

SUBJECT REVIEW REPORT

**DEPARTMENT OF
RESTORATIVE DENTISTRY**



***FACULTY OF DENTAL SCIENCES
UNIVERSITY OF PERADENIYA***

06th to 08th March 2007

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1. SUBJECT REVIEW PROCESS

This review was carried out from the 6th to the 8th of March, 2007 by a team comprising the following persons.

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The terms of reference for the Review Team are described in the Quality Assurance Handbook of the CVCD and UGC.

The Review Team based its findings on the following documents and activities:

1. A Self Evaluation Report prepared by the Head of Department and Staff
2. Meeting with Department academic staff for an in-depth assessment of the contents of the curriculum and the teaching/learning methods used
3. Observation of classroom teaching
4. Observation of Clinical teaching, clinics and support facilities
5. Records of Student Z scores and performance in year one
6. A survey of facilities available for teaching
7. A tour of academic support facilities such as Library and computer Unit
8. Interactions with the following personnel:
 - a. The Vice-Chancellor of the University of Peradeniya
 - b. The Dean of the Faculty of Dental Sciences
 - c. The Dental Nurses and Technical Officers
 - d. The Post-graduate Students attached to the DRO and Faculty
 - e. Undergraduate students
 - f. Patients attending the dental clinics
9. Perusal of miscellaneous documents related to teaching activities

2. BRIEF HISTORY OF THE UNIVERSITY, FACULTY AND THE DEPARTMENT

The Department under review is one of seven Departments in the Faculty of Dental Sciences (FDS) that, in turn, is one of seven Faculties at the University of Peradeniya. The University of Peradeniya is the heir to the University of Ceylon, first established on 1st July, 1942 both at Colombo and Peradeniya. Following a series of transformations, it was established as a separate University of Peradeniya in 1978. It is presently a mature University with a developed infrastructure, trained academic staff, equipped laboratories and all the specialized units and accessories of a modern University. It is also the largest in terms of student enrolment and the most complete with respect to the number and range of Faculties, in Sri Lanka. It is also the only residential University in the Island, located in spacious grounds, exceptionally pleasant surroundings and a mild climate.

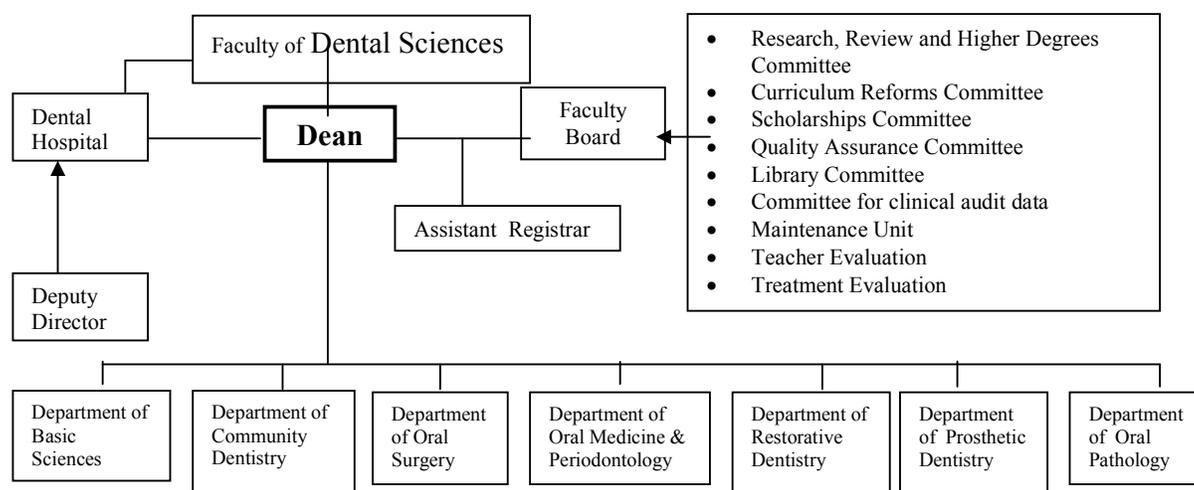


Figure 1. Organizational Structure of the Faculty of Dental Sciences

Undergraduate studies in Dentistry commenced in Sri Lanka with the establishment of a Department of Dental Surgery at the Faculty of Medicine in Colombo in 1943. Later, in 1954, the clinical units were transferred to Augusta Hill at Peradeniya but pre-clinical subjects continued to be taught in Colombo. With the establishment of a Faculty of Medicine in 1961 at Peradeniya, the teaching of these subjects also commenced at Peradeniya. In the year 1974, a joint Faculty of Medicine, Dental and Veterinary Sciences was formed incorporating a School of Dental Sciences. Later, in 1980, the Dental School was expanded to five Departments and finally, in 1986, a separate Faculty of Dental Sciences (FDS) was established. In 1990, the FDS was expanded into six Departments and in the year 1995 a Department of Basic Sciences was added to give the current position of seven Departments of Study, as shown below:

1. Basic Sciences
2. Community Dental Health
3. Oral Surgery
4. Oral Medicine and Peri-odontology
5. Restorative Dentistry
6. Prosthetic Dentistry
7. Oral Pathology

In 1997, under Japanese Grant Aid, a complete, modern facility was built on the main Kandy-Peradeniya Road and the FDS moved from Augusta Hill to this location on the 12th of June, 1998. This facility included a fully-equipped, purpose-built teaching hospital and the FDS enjoyed state-of-the-art facilities for the training of dental students and treating the public. These facilities included clinics and laboratories for advanced dental treatment, Wards, an outpatient Department, surgical theatres for oral cancer, facial deformities and trauma as well as an intensive care unit.

The Department of Restorative Dentistry (DRD) was first established in 1980 and with the rest of the FDS received - under the Japanese Grant aid - new and up-to-date facilities for teaching and clinical work. The DRD presently conducts classes and clinical training

for 3rd and 4th year undergraduates as well as for post-graduate students. Its role is to develop in their student's clinical skills in restorative dentistry with competency in restoring form and function of the dentition with an understanding of the materials commonly used in such restorations.

3. AIMS AND LEARNING OUTCOMES

Aims of the teaching program and the intended learning outcomes together with the program details of the DRD, as described in their Self-Evaluation Report, are shown below:

3.1. Aims

Appreciating the importance of maintaining an intact dentition for both functional and aesthetic reasons

Understanding and assessing restorative needs and formulating and carrying out appropriate and sensible planning and treatment of the above needs keeping up with expectations and aspirations of patients, within the scope of the training

The DRD aims to provide

- Encouragements to students to apply their cognitive abilities in anatomy, dental anatomy, biochemistry and physiology that they learned during their first years of the undergraduate education.
- Opportunities for students to learn clinical skills in examination of patients, assessment and treatment planning.
- Opportunities for students to apply clinical skills assimilated in carrying out treatment in restoration of form and function in teeth
- A range of clinical demonstrations in phantom heads and actual patients in addition to lectures and tutorials to facilitate understanding of all restorative procedures.
- A friendly and supportive departmental environment that is conducive to learning restorative dentistry and applying the knowledge and skills in daily managements of patients.

3.2. Learning Outcomes

On successful completion of the program students should have

- Gained knowledge and understanding of the composition, method of manufacture, manipulation, properties, critique and selection of dental materials.
- Competence in obtaining the relevant history, examination special investigations in relation to diagnosis of caries and management including prevention as well as treatment.
- Achieved reasonable skills appropriate to restorative dentistry on simulators (phantom heads)
- Developed the ability to diagnose problems associated with caries and advice patients on effective methods of prevention.

- Gained knowledge and skills excavating caries with special care in protecting vital, non-diseased tissues, and principles in placing simple coronal restorations.
- Obtained knowledge and understanding and clinical skills in diagnosing non-carious dental hard tissue loss and providing treatment for them
- Be able to appreciate the need to correctly and intelligently diagnose pulpal pathology and decide on appropriate treatments.
- Understand diagnosis, case selection, instruments, materials and techniques practices and complications of endodontic therapy.
- The case selection, treatment planning, practice and laboratory procedures associated with crown veneers, inlays and bridges.
- Developed skills in planning treatments for problems that need a multidisciplinary approach.
- Acquired the ability to appreciate the aesthetic properties of teeth and aim to achieve these properties in carrying out restorations.
- Be able to carry out proper sterilization and disinfection procedures for different types of equipment in a dental clinic
- Be able to appreciate ethical and medico-legal considerations in dealing with patients.
- Introduce preventive and routine maintenance of dental equipment and the dental unit.

On successful completion of the course in restorative dentistry, students should be able to demonstrate their knowledge and understanding in patient management.

4. FINDINGS OF THE REVIEW TEAM

The DRD in common with many of the other clinical Departments in the FDS, cannot be studied in isolation since there is considerable overlap between their programs. In many instances, patients need attention from several Departments in order to complete their treatment. This situation is considerably different from subject reviews in other Departments, for instance, a Faculty such as Science which consists of Departments dedicated to particular disciplines. Moreover, many of the aspects to be reviewed are common to all the clinical Departments or even to the entire FDS and does not relate to the DRD alone. For these reasons, we feel that it would perhaps have made more sense to review the entire Faculty or at least all the clinical Departments together; it should also be noted here that the Vice-Chancellor expressed similar sentiments when the Review Team met him at the commencement of the review.

Aims and Objectives

The knowledge and skills that the DRD expects a student to acquire through its programs are identified in detail in the descriptions above, although the last 3 are common to other Departments as well. In common with many other Departments in the FDS, the DRD has to impart clinical skills relating not only to making an assessment of a case and planning the appropriate treatment but also the hand skills needed to actually carry out the

procedure. The challenge for teaching staff is to ensure that every single student actually develops these motor skills.

It was not possible for the Review Team to determine in the short time available whether all the learning objectives listed by the DRD are actually achieved, but it seems unlikely. The Review Team observed that in order to achieve this objective, it would be necessary to have closer individual supervision of students than appears to be the case at present.

4.1. Curriculum Design, Content and Review

As mentioned earlier in this report, it is not always possible to completely isolate the curriculum of the DRD from the other clinical Departments. They have been able, however, to identify the specific areas in which they play a unique role in training dental students, namely in developing the hand skills needed to carry out restorative procedures. Overall, the DRD contributes around 15% to the BDS course.

The contents of the curriculum are of a suitable academic standard with sufficient breadth and depth similar to those in other Dental courses. The program allows students to get sufficient knowledge and transferable skills although there is no specific focus in this Department on developing analytical or intellectual skills. The training also provides a challenging program for students that appears to gradually increase in difficulty as they progress.

The curriculum has not been regularly reviewed and the changes in the curriculum and its delivery from the inception of the BDS course have not been properly recorded or documented. There is no evidence that the views of employers and external examiners have been taken into account in the past. There is a revision presently in progress for the entire BDS course. The current revision is expected to take into account views from students and patients as well as the changing needs of the country, in particular the transition from state to private employment. In planning the revised curriculum, it is also necessary to consider the new models adopted by other Faculties who teach clinical courses. Apart from formal changes to the curriculum, it is important that there is a mechanism to ensure that new and cutting edge technologies that arise in the field of restorative dentistry are rapidly included in the curriculum.

It is the view of the Review Team that the present status of Curriculum Design, Content and Review adopted by the DRD can be judged as Good.

4.2. Teaching, Learning and Assessment Methods

The teaching learning strategy is a combination of lectures, demonstrations and clinical practice which are well suited to the overall task of the FDS to produce practicing dental surgeons. The training within the DRD is predominantly clinical practice and clinical demonstrations with only 49 hours of the total 322 contact hours devoted to lectures. The lectures are given as several courses which are comprehensive in their content and provide the necessary theoretical background for their clinical training.

The students commence their training in the DRD in the 3rd year where they learn about dental materials and are allowed practice on phantom heads. The necessary clinical hand skills are imparted through an identified list of specific tasks that they are required to complete during their attachment to the DRD. The learning process is supported by tutorials and a limited level of computer-aided learning methods. Close, individual supervision of clinical tasks given to the students by qualified and experienced teachers is essential to ensure that they will acquire the necessary skills. Although learning outcomes have been formulated, students do not appear to be fully aware of them. Student

workloads are balanced and clinical hours are reasonable but it is not known whether the available time in the clinics is used optimally. The time limitation does not allow much flexibility and does not cater to different learning styles according to student ability.

Assessment methods were considered fair and adequate although it should be noted that it is not possible to test all the skills for each and every student during formal examinations (summative assessments). Such skills are tested to some extent at formative assessments for which 15% of the marks are assigned; clearly the scope of the formative assessments and the marks assigned to them needs to be increased.

It is the view of the Review Team that the Teaching, Learning and Assessment Methods adopted by the DRD can be judged as SATISFACTORY.

4.3. Quality of Students including Student Progress and Achievements

The academic quality of students at entry is excellent with Z scores second only to those entering the Faculties of Medicine. The variation in Z scores was also minimal compared to many other Faculties in Sri Lanka. It is acknowledged that dentistry requires good hand skills together with patient skills but it is unlikely that all the students enter with a similar aptitude for Dentistry. The teachers were confident that they could teach any student the minimum skills needed by a practicing dentist. The achievement of students through the course was satisfactory. It should be noted that these comments apply to all clinical Departments in the FDS and not only the DRD. The systems of awarding qualifications and honours in the Faculty appear to be satisfactory.

The Reviewer Team rates the Quality of Students including Student Progress and Achievements of the DRD as SATISFACTORY.

4.4. Extent and Use of Student Feedback

During the course of the training (particularly the block appointments) there is close supervision of students, and at these sessions, their views on the training program are sought in an informal manner. There was no evidence of a formal documented system of obtaining student feedback and of using such feedback to improve the teaching/learning process within the DRD. As a first step towards such a process, however, a teacher evaluation committee has been formed at the level of the Faculty.

The Reviewer Team rates the Extent and Use of Student Feedback of the DRD as UNSATISFACTORY.

4.5. Postgraduate Studies

There were no full-time research students present at the time of the visit. Moreover, all of the 9 clinical students at the FDS were registered at the Postgraduate Institute of Medicine and not the FDS. We observed that as a result, there was no separate postgraduate unit to look after the interests of postgraduate students and such a unit should be established at the Faculty. Although the DRD provided part of the clinical training to these students, in particular those specializing (MS) in Restorative Dentistry, the program cannot be considered to be part of the DRD. It is clear that the DRD and perhaps the FDS should develop a good postgraduate research program that will make optimal use of the facilities available to them.

It is the view of the Review Team that the Postgraduate Studies of the DRD can be judged as SATISFACTORY.

4.6. Peer Observation

Since clinicians work closely together in treating patients and supervising students, it can be expected that they observe each others work and teaching and that they help each other in overcoming any shortcomings. These peer practices are not formalized or documented, however, and the reviewers were therefore unable to assess their effectiveness.

The aspect of Peer Observation is judged by the Review Team as UNSATISFACTORY.

4.7. Skills Development

A major part of the training at the DRD is to impart skills related to restorations and the program is directed towards this. The students are required to carry out certain designated tasks and are not considered to have completed the training until they do so. The skills that a student is required to learn are given in the ILO but all of the skills are not tested at the formal examinations. The Review Team observed that the manner in which the Dental Hospital is structured does not allow the students to make overall assessments and judgments of patients. This is carried out at a different level and the patients are referred to the DRD where the students carry out designated procedures. This does not allow the student to develop the analytical skills needed in assessing the patient overall and deciding on the best course of treatment. Employers are not consulted on the adequacy of skills developed or on the methods of improving them.

It is the view of the Review Team that the Skills Development of the DRD can be judged as SATISFACTORY.

4.8. Academic Guidance and Counseling

Academic guidance and counseling is carried out at the level of the FDS and not the Departments. Counselors are appointed and are available to the students. Since they are usually academic staff members, the students can obtain academic guidance as well. In addition, the University has a system of counseling at a different level. The Faculty Handbook provides initial guidance to the course and adjustments to this are conveyed to the students whenever necessary. This should ideally be followed by a system whereby details of courses and ILOs are given to students at the beginning of that unit so that they understand what they are expected to learn during that period. The mentoring program in which students are assigned to a staff member allows them to seek assistance on academic or personal matters. Being a small Faculty and also due to close supervision required in clinical training, the interaction between staff and students is generally good.

It is the view of the Review Team that the Academic Guidance and Counseling of the DRD can be judged as SATISFACTORY.

5. CONCLUSIONS

Some of the strengths and weaknesses identified in each of the sections during the course of this review are summarized below.

Curriculum Design, Content and Review

Strengths/Good Practices: The curriculum is well-organized with sufficient coverage of the disciplines

Weaknesses: Formal Revisions that take into account modern methods of curriculum development and delivery have not been properly documented.

Teaching, Learning and Assessment Methods

Strengths/Good Practices: The standard (tried and tested) methods are followed which are generally adequate to impart the basic skills.

Weaknesses: A minimum core group of clinical teachers must be available at all times. Newer technologies (such as Computer-aided-learning) have not been used effectively or imaginatively

Quality of Students including Student Progress and Achievements

Strengths/Good Practices: Students enter with high Z scores and show good progress through the course

Extent and Use of Student Feedback

Strengths/Good Practices: Informal feedback is obtained during clinical teaching

Weaknesses: It is not formalized and not properly documented.

Post-Graduate Studies

Strengths/Good Practices: The available staff and facilities provide the opportunity to develop an excellent post-graduate (research) program

Weaknesses: Post-graduate teaching is not properly organized and presently, no research programs with research students are being undertaken

Peer Observation

Weaknesses: This is not practiced in the DRD

Skills Development

Strengths/Good Practices: The skills required are well identified and the program allows their acquisition

Weaknesses: A minimum number of qualified and experienced clinical teachers not available at all times to supervise the skills development; the lack of emphasis on developing analytical and problem-solving abilities in the students

Academic Guidance and Counseling

Strengths/Good Practices: Counselors have been appointed.

Weaknesses: Counseling activities are not documented.

Based on the observations made during the visit by the Review Team, the eight aspects were judged as follows:

Aspect Reviewed	Judgment Given
Curriculum Design, Content and Review	Good
Teaching, Learning and Assessment Methods	Satisfactory
Quality of Students including Student Progress and Achievements	Satisfactory
Extent and Use of Student Feedback, Qualitative and Quantitative	Unsatisfactory
Postgraduate Studies	Satisfactory
Peer Observation	Unsatisfactory
Skills Development	Satisfactory
Academic Guidance and Counseling	Satisfactory

The overall judgment is suspended

6. RECOMMENDATIONS

Some suggestions for improvement based on our observations and comments are shown below:

1. The revised curriculum should provide the flexibility for more interactions between the Departments and a multi-disciplinary approach to training students. The development of the new curriculum needs to be expedited.
2. Inclusion of new methods of teaching and learning, mainly IT based self learning methods, in the delivery of the curriculum is recommended. The necessary training in IT to students and staff and the hardware need to be provided
3. It is essential to ensure that a minimum number (core group) of qualified and experienced clinical teachers are available at the DRD at all times for student training. Temporary replacements for any staff members who are on leave should be sought from outside the University system if necessary.
4. Since it is not possible to test the acquisition of all skills by students at summative examinations, much more emphasis (and marks) needs to be given to formative assessments.
5. It is recommended to develop staff and post-graduate research programs that make optimum use of the available resources. Undergraduates also need to be exposed more to research and be required to carry out at least a directed study.
6. It is recommended to pay special attention to developing analytical and problem solving skills in the students, during the clinical training.