Birds of a feather flock together: the importance of seating location with active learning in the professional classroom

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ASK ANY PROFESSOR to describe a “first-row student,” and you will likely hear a description of an engaged learner who pays attention during class, takes notes, and asks questions. A research study (3) from the 1980s has indicated that undergraduate students sitting in the front and center of the classroom score higher than other students. However, it is unclear whether this same trend would be seen among professional students. The rigorous admissions process for Schools of Dentistry, Graduate Studies, and Medicine selects only the highest-achieving students, possibly eliminating trends seen with classroom seating locations.

On the other hand, the recent incorporation of active learning in the professional classroom may make students more dependent on their classmates for success in courses. In the School of Dentistry at the University of Louisville, the Dental Physiology course is a basic science course for 120 first-year Doctor of Dental Medicine students. The course is taught using a systems-based approach with 11 different physiological systems. In a recent study (2), students were taught five of the physiological systems using traditional didactic lectures and six of the physiological systems using an engaging lecture format. In engaging lectures, also referred to as broken or interactive lectures, students are given short periods of lecture followed by “breaks” that may consist of minute papers, problem sets, brainstorming sessions, or open discussion. During these activities, students are encouraged to work in small groups to foster a collaborative learning environment. Students in a collaborative learning environment are dependent on classmates in their immediate vicinity; thus, any trends of classroom seating on achievement could have important effects.

Students in the Dental Physiology course voluntarily choose their seating locations in a classroom designated for all first-year dental school courses. The tables in the classroom are arranged in groups of four with stadium seating, as shown in Fig. 1. While there is no assigned seating, almost all students (indicated by circles in Fig. 1) choose to retain their seating locations throughout the semester. Students are assessed in the Dental Physiology course through daily quizzes, four unit exams, and a final comprehensive exam. Despite the rigor of the course, only two to three students typically fail the class each year. However, given the extremely high costs of graduate

Fig. 1. Depiction of the classroom of the Dental Physiology course. Tables are indicated by rectangles, with each student location represented by a circle. Shaded circles represent students who failed the first exam of the course. The shaded circles with asterisks represent the student who failed the first exam and subsequently moved from group 32 to group 17. The shaded circles with Xs in group 32 represent students who failed the entire course.
education, it is still crucial to examine any potential causes of 
student failure.

As described by Winston et al. (4), in professional programs, 
failure of the first exam in a course is highly predictive of 
failing the entire course. As shown in Fig. 1, all students who 
failed the first exam are indicated by the shaded circles. As 
supported by the previous literature, no students located in the 
front center of the classroom failed the first exam. While some 
failures were scattered throughout the classroom, interestingly, 
all students in group 32 failed the first exam. Given the 
classroom design, group 32 is highly isolated from the podium. 
After the first exam, one student in group 32 (represented by 
the center asterisk) voluntarily chose to move to the front of the 
classroom in group 17. The other members of group 32 chose 
to remain in their original seating locations.

At the conclusion of the course, all students successfully 

passed the course with a “C” grade or higher, with the excep-
tion of the two students marked by circles with Xs in group 32. 
This brings up interesting questions regarding the use of 
engaging lectures in professional classrooms. Students who are 
mutually struggling with the material may actually reinforce 
misunderstandings of the content with one another. This may 
be compounded by the fact that at-risk students may volun-
tarily choose to sit at locations that are isolated from interac-
tions with the instructor. Students who failed the first exam but 
were surrounded by higher-performing students were all able 
to pass the class successfully. Thus, the collaborative nature of 
the engaging lectures may have allowed those students to 
correct their initial deficiencies or learn ways to more appro-
priately approach the material.

Perhaps one of the best indicators of the importance of 
seating location is the student who voluntarily moved from 
the back to the front of the classroom. Despite her failure on the 
first exam, she earned an overall “B” in the class. At the 
conclusion of the course, she nominated a student that sat next 
to her for an award, reporting the following:

Every morning of class, he would review content from the 
previous class with all the students who sat around him. He 
want all of us to believe we could do great in physiology and 
would review any topic with you that you may have been 
struggling with. He inspired me to do better in the class with his 
williness to help me, and I can contribute a good portion of 
my comprehension of the content to him.

These statements strongly advocate the importance of peer 
mentoring in the professional classroom. A study (1) in the 
United Kingdom found that a peer-led teaching program for 
first-year medical students was positively evaluated by the 
students and resulted in small gains in overall student perfor-

mance. It is worth noting that the School of Dentistry at the 
University of Louisville has a well-established academic sup-
port center, with free tutoring available for freshman students 
from upperclassmen. All students who failed the first physio-

logy exam did participate in tutoring outside of the class 
throughout the semester. However, despite extensive tutoring 
sessions, the two students in the back of the classroom still 
ultimately failed the course. Thus, the present observations 
may suggest the importance of in-class peer mentoring with 
real-time application of the course material. Consequently, 
seating locations may play an important role with the use of 
engaging lectures in the professional classroom.

Although admission processes select the top students from a 
pool of applicants, there may still be “back-row” students who 
are considered at risk. Since students voluntarily choose their 
seating location on the first day of the course, this may indicate 
that back-row students begin the semester with a lack of 
initiative to interact or with a generalized lack of confidence in 
their abilities. While it may be difficult to ascertain the factors 
that entice at-risk students to sit in the back of a classroom, the 
present findings suggest a need for further examination and 
intervention. As the scope of the present study was limited to 
one class and a small sample of students, it would be useful to 
determine if similar trends are seen in other classes or in other 
professional programs who have adopted the use of engaging 
lectures. Since many medical, dental, and graduate programs 
are becoming increasingly reliant on active instructional tech-
niques, this topic may become of vital importance to student 
success.

Future studies will focus on determining whether similar 
trends in classroom performance continue to exist over several 
years of the course as well as to evaluate the success of a 
professor-initiated intervention. The course director will rear-
range seating locations after the first exam, with a primary 
intent to separate students from groups in which two or more of 
the members have failed the first exam. This intervention 
may be crucial for the success of back-row students who are 
reluctant to interact during the engaging lectures and expose 
any deficiencies in knowledge. Furthermore, it is understand-
able that these students would be hesitant to suddenly change 
seating locations on their own accord, as this could be inter-
preted as disrespect for their former group members and an 
infringement on the new group. With a professor-instigated 
change in seating locations, higher-performing students will 
have the opportunity to teach at-risk students, thus reinforcing 
their own content knowledge and comprehension of complex 
physiological phenomena. If the results of these interventions 
are positive, it is envisioned that a formalized, in-class peer 
mentoring system could be developed to help ensure the 
success of all students in the professional physiology 
classroom.

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