COMMENTARY

Lecture Capture is the New Standard of Practice in Pharmacy Education

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Submitted December 15, 2021; accepted April 8, 2022; ePublished April 2022

The desire and need for remote access to education dramatically increased during the coronavirus pandemic, and it is only a question of which changes will remain in the future. Programs have begun to review changes and approaches that should be continued. This commentary advocates that the use of lecture capture (LC) as an instructional delivery strategy, is no longer just a supplement to learning, but is now a standard of practice in health professions education. LC creates equity for students by providing additional opportunities to review material. Students may be balancing schoolwork with a job, care for their children, or paying for groceries. LC allows students to acquire information at lower levels of Bloom’s taxonomy at a time that fits into their schedule, at a pace appropriate for them, and in a method that may better suit their learning needs. Students entering pharmacy school at this time have learned from audio/video media (eg, YouTube, Ted Talks, podcasts) and nontraditional educational competitors (eg, Khanh Academy, Coursera, MasterClass). Students have become accustomed to learning via media technology and regularly do so in their everyday lives. Students desire LC as it provides an opportunity to review unclear, complicated, or missed concepts as part of the studying process. Though its use is flexible, like any tool, LC should not be used for all situations. Benefits and disadvantages of LC for students, faculty, and institutions are described herein.

Keywords: lecture capture, recording, pedagogy

INTRODUCTION

Pedagogy and educational technology have evolved, impacting both higher education and health professions education. Lecture-based learning (LBL) has been modified so that the expectation is that active learning activities are included, and LBL may be entirely removed from the classroom when educators use pedagogy such as team based learning or flipped classrooms, which may use lecture recordings. Adopting this new pedagogy is facilitated by educational technology such as learning management systems (LMS), audio/video recording resources, and interactive classroom devices (eg, clickers). Cultural pressures such as the availability and integration of portable technology, rapid access to information, social media use, and shifts in the norms of virtual interactions in daily activities have also contributed to a shift in pharmacy education. Most recently, both the desire and need for remote access to education dramatically increased during the coronavirus pandemic, and it is only a question of which changes will remain in the future. The academy’s response included applying the concepts of design thinking to implement and test ideas to meet changed needs. There was a rapid shift to remote, asynchronous, and hybrid learning environments, which were implemented in a less-than-optimal manner. As we continue to move through the pandemic, programs have begun to review changes and approaches that should be continued in the short and long-term future.

Lecture capture (LC), the process of recording a lecture for a future use, is a method that was adopted by many in academic pharmacy during the pandemic. As LC is not well-defined in health professions education literature, the authors propose the definition: Creation of a recording for student learning using audio, video, written, or any combination of the three media formats. LC follows a six-step process and is likely different for each individual incorporating it: 1) Planning/preparation; 2) LC recording; 3) Processing/editing; 4) Posting for student use; 5) Use by students; and 6) LC archiving. These steps may not occur, may not occur in this order, and may not occur within a predetermined time span. Faculty will perform LC at different times/environments as some will record an in person lecture, and some faculty will record a lecture they capture in their office without students present. However LC is performed, educators use it for a number of purposes that can be beneficial to the students, faculty members, and the program. These include desired shifts in student engagement and performance, resulting from flexible use of class time that allows for modified instructional design, active learning, and learner centric approaches. In large part due to widespread use of LC during the pandemic, students and faculty now recognize and appreciate the value of LC. This commentary advocates that the use of LC as an
instructional delivery strategy, is no longer just a supplement to learning, but is now a standard of practice in health professions education.

**Lecture Capture Promotes Equity in Learning**

Traditionally, the expectations of health professions programs are for students to attend all classes, be on time, be attentive, submit work on time, and to leave personal and family responsibilities outside of the classroom. However, the reality is that pharmacy students, like all college students, come from all walks of life, have different obligations and needs, and have different learning styles. Students may be balancing schoolwork with a job to pay for rent or a mortgage, care for a family member or their child/children, or ensuring food is on the table. LC gives students the opportunity to acquire information at lower levels of Bloom’s taxonomy at a time that fits into their schedule, at a pace appropriate for them, and in a method that may better suit their learning needs. LC also helps to level the playing field by increasing access for students in underserved and rural locations, as well as for learners with disabilities.

Educational technology is heavily incorporated in higher education, and maybe more importantly, media technology is firmly entrenched in society. These technologies and creation of content moves quickly and so it is important for academia to remain agile in the same space in order to best serve students. Students entering pharmacy school at this time have learned via a number of different methods including distance learning (eg, literally all students due to COVID pandemic). Additionally, the amount of time spent learning from audio/video media (eg, YouTube, Ted Talks, podcasts) and nontraditional educational media competitors (eg, Khan Academy, Coursera, MasterClass), has increased significantly. Students have become accustomed to learning via media technology and regularly do so in their everyday lives. They are used to having the option to watch/listen to content at 1.5x speed, the flexibility of learning on their own schedule, and being able to readily look up information since there is an abundance of information online. The student entering pharmacy school is different today than students from five or ten years ago. Higher education and the pharmacy academy need to evolve in order to maintain a competitive advantage and to provide what current PharmD applicants and students want.

**Students Demand Lecture Capture and Believe it is Beneficial. Faculty (Mostly) Agree.**

Students appreciate that LC provides an opportunity to review unclear, complicated, or missed concepts as part of the studying process. LC facilitates studying by allowing students to navigate to specific content areas, modify playback speed, and repeat the content. Students rarely use LC as an alternative to attending class, recognizing the potential impact of pop-quizzes and other in-class assignments. Positive effects include an improved quality of notes, improved understanding of lecture content, better retention of information delivered in lectures, and enhanced learning. Additional benefits for students include independent resolution of questions on content, being able to control the pace of their own learning, and being able to pay more attention in class. Though students enjoy face-to-face interactions the most, hybrid learning modalities where students can learn at home and also in the classroom helps students retain the material. For active learning such as case-based learning, the classroom environment is still the preferred method for students.

Faculty also recognize the value of LC based on student demand for supplemental learning tools, for students who miss class, and as a flexible alternative when circumstances do not permit on-campus instruction. Faculty members who chose to not use LC suggest it is not an appropriate mode of delivery, class attendance concerns, and performance concerns. However, faculty members may also benefit from use of LC. The authors propose that the use of LC for team-based learning or flipped classrooms may be more engaging in the classroom for faculty and allow for improved interactions with students due to increased time spent in direct interactions.

**Benefits and Risks with Lecture Capture**

Meeting student wants and needs can improve student satisfaction and thus the sentiment of alumni, an important objective for all institutions. LC resources can be made available to newly graduated alumni as resources when they are studying for the North American Pharmacist Licensure Examination and Multistate Pharmacy Jurisprudence Examination. Institutions can also use LC as a back-up plan or as a component of a quality improvement program. An LC lecture can be used in place of a live lecture when faculty have another obligation or when emergencies occur. Lastly, a faculty member can receive feedback via an observation of their captured lecture, which can be viewed at any time by the reviewer, thereby incorporating quality improvement into the teaching and LC process.

LC is like any tool, though a quite flexible one, it should not be used for all situations. LC should be carefully considered during course design, development, and delivery, as there are also advantages to in person learning. Learning via traditional lecture, whether live or via LC, is at a low level of Bloom’s taxonomy and does not involve interaction with peers. Health care professional students need to work on developing higher level cognitive skills such as critical thinking,
interpersonal skills such as conflict resolution, and self-management skills such as self-awareness and restraint. LC may not be appropriate when immediate feedback for students on their understanding would be beneficial. For example, patient cases or controversial topics where students would like to express an opinion is impossible in a unidirectional lecture delivery modality such as LC. Additionally, some learners may struggle when asked to only utilize content provided via LC, such as difficulty paying attention in a non-classroom setting and less direct interaction with both faculty and content than they would otherwise demonstrate in the face-to-face setting. Lastly, LC is inappropriate as a direct replacement for live lectures when the school is not a distance learning campus and students’ expectations are for face-to-face interactions. Without thoughtful approaches such as using the principles of backwards design to tie specific learning outcomes to recorded elements, the use of LC may hinder learning or at best not enhance it.

Costs Associated with Lecture Capture

Just as every tool isn’t the same, every house is built differently and has different people living in it. Every institution has different resources, student populations, structures, and other unique circumstances, thus LC may not be an option for some faculty or institutions. Institutions that are better resourced can have automated systems in place that can assist with capture and posting of LC. They may also have personnel or entire departments specifically dedicated to LMS management, LC processing and editing, faculty and staff development on LC best practices, and LC archiving. Such measures help bear some of the faculty burden by translating them into financial costs for the institution. Institutions may also choose to maintain LC hardware in the classroom, which has additional expenditures associated with maintaining it. Costs of maintaining LC hardware in each classroom are less of an issue in the past few years as video conferencing and recording have become standard tools. As institutions develop repositories of recorded content, they must also develop processes for ensuring that material is current and updated to meet the ever-changing needs of students and technology platforms. There are also costs for retaining the audio/video recordings, which must be stored in a central location for faculty to access (eg, the “cloud”). The chosen platform for retention and storage will be institution specific and likely depend on the institution’s existing framework.

The overall costs of LC for faculty are specific to each individual and how LC is incorporated in their instruction, but the main costs are time and opportunity cost. Reworking lectures to new formats, adjusting instructional design and delivery, and learning new multimedia tools (ie, training), impact faculty time and have opportunity costs related to lost scholarly endeavors and other factors necessary for promotion and tenure. Some individuals may use simple audio recordings embedded in a slide deck while other faculty simultaneously record all instruction during class time (eg, simultaneously recording lecture slides, the class discussion, and external instructional videos or web resources). When using audio/video recordings, the instructor has the flexibility to choose when and how to record the content and whether the content needs to be edited and to what extent. This entire LC process is framed by built-in accountability for faculty with deadlines that students access materials prior to class or before examinations. An intangible cost to faculty is that possible shifts in the way faculty are evaluated can result in fear of loss, including the loss of key aspects of faculty identity, also resulting in resistance to change. Faculty duties have historically involved direct instruction, with faculty contracts, promotion, and annual evaluations based on factors including class size, time in the classroom, and teaching frequency.

CONCLUSION

Research and institutional practice have focused on developing traditional LBL and active learning infused LBL. Higher education is deeply rooted in these methods of teaching, and though so much work has been done in this area, now is the time to fully embrace other methods of pedagogy. Employee engagement and faculty resistance to change are serious factors that institutions must address when adopting LC. To address the sunk cost fallacy, past experiences and investments in maintaining an in classroom lecture environment are not good justifications for continuing existing models of pedagogy. Approaches from change management theory, including Kotter’s 8-steps, Bridges’ transition model, and the Kübler-Ross change curve, can be employed to help both faculty and students adapt. The ivory tower of academia is notoriously slow to change, but the best time to prepare for change is before it is needed and the second best time to address change is “now.” Change is always hard and it starts with an open discussion among stakeholders. Expanding beyond traditional LBL can be contentious as the methodology has been entrenched since the beginning of academia. Change is needed at multiple levels and not just by the faculty.

Pressure from accrediting bodies and shifts in expectations of best practice from professional associations can serve as change catalysts. Accreditation standards and guidance surrounding best practices of LC could identify: 1) Optimal length of LC; 2) When live versus asynchronous recordings should be used; 3) What kind of permissions should be included for downloading LC to use elsewhere (eg, accessibility and intellectual property protection); 4) Informal
methods of sharing best practices (eg, AACP forums); 5) Best methods for posting LC given various conditions (eg, LMS or YouTube); 6) Ethical and equitable use of LC following death or departure of faculty.

Institutions can also facilitate change in a number of ways. Providing specific guidance in the form of policies, procedures, or guidelines for faculty and staff can define expectations and what is appropriate or not appropriate at the institution. If more system wide change will be instituted, training on LC and tools to perform LC should also be provided. These are school specific and it will be necessary for faculty to be willing to adopt such a dramatic change in their teaching practices. Additionally, faculty will need to fully engage in all stages of the change process. This includes actively participating in any discussion on LC, contributing to guidance set out from the academy or institution, engaging in training and research, and incorporating LC best practices in their teaching.

While this commentary is based on the authors’ knowledge, experience, and opinions on the use of LC, formal guidelines are crucial for broader implementation of this pedagogical approach in pharmacy education.

REFERENCES