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## GROSS ANATOMY COURSE DELIVERY TO DENTAL UNDERGRADUATE STUDENTS VIA TEAM-BASED LEARNING

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**ABSTRACT:** *Team-based learning (TBL) uses instructor facilitated role. Its goal is to go beyond the simple coverage of content and to focus on making sure that the students use course ideas to solve problems. There are many studies comparing TBL to other educational methods demonstrating higher engagement and enjoyment among TBL participants. Our proposal of using TBL in delivery of anatomy curriculum for dental students agrees with previous studies which demonstrated the major effectiveness of the TBL method in medical sciences education. Anatomy teaching has recently seen the introduction of several changes. These include the introduction of new educational methods, course hour's reduction, the abolition of cadaver dissection, the integration between clinical and preclinical curricula, and a change in students' learning objectives. The teaching of anatomy using TBL has received much attention in recent years. TBL can be applied to cover anatomy topics in a dental curriculum. TBL results in an improved knowledge gain and higher satisfaction ratings for the students. By utilising TBL, dental students can learn to work together and work effectively in teams.*

**KEYWORDS:** Gross Anatomy, Course Delivery, Dental, Undergraduate Students, Team-Based Learning

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### **Benefits of team based learning**

Team-based learning (TBL) is a learning methodology that depends upon small-group learning, student preparation outside lecture room, use of knowledge inside lecture room and instructor facilitated role. TBL can be also defined as a strategy that is based on techniques for developing high-performance teams that can enhance the quality of student learning. The goal of TBL is to go beyond the simple coverage of content and to focus on making sure that the students practise using course ideas to solve problems. (Michaelsen & Richards, 2005, p. 85–88 )

TBL increases learner engagement, promotes active learning and is reported as enjoyable and innovative experience. (Vasan et al., 2008, p.3–9 and Mody et al., 2013, p.239–42) TBL maximize student collaboration, developing communication skills, increasing teamwork, enhancing problem-solving skills and promoting knowledge outcomes. (Searle et al., 2003, p.S55–8; Haidet et al., 2004, p.15–27; Thompson et al., 2007, p.250–7 and Kelly et al., 2005, p.112–8)

### **Academic Prevalence and methodology of TBL**

TBL is more and more being used in medical education. (Michaelsen & Richards, 2005, p.85–8) It has been gaining good reputation in academic institutions all over the world. In USA, at least 83% of academic institutions use TBL. 44% of those institutions also have faculty members who are part of the TBL Collaborative (TBLC) which is an international collaborative that focuses on connecting TBL practitioners, sharing TBL resources, and promoting best

practices. Also, within the top 50 medical schools in the US, 92% use TBL pedagogy. (Hunt et al., 2003, p.131–9 and Mody et al., 2013, p.239–42)

TBL methodology is divided into three successive stages; first stage is “student pre-work”, which take place before entering the lecture room. In which students review topic-related materials (e.g. readings, presentation slides, audio lectures or video lectures). (Haidet et al., 2004, p.15–27) Second stage is “readiness assurance” which is further subdivided into three successive steps taking place inside the lecture room. The first step is individual Readiness Assurance Test (IRAT), in which every single student complete an individual quiz formed of average 10 multiple choice questions based on the pre-work materials. Team Readiness Assurance Test (TRAT), students form teams and takes the same test again and submits the teams answer. Both IRAT and TRAT scores count toward the every student final grade. Clarification session, students raise points of clarification or discuss the quality of multiple-choice questions in the tests. Instructors facilitate a discussion regarding the topics and concepts covered.( Searle et al., 2003, p.S55–8 )

Third stage is “Application exercises”, during which, students work in teams to solve topic related problems that allow them to apply and expand on the knowledge they have just learned and tested. Instructors facilitate a discussion or debate among teams to consider the possible solutions to the topic related problem. (Kelly et al., 2005, p.112–118 and Thompson et al., 2007, p.S53–6)

### **Proposal of application**

There are many studies comparing TBL to other educational methods demonstrating higher engagement and enjoyment among TBL participants. (Dunaway, 2005, p.56–62) Our proposal of using TBL in delivery of anatomy curriculum for dental students agrees with previous studies which demonstrated the major effectiveness of the TBL method in medical sciences education. (Nieder et al., 2005, p.56–63)

Mody *et al.* compared between the lecture-based method and TBL, his study showed that TBL can be used as an innovative approach for medical students’ education.( Mody et al., 2013,p. 239–42) Tan *et al.* compared TBL with passive learning and reported that TBL is an effective technique for improving knowledge in undergraduate education.( Tan et al., 2011, p. 91)

Regarding knowledge gain, Vasani *et al.* compared TBL and traditional lectures with anatomy curricula. The results of that study also revealed a greater improvement in knowledge gain in the TBL group compared to the lecture group. Vasani *et al.* reported that not only knowledge gain increase, but also the students’ scores in the TBL-based anatomy courses were higher than those of lecture-based anatomy courses. (Vasani et al., 2009, p.150–5)

Human anatomy is a basic science course in any dental curriculum. Anatomy teaching has recently seen the introduction of several changes. These include the introduction of new educational methods, course hours reduction, the abolition of cadaver dissection, the integration between clinical and preclinical curricula, a change in students’ learning objectives. (Carlson, 1999, p.497–502)

The teaching of anatomy using TBL has received much attention in recent years. (Inuwa,2012,p. 336–43; Inuwa et al., 2011,p. 383–90 and Habbal, 2009,p. 24–31) In head and neck anatomy, the anatomy of related bones, muscles, and nerves are will be taught together. This will give more understanding of the structures.( Chung et al., 2009,p. 1013–7) At “student pre-work” dental students will develop three criteria; self dependence, research work reviewing many materials with wide variety and independent from the instructor to deliver knowledge.

By executing IRAT the student will benefit from assessing his own prework, while at TRAT the student will learn the essence of team work, communication skills, and peer review of his knowledge. At the Clarification session, student has the ability to communicate with instructor and discuss the quality of MCQs. Regarding the Application exercises with problem solving related to clinical problems with application of basic anatomical facts to solve these problems.

## CONCLUSION

TBL would be effective for teaching anatomy; this would be tested on undergraduate dental students by comparing TBL to a traditional lecture course, measuring knowledge and the students' satisfaction with the outcomes. This study will be the first one to propose the TBL for teaching anatomy to second-year dental students, at college of dentistry, Dammam University.

TBL can be applied to cover anatomy topics in a dental curriculum. TBL results in an improved knowledge gain and higher satisfaction ratings for the students. By utilising TBL, dental students can learn to work together and work effectively in teams.

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