Many Australian and overseas universities, medical schools and professional bodies have now adopted an outcomes-based education (OBE) approach to learning.1 This means that curricula design, content and teaching methods used are based on the identification of knowledge, skills and attributes that graduates will be able to demonstrate upon graduating.2,3 Much of these competencies will be specific to the course of study. However, some include generic attributes such as reflective practice, applying research methods and effective communication.

The advantages of OBE are reported as being improved clarity for both students and teachers of intended outcomes, increased relevance of learning opportunities, and a framework to help unify a curriculum. OBE is consistent with the move to more performance or criterion-based assessment.4 It also facilitates an “assessment-to-standard approach” which highlights the need to clearly specify the learning outcomes as cautioned by Rees rather than blindly adopting an outcomes-based model.5-7 This was also reinforced by Harden who acknowledged that although outcome-based education is “easy to conceptualise [it] is often difficult to define”.6

The University of Western Australia (UWA), commenced an ongoing implementation of OBE for undergraduate courses of the Faculty of Medicine, Dentistry and Health Sciences (FMDHS) in 2005. This cultural change continues to provide different challenges at various stages. The authors describe some of these changes and how the Faculty met challenges as well as reflecting on the journey of shifting the culture of the learning environment away from teacher centred towards a learner centred environment.

The FMDHS offers a 6 years medical degree, a 5-year dentistry degree, a 4-year health science degree and a 4-year podiatric medicine degree. Prior to OBE each course had documented: a set of graduate aims, unit objectives and/or lists of topics covered (content delivered). While, many Faculty members in devolved clinical sites had an appreciation of what was taught in the courses, the curricula was not centrally documented. The lack of documented overall curricula was exposed in 2000 when the medical course was restructured towards problem based learning. To address this lack, work was done by education staff with several units using a “bottom up” approach. However, this information was still not shared across the course.

A project was required that would involve all units across the medical course and would clearly define a set of graduate attributes. It was decided that practical and procedural skills would achieve this initial goal so a participatory project was commenced in 2002. This project achieved a curriculum skills map which was shared openly and discussed at length. Work on OBE by experts5,6 was circulated as part of this project and assisted in raising the level of awareness and 

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knowledge of the process of specifying learning outcomes for the whole medical course, and subsequently the other courses in the Faculty.

As UWA is a devolved and diverse institution, the development and implementation of OBE approaches remained, essentially, the responsibility of Faculties. This process required funding which was provided by the University through annual small grant rounds between 2002 and 2005.

Once the change had begun, the implementation of OBE in the FMDHS was progressed in three phases:

1. Specification of graduate and year level learning outcomes.
2. Determination of generic skills learned across all of the undergraduate courses.
3. Unit level review of learning and teaching.

At each stage of these activities, regular staff development sessions were offered to facilitate the project, enhance staff knowledge and skills in the area of OBE and to assist the cultural shift required among academics to ensure the successful adoption of OBE.

It was recognised that the established curriculum committee structures would be the best way to ensure participation in the change process from all of Faculty and to promote the project. Each course has a separate curriculum committee with representation from each discipline or school and committees that deal with the standard of the courses delivered at each year level. Outcomes-Based Education became a standing item for discussion on the agendas for each of these committee meetings. These discussions covered issues such as what is OBE, how it is different and what are the benefits. These were essential to encourage participation. After a review of course documents (e.g. unit guide books, lecture schedules) a draft of the graduate and year level learning outcomes were compiled for each course. These were discussed and accepted at the curriculum and year committees. Each of the four Faculty courses consisted of four curricular “themes” and each comprised between three and five “strands” as illustrated in the example from the medical curriculum in Figure 1.

Over the following year, development of specific year level learning outcomes was specified within each strand. This was undertaken to enable a shared understanding between students and teachers of required cognitive and behavioural learning at the completion of each year of the course. For example at the end of year 2, a student may be expected to discuss normal human structure and function, but by year 5, the student would be expected to integrate knowledge of normal human structure and function to the management of health and illness presentations. This progression of complexity of behaviour reflects the developing cognitive abilities required of the learner and involves different teaching and learning methods.

The second phase of the project determined the key generic skills for each of the undergraduate courses. This was achieved by reviewing the agreed graduate outcome statements and assessment matrices for all four courses; the university educational principles; generic skills in other courses within the university; appraisal of generic skills / competencies / outcomes / attributes from similar courses conducted in other Australian universities and the related literature. From this nine generic outcomes were developed and ratified by the curriculum committees and Faculty Board (Table 1).

Table I: Faculty of Medicine, dentistry and health sciences: generic outcomes.

| 1 | Effective communication skills |
| 2 | Discipline-specific knowledge and skills |
| 3 | Information literacy skills |
| 4 | Critical thinking and problem-solving skills |
| 5 | Research skills |
| 6 | Understanding health and society |
| 7 | Understanding ethical, social and professional skills |
| 8 | Personal and professional skills |
| 9 | Creativity and innovation |
The generic outcomes were then mapped to all units in the courses and as a consequence areas of strength and weakness in each were identified.

The aim of the third phase of the project was to take the agreed course and year level outcomes to the level of units so that the top down approach taken thus far could become dispersed and all units could participate in a facilitated review of teaching and learning. This included revision and documentation of unit level learning outcomes, associated learning and teaching experiences and developing an assessment blueprint (Table II).

Process evaluation has been received through feedback from unit coordinators and Heads of Schools. Most found the process engaging and worthwhile. Some areas have used this project as a tool for considered curriculum development. For example the Centre for Aboriginal Medical and Dental Health have mapped related learning outcomes to teaching and learning in the medical course and used the process to implement curriculum changes and evaluate the impact of these changes.11

The main strategy used in the project was one-on-one meeting between each unit coordinator and a medical educator. Together they documented the unit level learning outcomes and mapped them against assessment practices and learning experiences. Tools were developed to assist this process including resources for writing learning outcomes, outcomes based unit handbook templates and development of assessment blueprints. Group workshops on writing learning outcomes and linking them to assessment were offered to staff and unit coordinators. For many, it made the change easy to understand and to be involved in.

As expected some staff passively avoided the process. Champions were sought and encouraged. Students became allies in the process as they developed increased mindful-ness about their learning outcomes in asking staff for clarification which helped diminish any final resistance.

One of the problems that affected sustainability of the project was staff turnover. To combat this it has been agreed that every year the unit outcomes will be ratified by the year level committees. It is anticipated this will increase shared understanding of other units being taught in the courses, minimise unnecessary changes to the learning outcomes of the courses and maintain curricula alignment with graduate outcomes.

Only small amounts of funding have been available for each stage of projects. The funding rounds occurred annually and were only sufficient to employ fractional appointments for short periods.

This paper has described how one Faculty implemented OBE through the three phases of specifying graduate and year level learning outcomes, determining the generic skills learned across all of the undergraduate courses; and a facilitated review of learning and teaching at an individual unit level.

This project has succeeded because it has been allowed to occur over time and leadership has been backed up by expertise in medical education. Additionally, financial assistance was available to support the process.

The experiences supported observations by others that there are three essential ingredients for successfully implementing OBE; change management, mindfulness of medicine’s culture and faculty development.12

It was also observed Medical Education Units are essential for the success of similar projects that require input from a diverse group of staff with a range of specialist expertise. The impact of this longstanding project is still unfolding and we have moved to an exciting new phase with the development and implementation of Mapp-EdOut, the Faculty wide curriculum map and outcomes database. Future directions include using the Mapp-EdOut database to evaluate the impact of this project on the implementation of OBE across the Faculty. The project will continue to drive short and longer term curriculum reform in each of the undergraduate courses in the study.

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