

Small Group Teaching: Easy Method of Learning Anatomy

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Abstract

As the medical undergraduate curriculum has been restructured, anatomy teaching methods have also progressed. Traditional teaching methods of dissection, tutorials and lectures are now supplemented by anatomical models, surgical videos and e-learning. The introduction of 'small-group teaching' in gross anatomy has emerged as noteworthy and has had a constructive impact on the academic achievement of students in anatomy. The interaction of 10-12 students and an instructor around a cadaver on a dissecting table in the traditional gross anatomy laboratory is an example of small group teaching in anatomy. Without refuting the significance of traditional lectures, a growing number of teachers are appreciating the importance of small group work, as an important supplement to lectures. The benefits are ample, including growing involvement by students, superior understanding, retention of material, finer skills, and an eagerness for self-directed learning – which can even motivate students for taking on independent research. *Conclusion:* Small group teaching has a plethora of benefits like positive interactions among students from diverse cultural backgrounds, exchange of information, academic achievement, possession of new knowledge and fine skills, aptitude to work out clinical problems, motivation to learn confidence and social development.

Keywords: Medical Undergraduate Curriculum; Anatomy; Teaching Methods; Dissection; Tutorials; Lectures; Anatomical Models; Surgical Videos; E-Learning; Small-Group Teaching.

Introduction

Anatomy is one of the most important medical science disciplines in the undergraduate curriculum and forms the foundation for the training of future doctors. Anatomy is not only indispensable for surgeons but also essential for anyone who performs an invasive procedure on a patient; It is extremely vital for radio-logical imaging; and even for a simple physical examination of a patient. Thus all branches of medicine require Anatomy. Worldwide curriculum reforms have resulted in a reduction in the gross anatomy teaching hours. With diminishing time and

resources devoted to anatomical education, it is crucial that the remaining teaching of anatomy be effective, efficient and evidence-based [1]. Small group teaching is frequently used in professional colleges and has a surplus benefits like positive interactions among students from diverse cultural backgrounds, exchange of information, academic achievement, possession of new knowledge and fine skills, aptitude to work out clinical problems, motivation to learn, confidence and social development. Moreover it has no detrimental effects at all. But if the fundamentals of how to administer and supervise small group teaching is not known, some of its benefits may be lost. This paper is designed to address planning and management of small-group learning activities so as to formulate this instructional design as an integral part of the anatomy curriculum [2].

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Discussion

Members of the group should be made to understand that they are mutually dependent on each

other. Each group member is accountable for the success or failure of every other member because group members will all succeed or all fail at completing the assignment. This can be accomplished by giving a common goal to the entire group to achieve [3]. At the same time each member must be held accountable for his or her share. This will keep the students focussed. Without individual accountability, two common problems are likely to arise: either some members may contribute very little, or a particular member may dominate and complete the entire assignment. Members of the group should be encouraged to interact with each other through discussing concepts, encouraging each other and sharing personal experiences; in this way they will help each other to learn concepts. One of the aims of small-group teaching is to develop the interpersonal and communication skills of the students, which are important in their later education and career [4]. Different members of the group should possess different social skills to be able to complete a task, like leadership qualities, communication and active listening qualities, conflict-solving abilities and decision making. The teacher should be aware of these qualities of the students and bring together such a group. In a small group, each student is expected to contribute equally. That means work as well as the time has to be equally divided among the members. For example, for a given concept, in the first half of the time, half the group will discuss and the other half will be actively listening and in the remaining half of the time roles are switched over [6]. For a small group learning session to be successful, an important pre-requisite is that students work in the same place and at the same time, so that they are able to discuss concepts, actively listen, and quickly solve problems [7]. Thus small group teaching provides students with a firm foundation, allowing the progression to more explorative self-directed learning methods. Ideally, groups should have up to five members, to allow everyone to contribute. Members should be chosen based upon differing achievement levels, learning styles, career objectives, personalities or past experiences. Groups can be informal or formal. Informal groups are those which pick their own partners, but this should be avoided as such groups stray from their objectives. Formal groups can be co-operative or collaborative. Co-operative group learning procedures are more structured. They reflect upon a group session, to depict what member performances were supportive and unsupportive and on that basis, they make decisions about which actions to maintain and which to amend. They thus become better judges of quality work. Collaborative groups use more negotiation to solve conflicts among

their members [8]. At the outset of a task, group members should be given explicit directions by the instructor, for example, the instructional goal - whether it is a problem solving or understanding of a concept. Students prefer this small-group learning method over a completely self-directed method in the gross anatomy, because the study materials are carefully chosen and the study objectives are clearly demonstrated by the instructor. The functioning of the group should be monitored discreetly. The instructor should circulate among the groups, but avoid being invasive unless a question needs to be answered or the group seems unable to proceed on the task [9]. The instructor's task is to lead and not to order what should happen amongst the group members. If, for example, group members grumble that someone isn't contributing enough, the instructor should make it plain that resolving the problem is up to the group and won't be solved by the intervention of the instructor [10]. Ideally groups should not be graded because it promotes competition and decrease cooperation. In these cases, the academically weaker students may be ostracized. In a competitive academic environment, where students have most often been rewarded for individual effort, collaboration may not come naturally for everyone. Some students at the outset express uncertainty about the significance of group work, or believe that class time is best spent hearing from the instructor rather than working with students who are acquainted with as little as themselves. Others may think that they have done well up till now on their personal effort, and don't want to be weighed down by other erstwhile students with different histories of success or different functioning styles. And some students are simply withdrawn and not used to contributing their work to their colleagues [11]. Lecture may be a faster way to convey information, but what remains to be seen is that how much information do the students retain after a lecture. According to Slavin et al there is an increase in academic achievement when small groups are used. Although students may not learn as much detailed information, they will learn other skills crucial to their academic success, such as problem solving, critical thinking, leadership, communication, and contributing to a group [12].

Anatomy is a living subject, not a collection of facts learnt early and then forgotten. Retaining anatomical facts requires constant practical application. Group activity is an intrinsic feature of the traditional dissection room. Benefits of cadaver study are learning teamwork, learning self instruction, appreciation of mortality.

During the study of gross anatomy, most medical students are faced with more material than they have

ever dealt with before in such a short time frame. They wonder if they will make it through the course. They do, and the confidence they gain helps them through even more difficult experiences later in their training. Dissection of a cadaver provides a deep learning experience that is not soon forgotten [13].

The major form of teaching in the medical gross anatomy course is small group teaching in the dissection hall lead by a medically qualified demonstrator.

Here there is a hybrid of three types of small group teaching – dissection sessions, discussion sessions and problem solving sessions. Even basic dysfunctional anatomy can be taught in groups, like for example - What would or would not happen if this nerve were cut? Would an infarct occur if this artery were occluded? What would be the result of tearing this ligament? An advantage of the large dissection hall space is that small group teaching can be applicable to the whole medical class within a single space; multiple rooms do not have to be reserved [14]. Small group teaching can also be carried out with bones and radiographic films and three-dimensional (3D) plastic models used as supplementary teaching material. Living anatomy sessions can also be small group sessions with the aid of videos.

These can later be used by the students for self study. As per study conducted by Davis et al, 99% of students felt that they learned more from small-group teaching with cadavers and with medically qualified demonstrators, as compared to didactic lectures or self-directed learning [15]. Although small group teaching in gross anatomy consumes a large amount of faculty time, it cannot overshadow the educational benefits described above [16]. Such strong preference for face-to-face, small-group cadaveric teaching as well as the surplus benefits of this type of teaching, suggests that this modality should be a major consideration in course design [17]. To teach complicated and intricate areas of the human body eg Perineum, the traditional cadaveric dissection, may not be enough.

For such topics, a dissection video is prepared which not only shows the steps of dissection, but also 2D diagrams of sagittal and coronal sections. Simultaneously a 3D model can also be shown to the students. All these aids help to simplify the topic. These kind of audio-visual aids are complementary to the traditional modes of teaching, A digital anatomical teaching tool with the combination of dissection, 2D diagrams and the demonstration of the 3D model adds to the perception of that region [18].

Conclusion

Small group teaching has a plethora of benefits like positive interactions among students from diverse cultural backgrounds, exchange of information, academic achievement, possession of new knowledge and fine skills, aptitude to work out clinical problems, motivation to learn, confidence and social development. Moreover it has no detrimental effects at all. But if the fundamentals of how to administer and supervise small group teaching is not known, some of its benefits may be lost. The instructor must address the importance of group work and the essentiality of its goals, since students will be far more motivated to participate if they see the application of the group assignments to larger course objectives. Determining how the groups will be formed can be more complex for the instructor, since ideally the groups should be varied enough to include students with a range of intellectual abilities, academic interests, and cognitive styles. Although students may not learn as much detailed information in small group teaching as they would in a lecture, they will learn other skills crucial to their academic success, such as problem solving, critical thinking, leadership, communication, and contributing to a group. Small group teaching with cadavers in the dissection hall is indispensable in the study of gross anatomy. Here the students learn not only normal anatomy, but also the basic language of medicine as well as the concept of biological variation. They develop manual dexterity. Dissection nurtures the group spirit thus assisting in social bonding and communication. In a climate of declining time devoted to anatomy teaching, small group teaching forms the basis of efficient anatomy teaching of the future.

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