

Outcomes of Third-Year Pharmacy Students Using Technology for Instruction in an Infectious Diseases Elective Course

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BACKGROUND

- The use of technology both inside and outside the classroom is integral to the facilitation of pharmacy students' learning.¹
- Technology is allowing education to restructure classroom time for something other than simple transmission of factual information and to adopt an evidence-based approach to instructional innovation and reform.¹
- Pharmacy colleges and schools should incorporate technologies that students frequently use and that positively impact learning.²
- Limited assessment of the impact of technology on student performance is available including teaching and learning from peers.^{1,2}
- An infectious diseases elective course developed at the Jefferson School of Pharmacy incorporated the use of contemporary technology to facilitate student learning and peer-generated instruction.

OBJECTIVES

- To identify student attitudes toward the use of technology to deliver content and the responsibility for peer-generated instruction.
- To compare student performance on faculty-generated versus peer-generated instruction on a cumulative, multiple-choice, final examination.

METHODS

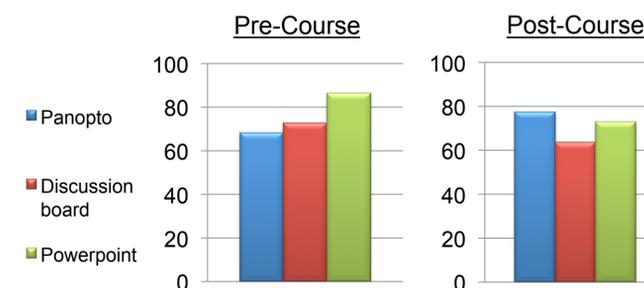
- Students worked in small groups to develop and asynchronously deliver new content as case-based presentations through the use of lecture capture software Panopto®. The course coordinators ensured accuracy.
- Surveys administered at the beginning and end of the course gauged student attitudes toward technology and delivering and receiving peer-generated instruction.
- The percentage of students identifying strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree to the following statements in relation to the use of technology and being taught by peers was compared across the beginning and end of the semester:
 - I am comfortable with being held responsible on an exam for content in this course that will be/was taught by the course instructors.
 - I am comfortable with being held responsible on an exam for content in this course that will be / was taught by my peers.
 - I am comfortable with the responsibility / am confident that I was able to teach some of the content of this course to my peers.
 - I prefer the use of technology within courses as a means to facilitate my learning.
 - The current use of technology as a means to facilitate my learning at Jefferson School of Pharmacy is adequate.
 - I have experience with using technology to teach others.
 - I am confident in my abilities to use technology to teach and learn from others.
 - The application of technology within this course will be / was effective for teaching and learning inside and outside of the classroom.
- Students were also asked to rank which technology media they found most suitable for teaching and learning from others.
- Item analysis was conducted on a cumulative assessment written by faculty to compare student performance on faculty- and peer-generated instruction.

RESULTS

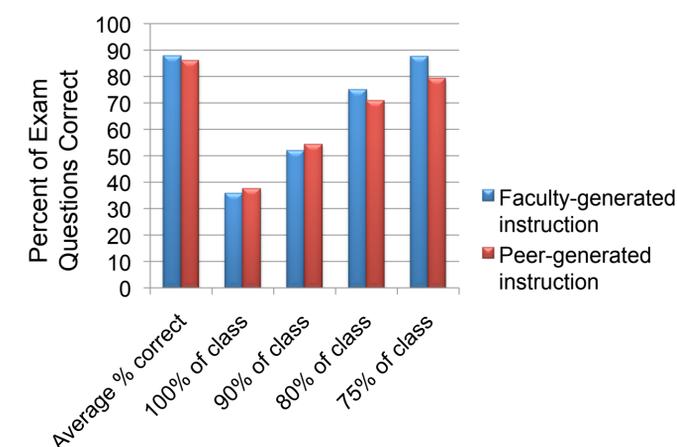
Percent of Students who Agree or Strongly Agree with Survey Statements (n = 22)

Survey Item	Pre-Course	Post-Course
1	100%	100%
2	73%	95%
3	82%	100%
4	91%	82%
5	91%	86%
6	59%	100%
7	77%	91%
8	72%	95%

Student Preference of Media Suitable for Learning from Others



Student Performance: Faculty- versus Peer-generated Instruction



DISCUSSION

- The use of technology for instruction is prevalent in pharmacy schools and colleges, but students have little experience using technology to teach and learn from peers.
- Having students prepare and deliver new content to peers using lecture capture software, and having responsibility for peer-generated instruction, may increase students' comfort level with teaching and learning from peers.
- These activities may restructure classroom time and allow for more material to be learned asynchronously outside of the classroom.
- Student performance on a final examination was similar for material taught by faculty and peers indicating that the peer-teaching-peer method may be effective for educating students in pharmacy academia.
- The study was not adequately powered to detect statistically significant differences (n=22), so more studies investigating the use of technology for peer-delivered instruction and its effect on learning outcomes are warranted.

CONCLUSION

Pharmacy student perceptions of technology as a teaching and learning tool may be improved with the asynchronous delivery of course content by students. Peer instruction, when information is verified accurate by course coordinators, may be an effective teaching tool.

REFERENCES

- Monaghan MS, Cain JJ, Malone PM, Chapman TA, Walters RW, Thompson DC, Riedl ST. Educational technology use among US colleges and schools of pharmacy. *Am J Pharm Educ.* 2011;75(5):Article 87.
- Stolte SK, Richard C, Rahman A, Kidd RS. Student pharmacists' use and perceived impact of educational technologies. *Am J Pharm Educ.* 2011;75(5):Article 92.