

The Manchester Dental Programme (TMDP): Notes on Staff Focus Groups

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Introduction

As part of the evaluation of process of TMDP, two focus groups of *TMDP Implementation Group* were convened. The Focus Groups were held after two consecutive meetings of the *TMDP Implementation Group* (11th June 2008 and 2nd July 2008). The first focus group focused on the aims and objectives of TMDP and its development, and the second on the how progress had been made to that point and the immediate challenges in the future.

The methodology behind the focus groups is based on *Realist Evaluation* (Clarke and Dawson 1999), where the informal theory of how the programme will benefit the students is explored and then influences the nature of the subsequent evaluation and sources used for the evaluation. This report also draws upon the project bid and a series of meetings with *TMDP Evaluation Team*.

The aims and objectives of the programme will be described, followed by the mechanisms through which they intend to achieve them. Consideration is then made of the approaches that are being used to evaluate these mechanisms. The experiences, issues and concerns of the group are then expressed.

This document is open to response and correction from *TMDP Evaluation Team* and for their use in reflections on and reporting of *TMDP*.

Aims and Objectives

The overall aim of the TMDP is to better prepare their students for dental practice. This will be achieved through:

- Integrating the two years of basic science and three years of clinic practice programmes into a fully integrated five-year dental programme. Basic science and clinical practice will run throughout all five years (*vertical integration*) and the theoretical, classroom learning will be more closely related to the clinical practice with which students are engaged (*horizontal integration*);
- Introducing holistic approaches in Dental Care Professionals through an integrated dental team approach, providing many opportunities for teamwork throughout the programme;
- Making the students more inquiring and hence autonomous, lifelong, reflective learners, by delivering the basic science and clinical aspects of the course through student-centred, Enquiry-Based Learning approaches.

The Vision

The vision for TMDP is that it will produce students who will become confident dentists, or other dental-related professionals, and say, *'Yeah, we enjoyed our time at Manchester, we enjoyed our learning it was great!'*

The aim is also:

- (1) To constantly improve the educational experience in terms of how and what students learn, as well as what they come out with at the end;
- (2) To equip students to become life-long learners;
- (3) To provide them with the skills to find and to evaluate new information;
- (4) To enable students to go in a practice, develop their specialism, and delegate where appropriate.

Motivation and History of TMDP

When the Medical programme transformed to Problem-Based Learning (PBL) in 1994, the School of Dentistry also adopted Problem-Based Learning for its Basic Sciences. Both the Medical and Dentistry PBL were delivered and supported by the Faculty of Life Sciences. At this stage the medical and dentistry students used the same problems, since they were learning the same material. However, this approach did not seem to work well, because the problems were written for medical students, not dentistry students. The relevance and motivation to learn the material designed into the context of the problems emphasised the relevance for medicine, but not for dentistry. Consequently, the dentistry students did not find the problems as motivating or relevant to their own profession, and, hence, did not perform as well on these problems. Subsequently, the basic science PBL problems were redrafted and refined to appeal to dentistry students and, as a result, the situation improved. These basic science PBL scenarios represented the majority of the first two years of the dentistry programme. The three years of clinical courses were delivered in a mixture of ways, principally through traditional, didactic methods. It is from the experience of the years of basic science PBLs, as well as experimentation over that time in other areas in the course, that has led to the development of the current TMDP, delivered throughout by EBL. The expertise developed in Life Science, which directly support the Medical and Dentistry programmes, as well as provide excellent examples of and for the Manchester Medical Programme, were also important contributing factors.

In 2000, the School of Dentistry received the top possible score of 24 points for its Dental Programme from the QAA (Quality Assurance Agency for Higher Education) subject review. It was the first Dental School to achieve this. As a School, they decided that instead of being complacent, they wanted to push forward and continue to improve their provision.

The Head of School initiated the revision of the programme and appointed a champion, David Bearn, who was full of energy and enthusiasm for the change. He, in turn, gathered an enthusiastic staff around him. It was his drive and energy that pushed through this change. There were previous attempts to move to a new curriculum, but they had been unsuccessful or had amounted to only peripheral changes. There was a realisation that to move to a new programme, there would have to be a full revision.

The schedule was to introduce TMDP in years 1 and 4 in 2006-07, years 2 and 5 in 2007-08 and year 3 in 2008-09. Years 4 and 5 would be refined after that.

As a consequence of this forward, progressive approach, TMDP anticipated many of the aspirations that emerged from the President's review of Teaching and Learning (Gilbert 2008), such as Personalised Learning, small team work, Enquiry-Based Learning, as well as meeting with students regularly and asking them to reflect on their process.

The School of Dentistry's enthusiasm, growing EBL expertise, and support for other members of staff in the University contributed to CEEBL's case for excellence, and resulted in one of the Faculty projects put forward in the bid. The generosity of members of the TMDP team in sharing their expertise with colleagues, internal and external to the University, has, in turn, benefited CEEBL, in terms of the support that the Centre has been able to provide as a direct result.

Implementation

An important characteristic of the approach to the design and implementation of TMDP was that the School took complete ownership of the Dental Curriculum and redesigned it from a blank sheet. Once designed it was cross-checked through a mapping exercise with the requirements of the General Dental Council (GDC), who are responsible for the professional accreditation of dental programmes, to ensure all the professional requirements were met. This meant that the team had a full understanding of the programme and why every element was where it was, as opposed to simply implementing a curriculum based solely on the GDC requirements.

Integration of the Curriculum

Under the TMDP old format, there was a disconnection between the basic sciences and the clinical practice. This was exemplified structurally by the first two years being principally basic science and the last three years focusing on clinical practice and other aspects of the course. This had a number of unintended consequences:

- Students entering the dental programme became disillusioned, because they were not learning about dentistry and did not always appreciate the relevance of the basic science.
- After the first two years, there was a danger that the basic science was completely forgotten as students focused on the clinical aspects of the course.

Together, these led to the idea of redesigning the programme, so that its clinical and basic science aspects were more integrated. The clinical aspect of dentistry would be apparent from the beginning and basic science would persist into the final year. Through this integration, the connections and relevance of the basic sciences to clinical theory and practice would be more evident and mutually reinforcing.

The design of the new curriculum was based around six vertical themes, including an emphasis for each of year of the programme. Figure 1 shows how the emphasis on the two basic science themes diminished over the programme as the emphasis on clinical competence theme grew, while other themes maintained a continuous presence in all years.

A team was formed around each of the vertical themes and responsible for their development and implementation. Further teams were formed for each of the horizontal years, with a representative from each of the themes. This approach ensured the coherence of the programme and clear communication between the themes and the years.

Aspects of the basic sciences are reinforced in later years. This repeated exposure is anticipated to improve the retention of these concepts. For example, clinical cases are used which help to raise the awareness of the underlying basic science.

An important component of the integration of the curriculum was the reduction of duplication in both teaching and assessment. With an overview of the curriculum, it was clearer what should be taught, or learnt, where and when. This resulted in a much leaner and more efficient curriculum without substantial loss of content.

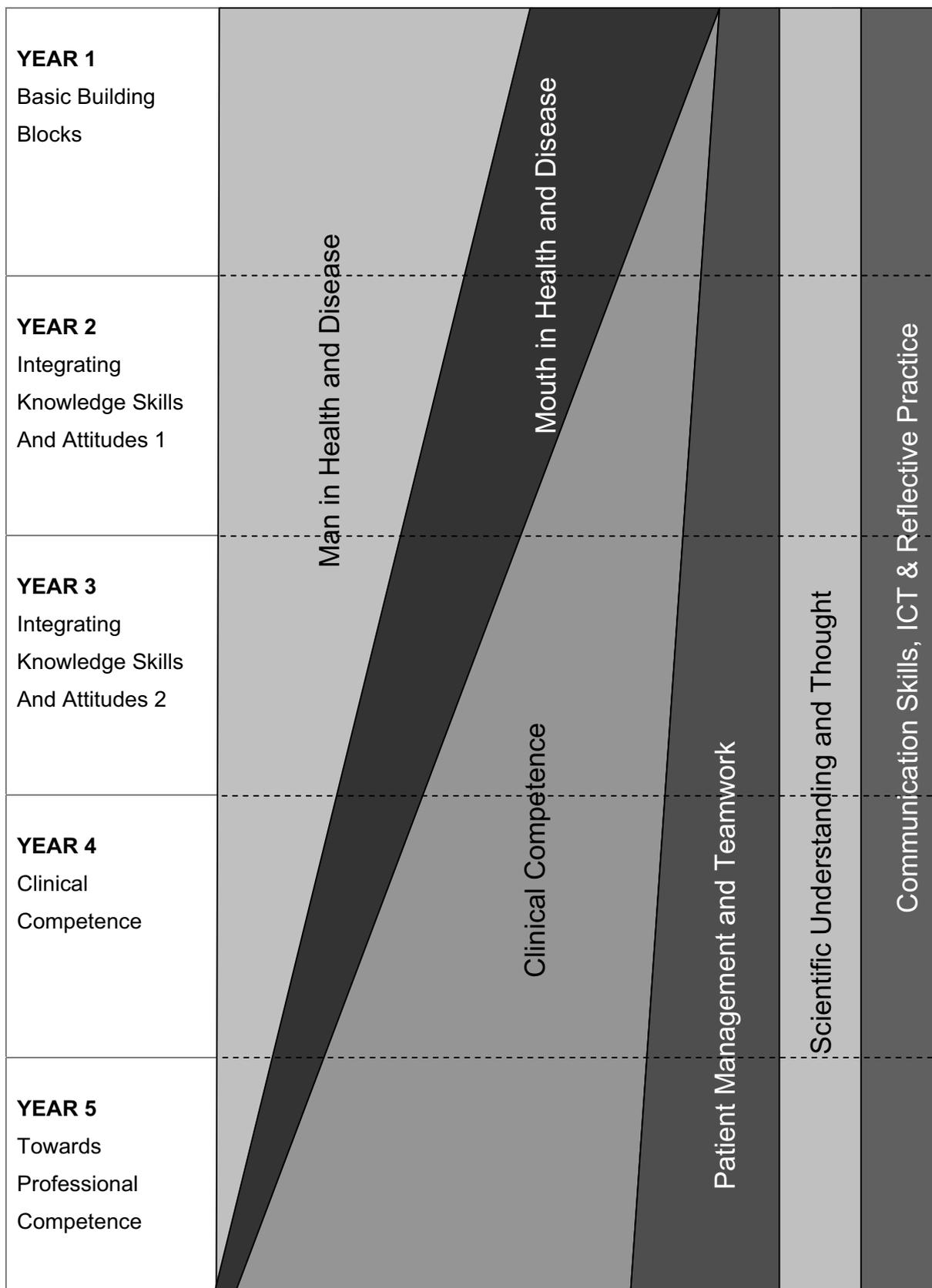


Figure 1. Design of TMDP into Vertical and Horizontal (Year) themes (Bearn 2005).

Building a Dental Care Team

Increasingly important in the dentistry profession is the move away from dentists as sole practitioners, responsible for every aspect of a patient's oral health and well-being, to being a leader of an inter-professional dental care team, which includes dental nurses and hygienists. In this role, the professional dentist appropriately refers and delegates aspects of patient treatment to other members, with the appropriate level of supervision. This makes efficient use of the skills and expertise of the whole team and provides the dentist the opportunity to develop his/her specialism.

To prepare dental students for this role, TMDP provides them with a number of opportunities to develop their teamwork and leadership skills:

- The dominant teaching and learning method is Enquiry-Based Learning, where students are learning together as a team to achieve their learning outcomes for the problem they are working on. Consequently, they are immersed in a teamwork environment for the whole University experience.
- Students from different years are linked up in some clinical situations. First years observe third and fourth years in practice. At later stages the relationship shifts to that of referring elements of the treatment to the more junior students and supervising their performance.
- A further aspect is working with students from other programmes, such as the BSc in Oral Health Sciences. This raises the awareness of the dental students to patient treatments that other dental professionals can offer. There is further opportunity to develop this approach by building on established links with the Manchester Metropolitan University's Dental Technicians and having students shadowing each other: Dental technicians can observe the clinical applications of their products, and the dentists can observe a variety of technical procedures. These will improve the understanding of each others' professions and how their work is interdependent.

This is considered a unique concept in the UK. Traditionally, students are isolated within the year of their individual courses on their individual programmes. The students realise now that they are being brought together as a team, rather than individual practitioners.

Learning through Enquiry

The School of Dentistry has had experience with delivering their basic science curriculum, supported by the Faculty of Life Science, as Problem-Based Learning. This experience was used

as a building block for the rolling out of Enquiry-Based Learning throughout the five years of the programme.

One of the lessons learnt from these previous experiences of designing EBL problems is to keep the cases brief. In the past, cases have grown and become more complex as different cues were built in, leading to cases two- to three-pages long. The cases were shortened and focused. (It was a difficult realisation that we did not have to have one prime objective for every single learning outcome in the case.) We had to make sure that the areas are highlighted, but the students themselves have the onus of dissecting aspects through the aid of a facilitator.

In later years, some variation in the construction of the cases has been made by using different types of triggers, such as visual cues, or gradually revealing information to the students throughout the cases. In addition, the time-frame for the cases has been altered to provide more complex multi-staged cases.

An innovation which has come from the Life Sciences' development of the basic science elements of the course is the use of an extra, fourth session at the end of a case (Grady *et al.* 2009). A task, related to the case they have just completed, is given to the group, which they work on during the session. The facilitator then assesses how well they have addressed the task as a team and gives feedback on both teamwork and technical aspects of the task.

Evaluation Sources and Methods

The implementation team were asked to consider how they would recognise if TMDP was working. Central to evaluating the overall aim of TMDP is the surveying or questioning of students and trainers in the Vocational Dental Practitioner year, immediately after graduation, to see if they are actually better prepared for practice.

Integration of the Curriculum

There has been immediate feedback about the integration of clinical dentistry into the first two years; students have been keen to do it and are responding positively to it.

To test the retention of basic science, spotter questions have been built into the OSCE (Objective Structured Clinical Examination). Twenty of the questions were exactly the same across years one and two. The analysis on the results of these has not been done yet. Other stations could be built into the later years' assessments that are either identical to those of

previous years or are developments of previous years, building on the same required knowledge and skills. In addition 'progress test' questions (*i.e.*, questions that are similar across all years of the programme relating to basic science) are planned to be incorporated into the examination. One area of focus could be knowledge of anatomy expressed in Radiology.

Teamwork

Teamwork was agreed to be an essential part of TMDP; however, it was not clear where this was assessed or evaluated. Communication and interaction with colleagues were captured under professional practices, but it was felt that these did not cover all the aspects of teamwork.

Group projects, where group contribution was part of the assessment, were identified: in year one, there was a group poster; year two, there was a group oral presentation; and a further group assessment was identified in later years.

Other sources of evidence concerning the team-working of the groups were through student feedback and opportunities to observe the students working in teams. One source mentioned was the GDC observation report (Feb. 2002), which had observed that there was greater integration between the BDS (Bachelor of Dental Sciences, the principal dentistry qualification) and BSc (Oral Health Sciences) students.

The School plans to place inter-year groups in the new out-reach clinics called Dental Education Centres (DECs), to practise; there would also be opportunity to build in some evaluation of students' experiences in the DECs.

A focus group with the third and fourth years will explore their inter-year group work in Oral Surgery and their experiences of being observed by the first year students.

Learning through Enquiry

The performance on the Session 4 tasks of the EBL should indicate how well students are working together and learning through the enquiry process. The other discussions that arose when considering EBL were more complex discussions of issues that are reported under Reflections and Observations.

Challenges

The implementation team identified a number of challenges:

- Maintaining two courses at once; this was not elaborated on, but is partly mitigated by changing the curriculum in years 1 and 4 at once, so the overlap only existed for two years.
- The attitudes of other members of staff. There was scepticism about EBL and the need to change when the old curriculum was clearly working and working well. Since PBL was already prevalent in the basic science parts of the course, the change was bigger on the clinical side. Clinical teaching is traditionally done in small groups, so that element was already in place. However, it was felt that everyone in the School was now on board with the new TMDP now.
- Related to the above was the integration aspect, which was also met with some rigidity, reluctance and resistance from some members of staff. This was helped significantly by the School already having its departments and specialities dissolved, so there were a lot less people fighting over territory. However, this is seen as an on-going process, both progressively removing more barriers and constant vigilance to ensure that discipline territorialism does not re-emerge. An example of an academic refusing to be an external examiner for Leeds, which also has an integrated programme, because he did not want to see his discipline diluted, illustrates that attitudes against integration are still persistent in the wider community.

These challenges were addressed, in part, by the School's decision to appoint a champion, as well as an implementation team, to give the process momentum. The other approach was to recognise that not everyone was going to change and compromise would be necessary, leaving islands of didactic teaching in place. Some of these traditional methods are the theatre events, which can be a series of mini-lectures; however, these lectures can still be an opportunity for more innovative approaches, for example, through the use of electronic voting (Al-Ani *et al.* 2009).

It was also noted that not having an increase in student numbers was helpful. It would be difficult to implement a new curriculum, as well as managing the strains of a swelling student population.

Reflections, Observations and Issues

At this stage in the project, Years 1 and 4 had been run twice; Years 2 and 5 had just been run for the first time; and the preparations for the first run-through of Year 3 in the next academic year were in hand. The team was asked to reflect on how well they thought TMDP was going.

The group were pleased with the progress and confident that it was working well. All the final year students had passed their exams; whilst this fact may not be entirely attributable to TMDP, it was certainly a good sign. Also the comments from the external examiner were very complimentary and encouraging for the years involved in the TMDP.

Staff raised concerns about students retaining and developing their EBL skills and the dependence of their experience on the ability of the facilitator, briefly described above.

Integration of the Curriculum

Clinical Integration

Immediate feedback from the first and second year is that the integration of clinical practice is very much appreciated; it is why they came to the University to study dentistry. An extreme example is that one student has complained that there is too much clinical practice and assessment in the first year.

The current third years, who are the students on the old programme, are very envious of the current second years. They see the second years coming onto the wards and doing the same clinical practice as they are doing and feel that their clinical skills are devalued. The third years have done more childhood treatment; however, they fail to recognise this distinction.

Despite the timetable and planning of the sessions being much more integrated in years 1 and 2, that integration is not always made in the students' learning. For example in a clinical class, they may be examining each other, as well as studying detailed anatomy in a case, but they do not always make the connection. They still compartmentalise their learning with respect to context – this is clinical and that is a case – even though the clinical and case studies have been designed to coincide. The connection can be made in part by the members of staff involved, knowing what they are covering in other parts of the course. This involves briefing the PBL tutors. However, this disconnect was recognised to be a wider issue in student learning, since they had difficulty transferring knowledge generally from one context to another.

Having symposia events, where clinical staff and basic scientists were in the same room, was helpful. Often clinical and basic science symposia alternated, and there should be more opportunities to bring them together; however, staff warned that this integration should not be contrived or artificial and the same idea could not be made to work everywhere. There is a need to be sensitive to the particular context, but there may be some areas where greater effort could be made to marry the two. Integration was seen as a continuous process and part of an evolving curriculum, where aspects would be re-evaluated and meaningful changes made but not changes for changes' sake.

Basic Science Integration

Evidence about the retention of basic science is not yet available. Spotter questions, OSCE stations and progress test questions would be valuable sources of evidence. Radiography and Computerised Tomography were identified as likely areas where anatomy would be tested. It was noted that more spotter OSCE stations would need to be built into the fourth and fifth year, as the first full TMDP students roll through the programme. Currently, there were not many spotter stations. Some of the short answer questions could have more basic science included.

A useful source of input would be the basic science external examiners. The new TMDP is the first time that a basic scientist has been involved beyond second year.

Building a Dental Care Team

It was observed that as a consequence of the ethos of the School, there would be an organic growth of team-working and collegiality.

Inter-year teams

Observations of how the inter-year teams were working suggested that it was going well. First years were observing fourth years, and seeing some very interesting procedures, such as an unplanned extraction. It was felt that the gap between first and fourth years was too big; thus, in future, first years will be observing third years. The third years will have been through the same first year experience and so appreciate the first years' position.

In Oral Surgery, third, fourth and fifth years are timetabled together and work together as much as possible. Although these inter-year teams are not being formally evaluated, informal feedback has been good. However, there is a problem with the fourth years feeling 'in between' – not experienced enough to supervise the third years but too experienced to be supervised by the fifth years. The process begins with the junior students assisting the senior students, and as both groups progress, the roles swap with the senior students supervising the junior students.

There is an issue here about the senior students being reluctant to delegate work to junior students, since senior students are required to gain competence across a wide number of clinical procedures. There is a perception that they will not receive credit for work, if they are not doing it themselves. However, they could potentially learn a lot by watching someone else do the procedure, slip up, make mistakes, and then try to make corrections.

BDS and BSc students

Second and third year BDS and second year BSc students are expected to go out to primary schools together to talk to children about oral health issues.

There has been more integration of the BDS and BSc in the first and second years, but they do not have much contact after this time. This is inherently puzzling, as one would expect there to be a lot more clinical referrals from the BDS students to the BSc students. The number of referrals seems to be decreasing rather than increasing. Again, there is the perception that the BDS students need to do every bit of IRC (Impact Retained Crown) work; otherwise they will be in trouble with their examiner. There is also an issue with some of the referrals that are being made; the BSc is being used as a bit of a dumping ground for cases that BDS students either do not want or cannot do. As long as BDS students can do the procedure and understand what is involved, then they can refer the case, leaving them time to do more advanced restorative work. This is a message that the fourth and fifth years are given in induction week, but it is not happening yet. This issue is something that needs addressing. One possible solution is to send the BDS and BSc students out to the new Dental Educational Centres as integrated teams. In autumn 2008, third year BSc students assisted on the clinic, and the second year BDS students will be responsible for the basics, such as scaling, oral hygiene instruction, and root-surface work. This was an opportunity for each group to demonstrate and appreciate some of the skills that they have developed already.

There is also an informal route of mixing between the BDS, BSc and Dental Technicians. Some BSc students and Dental Technicians go onto to the BDS course, which demonstrates to the BDS students the type of knowledge these other professional groups possess.

Manchester Leadership Programme (MLP)

The second-year BDS students will be required to take part in the MLP programme to provide them with an additional opportunity to develop leadership and teamwork skills, as well as give them exposure to content outside the immediate dental curriculum. This opportunity will also feed into their competences about working with colleagues.

BDS and Manchester Metropolitan University Dental Technicians

The BDS students have not yet come into contact with the Manchester Metropolitan University (MMU) Dental Technicians, but this is something that is anticipated to happen in the future. As a result of the geographical proximity of the two courses, this presents a unique opportunity for dentistry in Manchester. The BDS students have been across to use MMU Dental Technician laboratories. In the future, there will be shadowing of students from MMU doing technical work and MMU students observing BDS students doing clinical work. There are also opportunities for the dental technicians to use the specifications from clinical cases to construct dental devices. The actual devices themselves cannot be used, because the controls of a dental technician laboratory and a student training laboratory do not match up; however, the strong links between the two professions can still be emphasised.

Dental Education Centres (DECs)

These represent new areas for teamwork. These are new large centres for dental treatment, where mixed teams of students can be organised to work as inter-year and inter-programme teams. These represent a new opportunity, not envisioned when TMDP was designed. The first one was anticipated to come on stream in January 2009.

Learning through Enquiry

There was concern that some students were still asking: '*Is this what I need to know in order to pass the exam?*' Hence, they were showing a strategic rather than enquiry approach to their learning. A related concern was that between the first and fourth years, students seemed to have forgotten all the enquiry skills that they had developed earlier in the programme. It was hoped that as TMDP was implemented and EBL ran through all years, students would not lose their skills of enquiry. It was still felt that between years one and two the maintenance and development of these skills was not as evident as expected.

Connected with the EBL sessions, there was a student evaluation of the facilitator. It was noted that the EBL experience was very dependent on the facilitators and that student satisfaction levels were very dependent on how well those students got on with the facilitator. This was further complicated by the students' perception of how central the member of staff was to the programme: the more central, the better the satisfaction was reported. There was also awareness among the students that they were getting different experiences as they compared notes on what was done in each others' sessions.

On TMDP, the student groups are maintained but the facilitators are changed each semester, to provide the students an opportunity to experience different facilitators. There was discussion of the possibility of including a peer-assessment of the facilitator. It was suggested that the difficulty with implementing this approach would be that it needed to be over a number of sessions to get a balanced impression and this ran into issues of time and resources. It was also noted that even a seasoned facilitator can have variable experiences, without necessarily being able to identify why these differences occurred. Consequently, it was difficult to advise people on developing their facilitation skills, since there are elements of subjectivity, personality and group dynamics at play in an EBL session.

It was suggested that there were more opportunities for communication among the EBL tutors in the first two years than in the later years (e.g., pre-semester meetings, post-semester meetings and tutors notes). Furthermore, second year tutors felt more confident about what was expected of them than the fourth year tutors. It was suggested that the minimum level of communication for the EBL tutors evident in the first two years should be replicated in the later years.

It was also suggested that there should be some preparation or training for the EBL tutors, similar to the training available for PBL tutors in the School of Medicine. This was recognised as a gap in their provision and needs to be addressed. Related to this problem was the high turnover of EBL tutors. It was argued that the School would benefit from being able to retain its facilitators and developing a sustainable core of EBL tutors for the course. This is something for future consideration.

Other Lessons Learnt

Planning

Good planning and willing people were seen as vital to the success of the programme's development. There was also the commitment to full curriculum change, *not just tinkering at the edges*. The total commitment to full programme change was evident in changing Years One and Four at the same time. There was recognition that to improve on the excellent results they had already received from the QAA, the change had to be profound.

The pre-existing PBL scenarios in Years One and Two made it a lot easier to complete those years and provided something to build on.

An important part of the planning was for the School to submit a curriculum document to the University, describing the new curriculum. They could have avoided this step by claiming that

there was an existing curriculum and only modest modifications had been made; however, going through a more formal quality assurance process had a number of benefits. It ensured that all the planning was done up-front, so that the full five years were mapped out completely. This forward planning meant that they could concentrate on implementation decisions knowing that all the design decisions had already been made and being confident that they knew where they were heading. The learning outcomes had been set; it was then a case of designing the appropriate learning activities to cover these. It also opened up the process to internal and external scrutiny and ensured the course design was fully thought through.

Assessment

The assessment was also re-examined. There was a move away from written essays to OSCEs, short answer questions and MCQs (Multiple Choice Questions). This change acknowledged that professional dentists seldom need to write essays.

The new assessment now has a common pattern across all years, with formative OSCEs in January as preparation for the summative OSCEs at the end of the year. One of the complaints of the third years on the old programme was that they did not have formative OSCEs, so their first experience of this form of examination was the summative OSCE in May.

More Generally

General feedback from the 4th and 5th year students, who had not gone through the new TMDP, is that of envy. They wish that they had had the opportunity to go through the new programme, since they can see how much better it is. This feedback also reinforces the decision to implement TMDP simultaneously in years 1 and 4, which reduced the number of students on the old programme and the number of years that the old programme would have to be delivered in parallel to the new TMDP.

The members of the TMDP implementation team also reflected on how the whole process had benefited them and required them to re-evaluate their attitudes to teaching and learning. For many, they found it had reinvigorated their teaching, *"It has been a wonderful learning experience"*. By opening up the process and forming teams, it also meant they the staff had more contact with their colleagues and opportunities to discuss teaching and learning.

Furthermore, the staff had proved to themselves that they could achieve such an ambitious goal. The experience had also increased their confidence in their colleagues and demonstrated to them that they worked well as a team. As a result of this process, they have a much stronger core teaching team than they had had before.

Next Steps

The implementation team were asked to identify the next important steps:

The immediate priority was getting the third year students successfully started, then ensuring that no gaps or repetitions had been introduced into the new programme. They would monitor the changes that had been made in the first three years to minimise any knock-on effects in years four and five.

It was noted that sessional staff, who are clinicians brought in for specific aspects of the course, pose a potential risk. There tends to be a rapid turn-over in sessional staff. There is also a possibility that they would make inappropriate assumptions about where the students were up to in the course. Moreover, the sessional staff would have experienced traditional programmes and their assumptions of student learning in the new programme may be invalid.

Further Notes on the Evaluation

The two focus groups form a single element of the rich set of evaluation data and evidence that TMDP evaluation team have been building up. It lies outside the scope of this report to deal with these other forms of evaluation, but they are mentioned below for completeness. The other sources of evaluation data include:

- The National Student Survey: TMDP performed as the best School of Dentistry in the 2008 results, gaining a score 96% on the overall scale and top marks on individual scales. This was in contrast with the previous performance of 68% in 2007, representing the worst School of Dentistry in the country. The 2008 results coincided with the first year of graduates from the new TMDP.
- DREEM (Dundee Ready Educational Environment Measure) (Roff *et al.* 1997) has been administered to all years of TDMP for a number of years now.
- Student Focus Groups: these have been conducted towards the end of each year of delivery to ascertain students' experiences with TMDP.
- The original survey administered by David Bearn will be used again to see if there has been a change in the responses due to the implementation of TMDP.

- Vocational Dental Practitioners (VDP): VDP is the first year of practice after the degree programme. Soliciting information from VDPs and their vocational trainers should provide some insight into how TMDP has prepared students for practice. Initially, a survey used to compare Scottish and English VPDs (Bonetti *et al.* 2008) looked attractive, but it focuses on skills associated with the vocational year rather than the preparation for that year. Consequently, other ideas are currently being pursued.
- One of the key members of the *TMDP Evaluation Team* and *TMDP Implementation Group* has been involved throughout the process by facilitating groups in the Years where EBL has been introduced. Her observations and reflections on the process as a whole will be very valuable in interpreting the evaluation data.
- Spotter questions in the examinations, progress test questions, and the OSCE stations should provide some indication as to whether the basic science is being retained throughout the course.

As a result of the size of this intervention (*i.e.*, the redesigning a 5-year curriculum), the evaluation results are only now becoming available. The TMDP Evaluation Team are finally able to take a step back from the implementation process and begin to analyse and interpret the evaluation data. It is anticipated that a number of valuable publications will result from this project.

Conclusions

TMDP represents a full curriculum change to an EBL approach. This process has been combined with many other initiatives associated with the Dental Programme. The other initiatives not mentioned in this report are the development of School Blogs, a Facebook presence and podcasts to develop and cement a School community of students and staff (Grey 2009). This has been a very successful and rewarding transition for both the staff and students involved, and there are a number of lessons that can be learnt from this example.

Some of the components that have gone into its success have been the following:

- The background of experience in EBL and PBL upon which the curriculum change was built and the local examples from which to draw;
- The top-down support from the Head of School, combined with the identification of a champion to manage the change process and the collection of like-minded staff to support the champion in implementing this change;

- The combination of professionalism and enthusiasm the staff has clearly brought to the process; breaking down the process into manageable tasks and distributing them across the team to make a coherent programme; and using theme and year teams with cross-membership;
- The commitment to a complete change of the programme; the rigorous design and planning of the new curriculum; and the decision to submit the changes for formal approval.
- A range of initiatives brought in to improve the programme and strengthen the horizontal and vertical integration between components of the programme;
- The ownership taken of the curriculum, which the team developed and then mapped back onto the GDC professional requirements;
- The creative use of opportunities to develop team-working opportunities, both across years and across programme, combined with the commitment to develop and expand on these.
- The integration of the curriculum was taking place in a School where the specialist departments had already been dissolved.
- Student numbers were held constant; the curriculum change was not taking place in a context of increasing student numbers, which have caused additional challenges to the programme.

There were very clear connections between the project's aim of better preparing students for practice by integrating basic science and clinical practice; developing clinical teams; and learning through enquiry. These aims were reinforced by making them central to the re-design of the curriculum.

Early evaluation results and feedback showed a positive change and appreciation by the students and staff involved. However, some issues did emerge, such as with students' ability to maintain their skills of enquiry over all the years of study; their ability to integrate learning from classroom to clinical situations; and their willingness to appropriately refer clinical cases to other members of the clinical team. The training and retention of EBL tutors and sessional staff were also issues that the implementation team would like to improve.

A variety of sources for evaluation data (*e.g.*, surveys and focus groups), have been considered and are at various stages of implementation. The results of this project will provide a model for other dental and clinically-orientated programmes to follow. The lessons learnt from the experiences and evaluation of TMDP will be of wide interest to others considering this type of curriculum.

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References

Al-Ani, Z., Richmond, R., Mackie, I. and Grey, N., 2009. *From traditional dental lectures and conferences to more interactive methods: The Manchester experience*. The academy subject centre for medicine, dentistry and veterinary medicine newsletter 1 (20), 14-16. [online] available from http://www.medev.ac.uk/external_files/pdfs/01_newsletter/0120_lo_res.pdf [3 November 2009]

Bearn, D., 2005. *The Manchester Dental Programme (TMDP) – an integrated enquiry based curriculum. Project bid to CEEBL*. University of Manchester, Centre for Excellence in Enquiry-Based Learning.

Bonetti, D., Young, L., Rennie, J. and Clarkson, J., 2008. 'Evaluating dental vocational training: how does Scotland compare to the rest of the UK?' *British Dental Journal*, 204 (4), 195-202.

Clarke, A. and Dawson, R., 1999. *Evaluation research: An introduction to principles, methods, and practice*, London: Sage Publications Ltd.

Gilbert, A., 2008. *Review of undergraduate education: Pursuing step change improvement for students - interim report of the undergraduate education review committee*. University of Manchester. [online] available from <http://www.campus.manchester.ac.uk/medialibrary/tlao/Pres-review-t&l/interim-report-review-ug-ed-jan-08.pdf> [10 November 2009]

Grady, R., Gouldsborough, I., Shearer, E. and Speake, T., 2009. *Using innovative group-work activities to enhance the problem-based learning experience for dental students*. *European journal of dental education*, 13 (4), 190-198. [online] available from <http://dx.doi.org/10.1111/j.1600-0579.2009.00572.x> [10 November 2009]

Grey, N., 2009. *Using blogs and podcasts to personalise learning*. Teaching and learning conference. Chancellors, University of Manchester, Teaching and Learning Support Office. [online] available from <http://www.campus.manchester.ac.uk/medialibrary/tlao/TLC09/NickGrey-BlogsPodcasts.ppt> [10 November 2009]

Roff, S. et al., 1997. *Development and validation of the Dundee Ready Education Environment Measure (DREEM)*. *Medical teacher*, 19 (4): 295-299. [online] available from <http://dx.doi.org/10.3109/01421599709034208> [10 November 2009]