

Appraisal and Improvisation of Undergraduate Practical Curriculum in Physiology

Hem Lata¹, Lily Walia²

Introduction

The practical classes in physiology for undergraduate (UG) students in our institute consist of laboratory-based exercises in animals and humans. The practical starts with demonstration, followed by students performing the experiment. Conventionally in India, these practical classes are divided into 3 sections: exercises in hematology, exercises on humans and experiments on amphibians (Ghai, 2005).

There has been a great deal of technological advancement and reduction in duration of first professional MBBS course in India from 18 months to 12 months (Medical Council of India, 1997). It is a great challenge for teachers to plan such a curriculum that helps the students to gain maximum useful knowledge about the subject in a 12-month course. Hence, it is essential to synchronize teaching methods in physiology with special requirements of medical students. The best method to bridge the communication gap between teachers and students is by obtaining a feedback about adopted teaching methodology from the students themselves (Victoroff & Hogan, 2006).

There has been no study in India on the feedback from students about the practical teaching after the reduction in duration of their first professional course. Therefore, there is a need for appraisal of the practical curriculum to improve learning in the subject.

Materials and Methods

The study was conducted in the Department of Physiology, Dayanand Medical College and Hospital, Ludhiana, India among 70 MBBS first professional students. Written informed consent was obtained from all students. The Institutional Ethics Committee approved the study.

A detailed questionnaire was used to obtain feedback and constructive suggestions from the passed out students about the existing physiology practical curriculum with special reference to the relevance to present day requirements (Powel, 1998). The questionnaire consisted of two sections. The first section dealt with questions on the various aspects of the quality of teaching, suitability of objectives for clarification of theoretical concepts and a general impression of the practical course. A five-item Likert scale was used (excellent, very good, good, fair, poor). The second section included detailed questions on individual practicals and demonstrations included in the physiology curriculum. A five-item Likert scale was used (very useful, useful, needs to be updated, not useful, irrelevant). The questionnaire was discussed with the faculty and modified as per the suggestions received. The questionnaire was validated on a few students. Students were given 30 minutes to complete the questionnaire and were not allowed to discuss it amongst themselves during this time. They were not asked to write down their personal particulars so that they could give their frank opinions.

Feedback was obtained from faculty through semi-structured interviews. Feedback and suggestions were analyzed. Based on analysis, more information was collected on existing and new practical exercises (i.e. methods being currently put to use, latest improvised/modified versions, frequently used alternative methods and use of multimedia) from various sources e.g. internet, suppliers,

¹Associate Professor

²Professor & Head

Department of Physiology,
Dayanand Medical College and Hospital,
Ludhiana, India.

Corresponding author : Dr. Hem Lata, Associate Professor
Department of Physiology,
Dayanand Medical College and Hospital
Ludhiana-141001 (Punjab)
Phone: +911614686600, 919872213776,
Email: hembadyaldr@rediffmail.com

other faculty, other institutes etc. (Gardner-Medwin, 2004). Discussions were then held with faculty to brief them about the modifications required and available. Based on these discussions, modifications, improvements and innovative practical exercises were suggested and implemented for the next batch (n=70) to improve learning in the subject. Performance scores of two batches were compared.

Results

All students (100%) provided feedback, with one incomplete form. 69 (97%) forms were analysed. All faculty members (n=6) were involved in discussions and interviews.

Most students described practical teaching of haematology and human exercises ranging from good to excellent. The various components of teaching asked were: briefing, demonstration, bench work, discussion, facilities, learning objectives provided, appropriateness of objectives to practicals and continuity of theory with practicals.

The feedback response of students on various haematology practical exercises is given in figure 1. The students marked most of these exercises as useful to very useful. Some students felt that absolute eosinophil count and reticulocyte count exercises were not

relevant and could be updated. Feedback on various human experiments is shown in figure 2. BP recording and practical exercises on reflexes were found to be very useful by most students. Students found that recording of ECG and cardiac efficiency test exercises were not relevant and needed updating. Figure 3 shows feedback on various amphibian experiments. Students remarked that most amphibian experiments need to be updated and time allotted to these experiments must be decreased. They also commented that a number of amphibian experiments were unnecessary and can be deleted.

In the second batch, which experienced improvised practical teaching exercises, test score improved by 15%. Students remarked that there was better understanding and that too in a shorter time.

Discussion

Analysis showed that haematology and human practicals were relevant and taught in a satisfactory manner and most of these exercises were useful to the students.

We learnt from feedback that some amphibian experiments were irrelevant and needed improvement and the need to decrease the number of amphibian practicals and the time spent on amphibian experiments.

Figure 1 : Feedback on haematology practicals

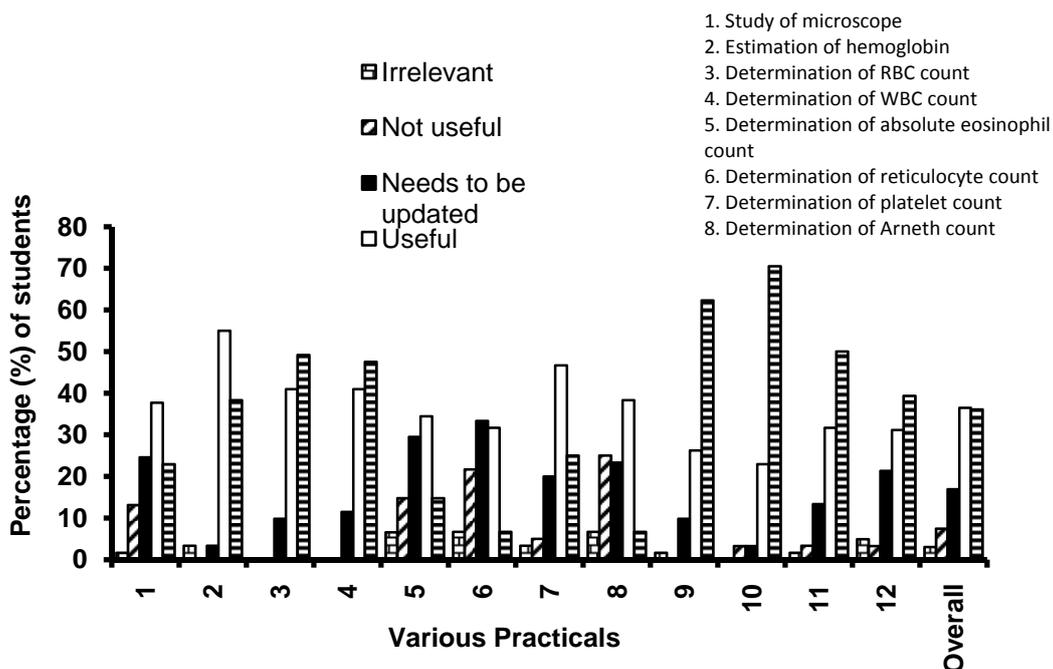


Figure 2: Feedback on human experiments

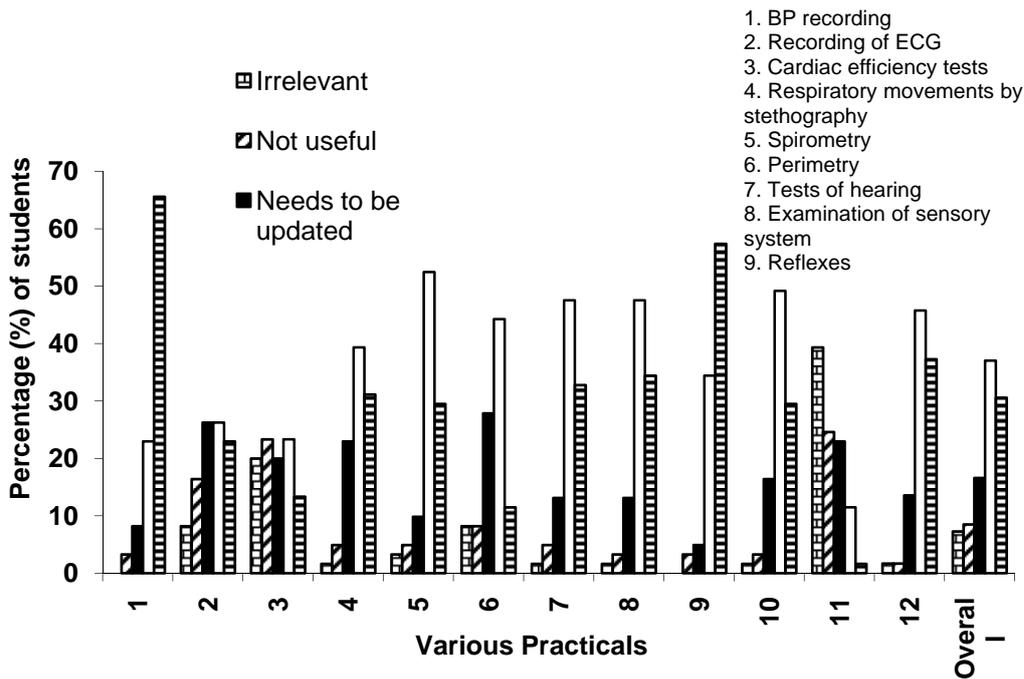
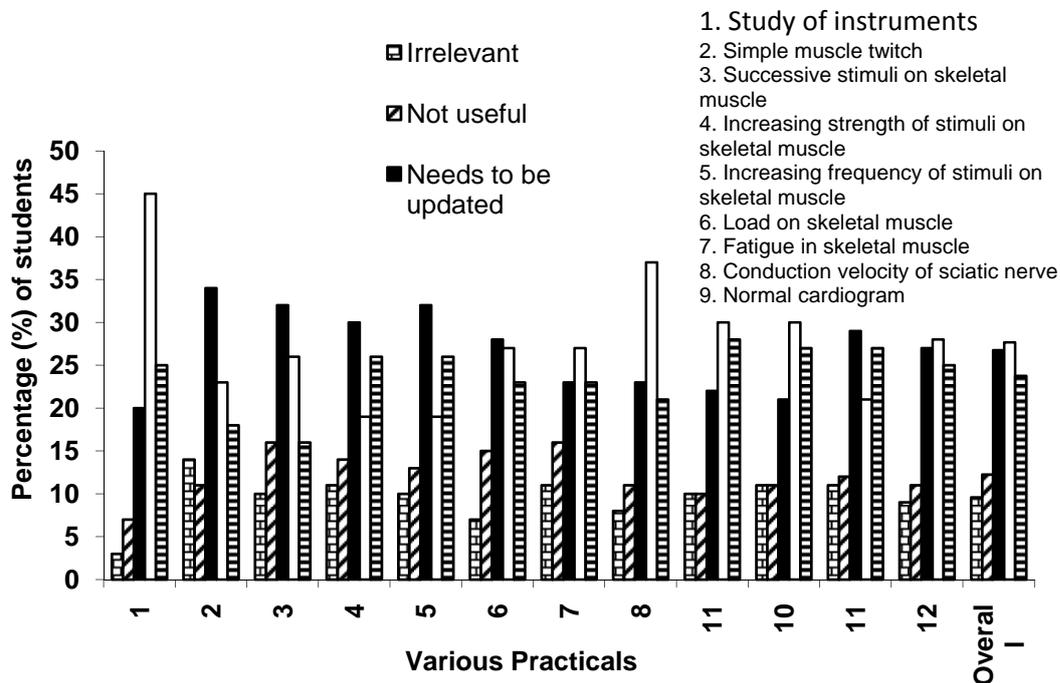


Figure 3: Feedback on amphibian experiments



Amphibian experiments were clubbed together to save time and the number of clinically relevant human experiments was increased. More equipment and facilities were added. The practical course was completed well in time, with sufficient time for revision.

Test score and feedback from the second batch, which experienced modified practical exercises, showed that there was better understanding and that too in a shorter time. The total marks for practical exercises in the university examination in physiology are 30% (Medical Council of India, 1997). As there was improvement in the marks in the second batch,

it will also transform to better performance in theory examinations. Encouraged by the improved learning of students, we are planning to introduce computer simulation models and clinical rounds to increase applied knowledge of physiology.

In conclusion, it is important to know what students need and whether they feel comfortable with the ever-expanding course with limited duration of time. The students undoubtedly are in best position to comment on the effectiveness of any teaching system and they may be regarded as the best judge to assess it. Frequent feedback may help teachers to plan the curriculum and improve upon the teaching methodologies adopted in their institutions.

References

- Ghai, C.L. (2005) *A textbook of practical physiology*, Jaypee Publishers: New Delhi.
- Medical Council of India (1997) Regulations on Graduate Medical Education [online] Available at: http://mciindia.org/know/rules/rules_mbbs.htm. [Accessed March 7, 2009].
- Victoroff, K.Z. & Hogan, S. (2006) Students' perceptions of effective learning experiences in dental school: a qualitative study using a critical incident technique, *Journal of Dental Education*, 70, pp.124-132.
- Powel, E.T. (1998) Questionnaire design: asking questions with a purpose [online] Available at: <http://learningstore.uwex.edu/pdf/G3658-2> [Accessed March 7, 2009].
- Gardner, M.T. (2004) Practical Physiology mini-practicals, Available at: http://www.ucl.ac.uk/~cusplap/med/minip_ans.htm [Accessed March 7, 2009].