



Higher Education Research and Development Society of Australasia, Inc

# Learning for an Unknown Future

*Proceedings of the*

## **26<sup>th</sup> HERDSA Annual Conference**

6-9 July 2003

Christchurch, New Zealand

Pandey, P. & Magin, D. (2003) Implementing peer tutoring in gross anatomy tutorials, in *Learning for an Unknown Future, Proceedings of the 26th HERDSA Annual Conference, Christchurch, New Zealand, 6-9 July 2003: pp 483.*

Published 2003 by the  
Higher Education Research and Development Society of Australasia, Inc  
PO Box 27, Milperra, NSW 2214, Australia  
[www.herdsa.org.au](http://www.herdsa.org.au)

ISSN: 0155-6223  
ISBN: 0 90 8557 55 8

This research paper was reviewed using a double blind peer review process that meets DEEWR requirements. Two reviewers were appointed on the basis of their independence, expertise and experience and received the full paper devoid of the authors' names and institutions in order to ensure objectivity and anonymity. Where substantial differences existed between the two reviewers, a third reviewer was appointed. Papers were evaluated on the basis of originality, quality of academic merit, relevance to the conference theme and the standard of writing/presentation. Following review, this full paper was presented at the international conference.

Copyright© 2003 HERDSA and the authors. Apart from any fair dealing for the purposes of research or private study, criticism or review, as permitted under the Copyright, Design and Patent Act, 2005, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms and licenses issued by the copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers at the address above.

# Implementing peer tutoring in gross anatomy tutorials

**Priti Pandey**

The University of New South Wales, Sydney, Australia  
p.pandey@unsw.edu.au

**Doug Magin**

The University of New South Wales, Sydney, Australia  
d.magin@unsw.edu.au

***Abstract:** This study examines the outcomes from the introduction of peer tutoring in two tutorial classes in gross anatomy. Seventeen students volunteered to prepare a topic from the syllabus, and make a presentation. These student presentations replaced the teacher's role in providing information, explanation, and student discussion, on the topics covered by the volunteer presenters. The evaluation focus was on the viability and learning effectiveness of trial scheme, and on the nature and usefulness of the feedback given to presenters. Analysis was based on notes recorded by the teacher on a 'teacher observation checklist', and on examination of the written formative feedback assessments made by the peer audience at each presentation. Two main findings emerged from the study. First, peer tutoring of this kind can be a viable and effective teaching adjunct in anatomy. Second, written assessment comments by peers provided a rich, supportive and detailed feedback for each presentation, and exhibited consistency in identifying relative strengths and areas for improvement in each presentation.*

***Keywords:** peer tutoring, peer feedback, anatomy*

## Introduction

There is a long history of case studies reporting on the implementation of peer tutoring. The review study by Topping (1996) described almost 100 studies of peer tutoring. However, this review instanced only four studies classified as 'same-year peer tutoring' in which a student in the class assumed the information-giving role of the teacher. Topping characterised this form of peer tutoring as being an area where there are "barely the beginnings of a satisfactory body of evaluation research" (p. 339). One reason for the lack of case studies in this area is the concern that peer tutoring involving the presentation of knowledge-based information would be compromised by the "lack of subject-matter expertise" on the part of student tutors (Schmidt et al, 1993). In similar vein, Topping (1996) cautioned that student "mastery of the content of tutoring is likely to be less than that of a professional teacher, so curriculum content coverage in peer tutoring may be much more variable", and advised that 'the need for monitoring and quality control cannot be overstated' (p. 327). Recently, Solomon and Crowe (2001) published a case study involving same-year tutoring within a PBL (problem based learning) course in medicine. Prior to their investigation, they were also concerned about the possibility

of learning being compromised by the student tutors' lack of expertise. However, the findings from the study allayed these concerns, with the implementation of peer tutoring being assessed as successful.

The study we report in this paper describes the introduction of peer tutoring in gross anatomy classes for first-year medicine students. Given the nature of instruction in gross anatomy classes – where a large content of detailed structural and terminological information is required to be learned – it is not surprising that same-year peer tutoring, as an adjunct to information-giving and explanation by the teacher, has not been regarded as a teaching method of choice. In this sense, the attempt to introduce this form of peer tutoring in anatomy can be seen as innovative.

Whilst peer assessment is also a well-researched area, recent reviews of peer assessment have stressed the need for further studies investigating the nature and effectiveness of qualitative feedback from peers (Pope, 2001; Topping, 1998; Topping, Smith, Swanson & Elliot, 2000). More recently, Higgins, Hartley and Skelton (2002) have identified the use of formative assessment feedback (by teachers as well as peers) as an area of growing research interest, and commented:

Yet, despite the significant position that written feedback comments occupy in student experiences, and that, today, an important purpose of assessment is considered to be the improvement of student learning, this area, surprisingly, remains relatively underresearched – particularly from student perspectives (Higgins et al., 2002, p. 54).

## **Background**

Anatomy is a study of the structure of the human body and gross anatomy is the study of the parts of the body as seen by the naked eye through dissection. Over time the traditional learning about the human body has been reduced to learning by prosections, and by use of models. Gross anatomy is taught as a course in the pre-clinical years to students in medicine and to students enrolled in science courses. The investigation reported in this study was conducted in Session 2 of 2002. The senior author was involved in teaching the course 'Anatomy 1 (ANAT1006)' during that period. Approximately 210 students were enrolled in the course, with 4-hours of formal tuition scheduled for each week of the semester. This consisted of one lecture (55 minutes' duration) and one tutorial (3 hours' duration). Four separate tutorial groups are run, consisting of 16-20 students in each group. The students attend the lecture in the preceding week and the tutorial classes are attended the following week. The teaching is intended to focus on the pre-assigned learning activities. Each tutor is expected to organise his/her teaching accordingly, and where (mostly always) time permits, students are expected to do some work for themselves towards the end of the tutorial. The reality is that, for the past several years, much of the activity in tutorials is basically 'mini-lectures' by the individual teacher providing information not covered in the lectures, further explanation of topics covered, or demonstrations using wet specimens or models.

## **The study**

### ***Purpose***

The investigation had two main purposes. First, we sought to evaluate whether the implementation of peer tutoring in the format applied in the trial scheme would be a viable and effective teaching method within the context of gross anatomy tutorials at UNSW. The second purpose had a research focus – to explore the nature, quality and effectiveness of written feedback from peers. As outlined in the introduction, this is an area which has been under-researched, and one in which there is a growing interest.

### ***Context of the study***

The subjects of the study were students who attended the tutorial classes in which the senior author had tutoring responsibilities. The course curriculum does not specify the requirement that students become involved in making tutorial presentations, nor is peer feedback or assessment a requisite. In the early weeks of the course, discussions were held with students in these classes to ascertain whether they would be interested in experiencing peer tutoring, and in providing constructive peer feedback to those who might volunteer to make presentations. The teacher outlined the major rationale for the introduction of peer tutoring and peer assessment feedback, as being an effective means for increasing student interaction, variety, and active learning for all of the class, as well as providing a rewarding learning experience for those who volunteered to make presentations. Students were also informed of a small pilot study conducted a few years earlier in another gross anatomy (for a science course) subject, in which similar student presentations were undertaken on a voluntary basis, and which had been endorsed enthusiastically by the students in that tutorial class. A published report of that pilot study reported that 13 of the 15 students who had evaluated the pilot scheme, wanted 'student presentations to continue' in future classes, with a similar number claiming that the student presentations had 'helped in learning and understanding of the subject' (Pandey, 1999).

Contingent on student agreement, up to 20 half-hour time slots would be allocated for tutorial presentations in the second half of the semester. Following discussions in which the potential learning benefits to student tutors and tutees from engaging in these activities were discussed, all students assented. Students were then asked if up to 20 of them would volunteer to prepare a pre-selected topic each, based on their notes and text, and make a 20-25 minute presentation (and a further 5-10 minutes for answering questions) at a specified time in the last five weeks of session. Over the next few weeks, 18 students volunteered to do so, and all but one (due to absence) of these volunteers subsequently made a presentation. The role of the class listening to the presentations was to check for the correctness of the information, and interact with the presenter and the teacher. The class was also asked to fill in a presenter feedback schedule, in which they could provide 'supportive and constructive' feedback to the volunteer presenter. The teacher's role was to listen and observe, intervene where there was a need to correct errors or omissions, and at the end summarise and provide explanation of concepts not understood by students.

### **Evaluating outcomes**

As mentioned in the section above, a similar attempt to implement peer tutoring had been undertaken earlier, but on a smaller scale. Two evaluation measures were used in that pilot study: the teacher's own observations, aided by a 'teacher observation checklist' pro-forma which was used for every presentation; and a student evaluation questionnaire which focused on learning effectiveness and on support for the continuation of student presentations. In that pilot study peer assessment and feedback comments on the presentations were not collected.

The current study also makes use of the 'teacher observation checklist' pro-forma (see Illustration 1). However, the major focus is on analysis of the written formative peer assessment provided by the student audience as feedback to the presenters.

### ***Feedback schedule***

A feedback schedule was developed consisting of eight criterion aspects of the tutorial presentation. This schedule was designed to assist students making written comments on each presentation. The

feedback pro-forma made provision for specific comment, which would ‘provide constructive feedback/tips for improvement on any of these items’. The eight criteria consisted of four items on the adequacy of topic information provided by the presenter, and four items on presentation effectiveness, namely:

*On the topic*

- (i) Evidence of relevant reading on this topic
- (ii) Adequate outline of gross anatomy (for the topic)
- (iii) Attention given to clinical relevance
- (iv) Adequacy of response to questions

*On presentation effectiveness*

- (v) Presented and explained information in a way which could be understood easily
- (vi) Engaged audience’s interest in the topic
- (vii) Oral presentation skills (e.g., audibility, diction, pace)
- (viii) Organisation of time

Content-analysis of written feedback was undertaken to ascertain which aspects of the presentation were the subject of constructive criticism and supportive feedback.

**Results**

***Content analysis***

As displayed in Table 1, there was an almost even division between comments of general praise (101 comments), and the proffering of constructive criticisms or tips (109). There was also an almost even division in the frequency of comments relating to ‘knowledge content’ and comments relating to ‘communication skills’.

**Table 1: Content analysis of peer feedback comments on presentations**

	General Praise	Constructive criticism/tips
<u>Knowledge Content</u>		
Explanation	40	15
Preparation	22	9
Clinical relevance	2	10
<i>Sub-total</i>	<i>64</i>	<i>34</i>
<u>Communication skills</u>		
Use of diagrams/teaching aids	26	25
Adequate eye contact	1	19
Appropriate delivery pace	1	15
Engaged audience interest	5	5
Use of voice	1	6
Other (eg response to questions; humour)	3	5
<i>Sub-total</i>	<i>37</i>	<i>75</i>
<b><i>Totals</i></b>	<b><i>101</i></b>	<b><i>109</i></b>

The two aspects, which drew most mention in the constructive criticism related to inadequacies in diagrams or the use of teaching aids, and to inadequate eye contact. Constructive criticisms were much more likely to be made in relation to communication skill effectiveness, whereas ‘knowledge content’ was substantially more likely to draw comments of general praise.

### **Observation of presentations**

The senior author made observations using a 'Tutor Observation Checklist' for every class presentation. This consisted of five broad categories (see Illustration 1). Four overall impressions were made from reviewing the observation sheets. First, with few exceptions, the student volunteer presenters thoroughly prepared for their talk, and interventions by the teacher to correct errors of fact, or omissions of necessary detail, were minimal. Second, the classes were livelier than normal, with more interaction and discussion within the class. Third, all of the presenters appeared to appreciate the experience of making a presentation, and almost all expressed a sense of accomplishment. Finally, when the teacher observations were compared with feedback comments made by peers, there was a good correspondence between the two sets of observations. This correspondence is exemplified in the case of one of the presenters (alias 'Samuel'). Illustration 1 contains the observations made by the teacher at Samuel's presentation. In addition, the following general comments were written by the teacher on the checklist form: "Samuel is an international student and has put a lot of work into preparing the presentation. He drew his own drawing (infratemporal fossa). I asked him to give me a copy, which I said, will be edited and used by students in the following year. He was confident, and was applauded by the peers".

**Illustration 1: Sample summary from teacher checklist on one presentation**

<b>Observations</b>	<b>Samuel</b>
<b>Student preparedness</b>	Excellent, prepared with drawings on the board
<b>Any misleading or incorrect information</b>	Virtually none
<b>Interactions during &amp; after presentation</b>	Good, peers were referring to his talk afterwards
<b>My interventions during presentations</b>	Minor- just for correcting pronunciation
<b>My follow up after presentation</b>	Minor – to clarify a few other interrelated points
<b>Any adverse problems</b>	Drawing needed a bit of clarification & editing
<b>Evidence of interest shown in the class</b>	Students admired presentation, and sharing of information

In the following section, the nature of the feedback provided by peers is illustrated through a full reporting of all specific feedback comments made for 2 of the 17 presenters. The level of correspondence with teacher observations can be gauged by comparing the teacher notes made for 'Samuel' with the full set of feedback comments for this student presenter as illustrated in the following section.

### **Illustrations of feedback received from peers**

Samuel: Fifteen students attending his presentation provided written feedback on specific aspects of the presentation, and three contained non-specific praise (eg 'good presentation', 'good stuff', 'brave presentation'). The feedback on specific aspects were:

- Very detailed. Good drawing and relation to information
- Needs more eye contact, maybe related to knowing the material so well
- You knew some things but did not include it in the presentation – e.g., clinical applications. Try to slow down when pronouncing a list of anatomical details
- Great use of diagrams, very detailed
- Pointer needs to accurately point to relevant feature. Good colour diagram
- Good reference to picture
- Clinical relevance needed
- Some relevant clinical information (needed). Present in a smoother fashion
- If you could state whether the attachment, arteries etc., whether they are the medial or lateral part at the particular plate/surface, it would be better, I think
- More clinical
- Learning aids would be good, as would a bit of clinical
- Maybe you could have read a little about the clinical relevance of the infratemporal fossa. Otherwise, good. The diagram really did help with understanding the topic
- Maybe clearer definition in explanation of various areas of the topic, to maintain interest. Good detail and diagram
- Possibly include clinical relevance to add interest. Very well researched.

The feedback comments for Samuel concentrated on two aspects – the use of diagrams and clinical relevance. Whilst the tenor of comments on the diagrams was one of praise, there were numerous mentions of the need to include information on clinical relevance.

Ronald: This student's presentation also received praise. However, in Ronald's case, the majority of students providing feedback identified just one aspect for improvement - the need to have more eye contact with the audience:

- More eye contact when speaking, maybe face the audience more
- No tips – it was good. Good drawing and clear explanation
- More eye contact with audience needed
- More eye contact, diagrams with more detail would be nice
- Eye contact and emphasis on certain points
- Detailed and informed. Slower (would be) better
- Try to look up more!
- Spoken a bit fast, a bit more outlining would've been nice, but otherwise jolly good
- Very clear and detailed presentation
- More eye contact with audience needed
- You could face the audience, which would help with presenting the information. Also, every now and then look at the audience when speaking
- Quite easy to follow what you said. Good organization of your presentation
- Eye contact lacking. Excellent in terms of simplicity and relevance.

Inspection of the written feedback for the other fifteen presenters were similar to that contained in the compendium of comments illustrated above in two respects: for all presentations feedback comments were similarly couched in supportive words and praise; and, each set of feedback comments contained useful information and tips for improvement.

Where they differed - which made the feedback so useful – was in the distinctively different patterns of areas nominated for improvement in the feedback given to different speakers. As illustrated above, feedback to Samuel stressed the need for more clinical relevance, whereas for Ronald, there was clear and consistent feedback on the need for my eye contact with the audience. In another individual case we noted, for example, a consistent message about the need to ‘slow down’ the pace of the talk; in another, attention to nomenclature and pronunciation of anatomical parts. In the majority of instances, the aspect(s) of each presenter’s talk, which drew constructive comments and tips for improvement, were consistent with those made by the teacher on her observation schedule.

## **Discussion and concluding remarks**

In reviewing several studies on the nature of the feedback students receive from tutors Higgins et al. (2002) observed that these studies had found considerable variability between tutors in the quality and quantity of comment. They also noted that “some comments can be very authoritarian, judgemental and detached, others may be very personal and empathetic” (p. 55). Their own study, based on student interviews, “revealed negative experiences of assessment feedback”.

By contrast, the findings from our current study reveal that peer feedback on the presentations was invariably supportive and empathetic in nature, and provided a uniformly positive experience for the volunteer presenters. Although many feedback comments were quite brief, account needs to be taken of the fact that it is the effect of the compendium of multiple peer feedback comments, which give rise to the richness and detail of the feedback.

The study has found that the trial scheme of using student presentations as a teaching adjunct had been an effective learning strategy, and one which both students and presenters found enjoyable and rewarding. We believe the outcomes from the trial strongly support consideration for including peer tutoring of this kind within the curriculum of the course, and in doing so, move it from a ‘volunteer’ activity, to one in which all students would experience presenting a topic. Should this eventuate as a course requirement, students will need to be given training support in making effective presentations, together with assessment credit provisions for undertaking this role. Also, given the findings on the value of peer assessment feedback, we believe that summative peer assessment should be explored as part of the assessment credit process. To this end, we intend to extend our investigations to explore the reliability of peer ratings in assessment of the quality of student presentations.

## **References**

- Higgins, R., Hartley, P. & Skelton, A. (2002). The conscientious consumer: reconsidering the role of assessment feedback in student learning, *Studies in Higher Education*, 27, 53-64.
- Pandey, P. (1999). Group tutoring by peers in gross anatomy: a case study, *Proceedings of the 24<sup>th</sup> International Conference on Improving University Learning & Teaching*, Griffith University, Brisbane, 553-558.
- Pope, N. (2001) An examination of the use of peer rating for formative assessment in the context of the theory of consumption values, *Assessment & Evaluation in Higher Education*, 26, 235-246.

- Schmidt, H., Van Der Arend, A., Moust, J., Kokx, I. & Boon, L. (1993). Influence of tutors' subject-matter expertise on student effort and achievement in problem-based learning, *Academic Medicine*, 68, 784-791.
- Solomon, P. & Crowe, J. (2001). Perceptions of student peer tutors in a problem-based learning programme, *Medical Teacher*, 23, 181-185.
- Topping, K. (1996). The effectiveness of peer tutoring in further and higher education: a typology and review of the literature, *Higher Education*, 32, 321-345.
- Topping, K. (1998). Peer assessment between students in colleges and universities, *Review of Educational Research*, 68, 249-276.
- Topping, K., Smith, E., Swanson, I. & Elliot, A. (2000). Formative peer assessment of academic writing between postgraduate students, *Assessment & Evaluation in Higher Education*, 25, 149-169.

Copyright © 2003 P. Pandey & D. Magin: The authors assign to HERDSA and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to HERDSA to publish this document in full on the World Wide Web (prime sites and mirrors) on CD-ROM and in printed form within the HERDSA 2003 conference proceedings. Any other usage is prohibited without the express permission of the authors.