

The Reinvention Centre

For Undergraduate Research

ACADEMIC FELLOWSHIP: FINAL REPORT

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Title

Social and Behavioural Medicine: Systematic reviews of social and behavioural interventions for clinical conditions

Summary

We have successfully reinvented the relationship between teaching and research at Warwick Medical School. We developed a very well evaluated training programme for systematic review methodology, supported students as they defined, conducted and completed their systematic reviews, and which continues to support them as active participants in the process of disseminating research findings. This new teaching-research relationship will not only give our students added value as they leave Warwick and begin their medical careers, but will also improve the teaching-research experience of future students who will be exposed to peer-led teaching. In addition, we have shown that there is a great desire among our students to engage more fully with research. Finally, investment from the medical school in a systematic review group focussed on medical education interventions will ensure that the benefits to undergraduate students deriving from greater engagement with research will continue to be available.

Background

Publication of *Tomorrow's Doctors* by the General Medical Council (GMC) (1993, 2003) set the curriculum framework for all undergraduate medical education in the United Kingdom. The framework, in both the original and updated editions, represents a substantial departure from traditional medical education. In particular the focus moved from a curriculum dominated by clinical sciences and shaped by fact-based knowledge acquisition, to a curriculum informed by social and behavioural sciences and shaped by the development of competencies.

The framework has generated considerable debate, much of which has focussed on

- a. the continued emphasis on the importance of the social and behavioural sciences,
- b. the need for medical undergraduates to integrate their knowledge of the different social and behavioural sciences and biological sciences,
- c. the need for medical undergraduates to be provided with opportunities to develop their own research skills.

The GMC recognises that in the past there have commonly been strong boundaries between the core subjects that constitute the medical undergraduate curriculum and that each core subject has commonly been considered to be separate and to have defined and different ways of thinking, knowledge, and skills (Bernstein, 1996). Bernstein reasoned that when boundaries between subjects are strong, an 'education in depth' approach is adopted and learners are

expected to develop their educational identities through the acquisition of states of knowledge in individual subjects. The practice of medicine commonly requires the practitioner to integrate her/his knowledge of the different core components. This integration of knowledge is facilitated when an 'Education in breadth' approach is adopted and the insulation between subjects is breached (Bernstein, 1996). The introduction of cross-curricular themes that subordinate subjects breaches the boundaries between subjects.

Medicine lends itself to the introduction of cross-curricular themes as patients who have the same diagnosis of illness will have very different psychological and sociological risk and protective factors. Bernstein (1996) emphasised the difference between cross-curricular themes and a focused curriculum. A focused curriculum occurs when the same topic is addressed in the context of different subjects which have defined and separate ways of thinking, for example studies on smoking in the context of a Cardiovascular Health module and smoking in the context of a Health Psychology module. This tends to reinforce medical undergraduates understanding that each subject has distinct ways of thinking and separate states of knowledge. Education in breadth, in contrast, encourages undergraduates to develop an understanding of ways of knowing and to view knowledge as a range of equally valid and sometimes conflicting realities. We proposed a project that supports an education in breadth approach because the students were required to identify, evaluate and synthesise evidence based on very different theoretical frames and perspectives, and often with little consistency in either the magnitude or direction of results.

The core modules of the 4-year accelerated medical degree rely on a lecture-seminar format, which, together with a heavy workload, many contact hours and a lack of choice over subjects or methods of study can reinforce surface or shallow learning (Toohey, 1999). Our project sought to develop student research, interaction with peers and teachers with reference to a well-structured teaching process (Toohey, 1999) as a means of developing deeper learning styles, integrating student-led research, and both practical and analytic reasoning and learning. The effectiveness of different curricula is hard to assess (Albanese, 2000) but the shift in teaching and learning style away from 'gaining knowledge to learning processes that include the ability to evaluate data as well as to develop skills to interact with patients and colleagues' (GMC, 2003). A specific aim of systematic reviews is to evaluate data and the students will be provided with the opportunity to develop their research skills using a protocol that has national and international currency (Bridle, 2003).

Objectives

The overarching objective of our project was to facilitate students' understanding of research in the social and behavioural sciences, make salient its relevance to medicine and to promote the transfer of research evidence into clinical practice. The specific objectives were:

- a) to provide students with training in systematic review methodology;
- b) to support students to be a co-author of a systematic review;
- c) to support students in their continuing career in medicine.

Evaluation and Outcomes

We have achieved all of the objectives for which the training programme and Reinvention Fellowship were established. Moreover, we have achieved measurable outcomes that extend beyond those explicitly identified at the start of the fellowship. Each outcome is detailed below.

To provide students with systematic review training:

We developed a systematic review training programme that was delivered in four workshops focussed on the following: (1) Planning the review, (2) Conducting the review, (3) Reporting the

review, and (4) Disseminating the review. Further details of the training programme are provided in Appendix A.

The training programme was designed explicitly to provide students with 20 demonstrable research competencies, each of which we had identified as being necessary for conducting and reporting a systematic review of satisfactory quality (see Appendix B). The research competencies can thus be linked to both the training programme and the observable output of our students, i.e. the review report. The 20 individual competencies clustered in groups of five around four broader competency components: (1) Define topic and search parameters; (2) Search, select and evaluate evidence included in the review; (3) Synthesise evidence, investigate heterogeneity and consider sensitivity analysis; (4) Disseminate review findings to targeted audiences.

The evaluation of the training programme was necessarily anchored to the research competencies it was designed to provide / facilitate. The principle mechanism for this evaluation, therefore, was the quality of the reviews produced by students. We used a standard checklist (CASP) to assess the methodological quality of each review, and found each review to be of a high standard. This assessment was echoed by the external experts for each review who were similarly impressed, and who have encouraged submission of the reviews for publication, following some amendments in light of the experts' peer-review. Each review report, therefore, is not only methodologically strong but also of a publishable quality, thus providing evidence of satisfactory achievement of each research competency.

We moved beyond a checklist evaluation of the training programme, so as to assess the training programme, more generally, from both student and staff perspectives. We asked students to evaluate the training programme using the 'module evaluation' procedure used in the medical school, something with which students are familiar, which we adapted slightly so as to be relevant to the training programme. The structure, content and delivery of the training programme were evaluated extremely positively (see Appendix C). From our perspective (CB, WM) the training programme was a great success. Not only did the outputs exceed the minimum standards required, but the development and delivery of the programme through workshops and training materials was an enjoyable and rewarding experience, which was further reinforced by the students' evaluation.

To support students to be a co-author of a systematic review:

Each review group is gaining valuable experience of the research dissemination process. Each group has produced a review report and submitted it to the training staff and the topic-area expert, all of whom have peer-reviewed the work and provided feedback. The review groups have responded to the feedback, identified relevant journals to target and are producing papers according to the authors' instructions of journals they have identified as appropriate. Although we will not know for some time whether the reviews will be accepted for publication, we feel that it is the experience of the process of dissemination from which students will derive greatest benefit. The training staff and topic-area experts have all made a commitment to support students throughout this process.

To support students in their continuing career in medicine:

The importance of gaining experience and understanding of research for medical students and qualified practitioners is increasingly recognised. All graduating medical students are required in all job applications to outline their experience and understanding of research. The receipt of this research scholarship, the development of systematic review skills, experience of the dissemination process and potentially a peer-reviewed publication will bolster their applications considerably. Moreover, systematic reviewing is the foundation upon which evidence-based

medicine is built, and thus the training programme will support their future careers by providing added value to their clinical practice.

Additional important outcomes:

Additional outcomes of importance related to the training programme include:

- Demand for research engagement: We only advertised our training programme to final year medical students, yet nearly one third made applications. Unfortunately, resource constraints meant that we were able to accept only 11 students onto the programme. Nevertheless, there is clearly a great desire from our undergraduate students to engage more fully with research.
- Student-led teaching: Members of each group have agreed to give a lecture on their review topic to the next cohort of Phase 1 medical students completing the Health Psychology module.
- Behavioural and Social Science Teaching in Medicine (BeSST): Each review group has submitted an abstract to the first conference of this newly formed multi-disciplinary group of academics teaching in medical schools.
- Best Evidence in Medical Education (BEME): WMS has agreed to fund a research group to conduct systematic reviews of various aspects of medical education. This is not as a result of our training programme, but we nevertheless will provide training materials and describe our experiences to the newly formed group, and we believe it will provide a further opportunity for our students to engage with research.

Conclusions

We have successfully reinvented the relationship between teaching and research at Warwick Medical School. We developed a very well evaluated training programme for systematic review methodology, supported students as they defined, conducted and completed their systematic reviews, and which continues to support them as active participants in the process of disseminating research findings. This new teaching-research relationship will not only give our students added value as they leave Warwick and begin their medical careers, but will also improve the teaching-research experience of future students who will be exposed to peer-led teaching. In addition, we have shown that there is a great desire among our students to engage more fully with research. Finally, investment from the medical school in a systematic review group focussed on medical education interventions will ensure that the benefits to undergraduate students deriving from greater engagement with research will continue to be available.

Appendices

A: Overview of Training Programme

The training programme comprises four workshops, as provisionally outlined below. The workshops are designed to provide the training necessary to complete specific systematic review stages. Each group must complete the required stage tasks and objectives before the next workshop, and you will be supported during this intervening period. It might be useful for review groups to identify a different 'lead' to oversee the completion of tasks and objective for each intervening period.

Each workshop will begin with a brief presentation (5 minutes) by each review group based on the completion of intervening tasks and objects. The purpose of the presentations is to provide a forum for peer-review, support and learning. External experts will be invited to the final workshop presentations.

Preliminary training programme

Date	Review Workshop	Intervening Tasks & Objectives
July	Planning: <i>Introduction to systematic review; Protocol development; Question components / formulation; Overview of training programme</i>	Develop protocol with completed background, specified objective/question, and outline methods. Submit draft for assessment, amend and submit to expert for comment.
Sept	Conducting: <i>Search strategy; Data extraction; Quality assessment (Data synthesis; Heterogeneity; Interpretation of results)</i>	Update protocol methods (search, extraction template, assessment criteria) and submit. Conduct review as specified in the approved protocol, and submit draft review report (data synthesis plan).
Oct	Reporting: <i>Report structure; Manuscript guidelines; Dissemination strategy; Targeted publication; (Data synthesis; Heterogeneity; Interpretation)</i>	Synthesise data; Write draft report; Identify peer-review journals; Obtain manuscript guidelines. Submit draft report and dissemination strategy for internal review and respond to feedback.
Nov	Disseminating: <i>Publishing the review; Target audiences; Dissemination media; Responding to peer-review; Contributing to medical education</i>	Present completed review to peers; Reflect on programme experience / evaluation and feedback. Write full report for internal peer-review, submit for publication and go to the pub to celebrate.

B: Systematic Review: Specification of Research Competency

You will conduct a systematic review of social and behavioural science evidence relevant to a clinical population and report the review in no more than 5,000 words. The report should be written to a standard acceptable for peer-reviewed publication, submitted for publication in accordance to relevant manuscript guidelines and, where necessary, responding to peer-review feedback.

On completion you will have satisfied four components of research competence:

1. Define topic and search parameters

- 1.1 Assess the extent to which the research area has been adequately reviewed;
- 1.2 Formulate review question and outline methods;
- 1.3 Identify and contact key researchers to comment on proposed review;
- 1.4 Identify relevant databases, publication types, and key journals to hand search
- 1.5 Develop review protocol, specifying the aims, objectives and methods of the review.

2. Conduct a search using appropriate databases and sources

- 2.1 Form a review group and develop communication and collaboration procedures;
- 2.2 Develop operational definitions of inclusion criteria;
- 2.3 Evaluate their sensitivity and specificity of test search strategies;
- 2.4 Conduct search to locate, select and obtain relevant studies;
- 2.5 Tabulate characteristics of each study and assess its methodological quality.

3. Summarise findings from the review

- 3.1 Specify *a priori* methods for data synthesis;
- 3.2 Analyse results of eligible studies;
- 3.3 Assemble complete data set and discuss interpretation with review group members;
- 3.4 Investigate potential sources of heterogeneity identified *a priori*;
- 3.5 If appropriate, perform sensitivity analysis.

4. Disseminate review results to appropriate audiences

- 4.1 Prepare a structured review report according to relevant publication guidelines;
- 4.2 Develop and execute a dissemination strategy targeting peer-reviewed journals;
- 4.3 Respond, if necessary, to peer-review feedback and re-submit;
- 4.4 Publicise and disseminate results to key local stakeholders via different media;
- 4.5 Establish and implement procedures to maintain the review database.

C: Student evaluation of the training programme

	Strongly agree > Strongly disagree					
<i>General Questions</i>	5	4	3	2	1	<i>Mean</i>
<i>Learning outcomes were clear</i>	9	1	1	0	0	4.73
<i>Achieved training outcomes well</i>	8	3	0	0	0	4.73
<i>Teaching helped me well</i>	8	2	1	0	0	4.64
<i>Teaching was very good</i>	10	1	0	0	0	4.91
<i>Workshop content was structured very well</i>	11	0	0	0	0	5.00
<i>Teaching staff were well organised</i>	9	1	1	0	0	4.73
<i>Good support was available</i>	9	1	1	0	0	4.73
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<i>Training Programme</i>						
<i>My interest was stimulated</i>	8	2	1	0	0	4.64
<i>New terms were explained well</i>	9	2	0	0	0	4.82
<i>Questions were encouraged</i>	11	0	0	0	0	5.00
<i>Small group work/tasks supported learning</i>	10	1	0	0	0	4.91
<i>Improved ability to solve problems</i>	7	2	2	0	0	4.45
<i>Gained useful / transferable skills</i>	9	2	0	0	0	4.82
<i>Content was relevant to clinical practice</i>	9	2	0	0	0	4.82
<i>Staff responded well</i>	10	1	0	0	0	4.91
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<i>Overall</i>						
<i>The training programme was very enjoyable</i>	8	2	1	0	0	4.64
<i>The training programme was very useful</i>	9	2	0	0	0	4.82
<i>The training programme was very relevant</i>	10	1	0	0	0	4.91
<i>I would definitely recommend the training programme to current medical students</i>	10	1	0	0	0	4.91

Do please add comments below if necessary:

Thank you.