

TUSM 2014 Strategic Plan

Report of the Strategies for Learning Committee

INTRODUCTION

The Committee met four times between March 21st and May 16th 2014 to review and assess current strategies for delivering the curricula of the MD program, MBS program, Physician Assistant program, and the array of Public Health degree programs offered at TUSM. The current learning/teaching strategies were reviewed with an emphasis on recent innovations to move away from traditional lecture-based instruction. The Committee discussed current use of small group teaching, simulation, team-based learning (TBL), problem-based learning (PBL), “flipped” classrooms, and the use of online content. There are marked differences in the various TUSM programs that influence teaching strategies. For example, the number of students in each class varies significantly: MD (200), MBS (125) PA (50 projected for 2015) and a range of class sizes for the public health programs. The MD and PA programs have the additional complexity of including clinical training at multiple sites. Thus, in addition to recommendations applicable to all TUSM degree programs, the Committee also made recommendations specific to individual programs.

There are several compelling reasons to significantly increase the amount of time our students spend in in settings that require interactive learning that includes knowledge application, problem solving and collaboration. At TUSM, and nationally, lecture attendance has plummeted as students (with an array of different learning styles) recognize that the passive transfer of information can effectively occur through a live lecture, a recorded lecture or through reading. Learning research supports the increased effectiveness of learning through application and problem solving versus passive instruction. Equally important, the Committee recognized that technologies, which are now in routine use at TUSM, as well as evolving technologies, provide an unprecedented opportunity to teach more effectively than was possible in the recent past. The ability to provide students with information and assessment more effectively and flexibly through technology will permit classroom time to focus on learning critical thinking, application of concepts, and teamwork. The goal is for time spent in the classroom to enable students to move well beyond mastering the informational content of the curriculum.

The Medical School faculty has recognized for a number of years the advantages of learning strategies that engage students in problem solving, critical thinking, knowledge application, and collaboration. Such strategies have been featured in faculty development workshops, extensively discussed in curriculum committee meetings, incorporated into a new simulation curriculum, and served as the educational rationale for numerous projects supported by TUSM innovation grants. Several courses in multiple programs have incorporated strategies involving TBL or flipped classrooms in both small and large classroom settings.

COMMITTEE FINDINGS

1. ***The Committee agreed that it is now time to substantially increase interactive learning strategies to enhance our students’ problem solving, critical thinking and collaborative skills.***

The educational goals of TUSM center on the application of knowledge (basic science, clinical science, public health), in a team setting through the use of critical reasoning and problem solving skills. The curricula of all TUSM programs are designed to go beyond simply ensuring that students have an appropriate knowledge base and include the use of that knowledge in the interest of individual and public health. Given changes in the learning styles of our students, the ever-increasing sophistication of communication technologies, and current research in learning, a significant increase in the use of interactive learning strategies (flipped classrooms, small classroom, TBL, PBL, simulation, etc) is essential to attain our educational goals. All TUSM programs have incorporated elements of interactive learning and made use of online content. Although TUSM has supported movement in this direction through faculty development workshops and curricular changes that focus on the integration and application of information, the implementation of interactive strategies has been primarily through the individual efforts of faculty members who have utilized TBL and flipped-classroom approaches.

2. ***The Committee concluded that expanded faculty development at TUSM will be critical to support the expansion of interactive learning experiences on the Health Sciences campus as well as the School's geographically separated clinical teaching sites.*** Together with the need to expand TUSM's students' interactive learning experiences, the committee realized that the faculty will need training and support while they adopt these interactive teaching and learning strategies
3. ***Simulation training provides a valuable mode of interactive learning in a clinical setting.*** Simulation programs provide clinical skill training with no patient risk and allows for deliberate practice. In addition to procedural skills, simulation exercises provide a means to learn teamwork skills in real-time. Studies show that simulation results in better knowledge retention than classroom learning. The Committee believes that simulation should be expanded and integrated throughout the curriculum for both MD and PA students, including basic sciences (for example, pharmacology/physiology), physical diagnosis, expanded high-fidelity simulation during core clerkships, and developing simulation programs for 4th year students. Similarly, an expansion of the current standardized patient program is essential for providing more objective assessment of clinical skills and training in other key areas of patient-doctor communication (e.g. palliative care, end-of-life, etc).
4. ***Learning and assessment must be aligned with the same educational goals.*** It was recognized that appropriate assessments to measure students' proficiency in applying both basic and clinical science knowledge to patient care, as well as in working in teams, is central to meeting the educational goals at TUSM. Thus, an expansion of the current assessment approaches is also needed to promote comprehensive learner's assessments.
5. ***It is clear that teaching strategies will increasingly utilize online material, including recorded lectures/mini-lectures.*** The Committee felt that the successful incorporation of such content

will require facilities (multimedia production studio) and staff to help faculty members design, record, and edit high quality online content.

6. **Implementing interactive learning strategies will require appropriate classroom space.** The recent growth of TUSM programs has already made finding the “right size” classroom an issue for all of the TUSM programs. The ability to use TBL, flipped classrooms and to significantly increase the use of small classroom teaching in the larger TUSM programs (MD, MBS), will require expanded classroom space as well as redesigning current classroom space. This must be a priority. It was noted that, Sackler Auditorium is poorly suited for interactions amongst students during class and is also exceedingly unfriendly for laptop or iPad use.
7. **The Anatomy courses currently represent one of the major team-based, small group, interactive learning experiences of the MD and PA students.** However, the space is limited and in need of a major renovation. Updated multimedia equipment is also needed.

RECOMMENDATIONS

To provide students in TUSM programs with team-oriented and interactive learning experiences, the Committee made the following recommendations

1. **Interactive classroom target goal:** The Committee strongly recommends that all TUSM programs expand the use of interactive learning throughout their curricula. By 2020, all faculty members should have all the resources (technical and faculty development) necessary to develop and implement interactive learning strategies. Within the next five years, most courses should have significant interactive components that engage students in problem solving, application of knowledge and collaborative learning. Although individual courses may adopt a single strategy (e.g. flipped classroom), it is likely that others will use a combination of high quality lectures and interactive learning strategies as deemed appropriate for the learning goals of the course.
2. **Faculty Development staff:** TUSM faculty development is viewed as a major strength at the medical school. However, it is clear that additional resources are essential to assist faculty members in adopting interactive learning approaches in their teaching. Expanding staffing for faculty development is especially critical to ensure that effective faculty development occurs at all TUSM clinical sites.

3. **Simulation:** Expansion of simulation throughout the curriculum is expected to require an increase of at least 50% in dedicated simulation center space. New equipment will be needed, including high-fidelity mannequins and ultrasonography instruments. Faculty time will be required to support the expansion of simulation and this may be accomplished by a combination of additional faculty staff (yielding a total of 1.5-2 FTE divided among a director and associate directors) and developing a cadre of faculty with protected time to participate in the simulation component of the MD and PA curricula. The Standardized Patient budget should be expanded by a minimum of 75% to allow for comprehensive clinical exams for MD program core clerkships and PA program clinical rotations.
4. **Multimedia studio and production staff for instructional design:** To support the increased use of online material and assist faculty with producing high quality content, the committee recommended the construction of a multimedia studio dedicated to this purpose. The studio would be home to a staff dedicated to assisting faculty members in the design and implementation of technologies used in teaching. The Committee strongly felt that such a studio and staff should be developed as a central resource for the Boston campus capable of providing multiple layers of expertise and avoiding redundant staffing and physical resources. In addition, it is essential that TUSM convert to a system of electronic syllabi that are media-rich, fully integrated, and promote active learning. Expertise in instructional design is needed to assist faculty who lack protected time and expertise to develop such materials.
5. **Assessment:** Assessments must be adjusted to measure problem-solving, the application of knowledge and collaborative skills. It was noted that it is possible to measure such competencies in many ways, including standardized patients, multiple choice exams and peer assessment. Expertise in the design of assessments will be necessary to help faculty ensure that students have attained the expected proficiency in these competencies. \
6. **Classroom space:** The Committee agreed that Sackler Auditorium should be remodeled to become a more versatile learning space. Flexible (multi-functional) classrooms are needed to accommodate various sized classes.
7. **Anatomy lab:** The Committee fully supports TUSM's plan to build a new anatomy lab that would incorporate interactive teaching of radiology and ultrasound in a manner that is fully integrated with the teaching of computerized anatomical imaging and cadaveric anatomy.

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Strategies for Learning – A Cautionary View

Brent Cochran

Member, Strategies for Learning Committee

While new learning modalities with increased student interaction appear to hold a lot of promise for increasing the efficacy of student learning, it is important to note that this represents a sea change in graduate level teaching methods. Thus, I feel it is important to urge caution in recommending, “that all TUSM programs expand the use of interactive learning throughout their curricula”. It is not clear that these methods will be effective for large classes and for all types of material. From existing experience, we already know that not all or even most students are supportive of their experiences in such settings. Moreover, these new modes of teaching will require significant additional faculty efforts to develop new teaching materials and to learn new teaching skills that will be foreign to many. More than likely, additional faculty will be needed as well to keep class sizes small enough to be effective in an interactive mode. In a time of tight budgets and increasing demands on faculty time in the clinic and in grant-writing, it is not clear how this will work on a large scale without significant investment in faculty. Movements in this direction should be implemented as educational experiments with only proven successful methods implemented on a larger scale. However, if done properly, the introduction of interactive learning modes could enhance the learning experience and knowledge retention of our students.