of this new medical curriculum at the end of the 20th century in Australia?*

From the outset David Maddison, our charismatic leader, ensured that Medical Education and Outcome Evaluation would be accorded academic credibility. A Committee, separate from the Education Committee, was given the task of planning long-term outcome evaluation. A substantial number of papers have since been published.

Unfortunately, a change of policy by one of the major foundations in the United States of America did not make it possible to mount a major, long term sociological study to answer that question.

*How might such radical changes in medical education be introduced and supported?*

To cite but a few examples, the major aspects of the course design were carefully set out in separate “Faculty Working Papers”. These were distributed throughout the Faculty and among colleagues in the community for their comments and suggestions. A revised paper was then circulated for any additional comments, before the final draft was submitted for ratification by the Faculty Board. This approach was designed to inform the wide constituency and to encourage a feeling of ownership. A Newsletter, with information from major stakeholder organizations, as well as from the Faculty, was created. Well over one hundred issues have been circulated since March 1978. Colleagues from the community, who participated as tutors, preceptors and in a host of other roles were accorded Faculty privileges. They were invited to an end-of-year meeting to review the successes and problems of that year.

*I have been informed that the end of your Australian saga did not mean retiring in some ivory tower. Tell us about that.*

For ten years, from 1989 to 1998, I was the editor of the *Annals* and of the first three volumes of *Education for Health* until Hilliard Jason took over from me. Serving as founding editor kept me in touch with colleagues and events across the world.

At the Wellcome Tropical Institute, London, I worked with Professor Eldryd Parry, former Founding Dean of several medical schools in Africa, such as Ilorin, Nigeria and Kumasi, Ghana. We prepared senior academics from Africa for leadership in continuing medical education and we experimented with Problem-Based Learning in distance education in developing countries.

At University College London Medical School I acted as Facilitator for Curriculum Change. The Government funded this time-limited position in order to support recommendations for major changes in medical education.

I have also been involved in the development of an International Directory of Problem-Based Learning to identify the different applications of the term PBL in different disciplines and their respective educational effectiveness.<sup>3</sup>

I directed an Inter-European Interprofessional Delphi Consultation on higher education for societal responsibility, which was published in 2002 by the UK Centre for the Advancement of Interprofessional Education.<sup>4</sup>

As Visiting Professor at the University of Manchester I am presently involved in the development of such a curriculum for Societal Responsibility.<sup>5</sup>

*Do you ever sleep more than 2 hours per night?*

(No reply, Professor Engel had already left for his next appointment.)

<sup>3</sup><http://interact.bton.ac.uk/pbl/index.php>

<sup>4</sup>Document can be obtained by sending an email request to Professor Engel at: [charlesengel@li-neone.net](mailto:charlesengel@li-neone.net)

<sup>5</sup>ENGEL, C. (2000). Health professions education for adapting to change and for participating in managing change. *Education for Health, 13*, 37–43.