

ECHO360 Active Learning Platform in Health Sciences education: How, when and why to use it?

Christian Cobbold

Griffith University

Francesca Fernandez, Isabelle Lys

Australian Catholic University

Abstract

The ECHO360 Active Learning Platform (ALP) is an online active learning platform allowing the creation of interactive multimedia content for anytime student learning, with the potential for comprehensive analytics. This ALP has previously been shown to enhance student participation and engagement during in-class activities however it can be challenging to use at first. To enhance the uptake of ECHO360 ALP in and out of the classroom a simplified guide with clear instructions on the most useful aspects of the platform was developed and shared with staff, successfully creating a community of instructors. A student guide was also prepared which showcased the methods for gaining the most from its use in and out of lectures. These resources are available in the appendix.

Keywords: ECHO360, online platform, lecture capture, active learning platform, education methodology

1. Introduction

Learning in science heavily relies on past knowledge to be able to enhance this understanding. As is evident from Blooms taxonomy (Bloom, 1956), learning is progressive starting with acquisition of basic knowledge on a topic (eg. Basic heart anatomy and function), before gradual progression towards more complex concepts, such as mechanisms of heart disease; this corresponds to the next stage of SOLO Taxonomy and Perry theory “multi-structural” and “multiplicity” respectively (Biggs and Collis 1982). If a student does not have the basic knowledge, they will not be able to move onto the next stage of SOLO Taxonomy and will disengage with material (Biggs and Collis 1982). The use of online pre-class activities providing basic knowledge before face to face classes has been highly employed during the last decade however such activities can be challenging and often do not occur (Nulty, 2011). Due to the challenge presented with pre-reading class activities, providing support and tools to enhance higher order thinking skills is both topical and timely (Biggs and Collis, 1982; Bloom, 1956). Technology-enhanced learning (TEL) has been growing in popularity and use for several years as new platforms have been developed, hence helping to stimulate active student learning. The process of active learning reposes student engagement with the material, participation in the class and collaboration with his/her peers (Topping and Ehly, 1998).

The ECHO360 platform, one of the latest TEL platforms, has been shown to promote student engagement and participation during face-to-face lecture time (Shaw et al., 2015; Green and Whitburn, 2016), and has

the potential to: (1) deliver excellent learning experiences that can be achieved by providing choice in learning and having blended learning options for all students; (2) increase the uptake and use of educational technologies to allow students to learn in different environments (and receive immediate feedback from both instructors and peers); (3) devise and deliver processes to ensure consistent, rigorous and whole-of-university implementation of educational technology as measured by the timely delivery of the technologies and staff satisfaction with educational technology platform; (4) devise and deliver mechanisms to showcase educational technology good practice linked to the product and services support processes.

The overall aims of this study was to show that the development of clear instructions for ECHO360 users (students and instructors) was essential in the use and success of ECHO 360 platform for the first year students in health sciences.

2. Methods

The ECHO360 Active Learning Platform (ALP) enables academic staff to deliver lectures in a blended or flipped learning environment which promotes student engagement in the classroom. The platform contains a variety of features that can enhance active learning and engagement: (1) Question and answer: students can ask and answer questions during the lecture thus minimising the potential embarrassment of interrupting classes, and students can actively answer one another's questions thus enhancing peer learning; (2) Note taking: students can write notes next to each slide whilst watching presentations and videos, thus keeping all content in one place at a specific point in the lecture – this becomes particularly useful when reviewing a session and during revision; (3) Flags and bookmarking: a confusion flag alerts academics to content that may be confusing for students thus enabling them to explain content in a different way immediately or after the session. Students can also bookmark pages which may be a useful prompt to revisit specific content; (4) In and out of class polls: the platform has multiple polling modalities such as multiple choice questions, short answer questions, click and drag and number lists, to name but a few. This allows academics to gauge how students are performing on the fly and can indicate content that may or may not be fully understood, thus gaining rapid and effective feedback; (5) Analytics: academics can track video views, post-delivery views, asynchronous comments and feedback and students who may not be fully engaging.

This case study trialled the use of ECHO360 ALP in health science courses with large numbers of students at an Australian tertiary education University. Formative questions (polling) were inserted at key locations in Powerpoint-generated lectures using ECHO360 and students asked to provide answers live. Students could also 'flag' slides that were confusing allowing staff to provide additional resources or explanations to enhance clarity; this was done either live or after the event. Students were provided with clear instructions (Appendix 1) on how to best use the platform to their benefit such as the ability to ask questions during, or after sessions. Academics, who also received a set of instructions (Appendix 2), could then respond to these questions, thus giving both synchronous and/or asynchronous feedback to student queries.

3. Results and Discussion

Traditional lecture delivery is often didactic and unengaging for students, leading to less than ideal student learning and subsequent performance (Price and Kirkwood, 2013). The benefit of student engagement in their learning has been demonstrated over the past decade, and use of the ECHO 360 platform during lectures has the potential to promote this active learning concept (Shaw et al., 2015; Green and Whitburn, 2016).

The use of ECHO 360 provided students with a collaborative and distinct learning environment to enhance student learning, engagement and improve lecture quality. When it was used during lectures it assisted in identifying specific issues encountered by students, particularly in relation to content understanding. Quick feedback and clarification provided to students allowed immediate adjustments in response to students' difficulties and/or suggestions. This practice has been beneficial for both students, who benefit from immediate feedback and so increase their learning (Chickering and Gamson, 1987), and the teacher in being able to identify student difficulties that they were otherwise unaware of.

The possibility for students to answer questions from other students of the same cohort enhanced peer to peer collaboration, which has been shown to informally offer an effective support in student learning experience, while providing a "sense of belonging", and helping first year students adapt to an unfamiliar environment (Huijser et al., 2008). There is an upsurge of literature illustrating the benefits of supporting sessions for first year undergraduate students (McGuire, 2006; Huijser et al., 2008; Ning and Downing, 2010), and ECHO360 offers this possibility while keeping questions anonymous if desired. Altogether, this ECHO 360 platform has significantly improved student engagement, understanding and peer to peer collaboration which may benefit their learning (Thallhri, 2016).

Consistent with our observations, ECHO360 ALP has also been shown to increase student participation and engagement in class at the University of Adelaide (Adelaide), University of Canberra (Canberra, 2016) and the University of New South Wales (Medicine, 2016). Some suggested uses of the ECHO360 ALP include taking attendance, analysing learner behaviour through learning analytics and for peer instruction (ECHO360, 2015). A previous study of an older version of ECHO360 ALP termed "Learning Tools" showed that there was enhanced student-teacher relationships and student engagement in large classes (Shaw et al., 2015). Time will tell whether similar benefits are also acquired due to its integration at this establishment but early feedback from students suggests that this will be the case. The learning environment became more collaborative between student and academic staff due to feedback provision during and after class via polling, annotating slides in lecture presentations and participating in discussion boards during and after class.

5. Acknowledgement

The research was financed by Australian Catholic University, Learning and Teaching Development grant 2016.

5. References

Bloom BS, Engelhart MD, Furst EJ, Hill WH, Krathwohl DR. (1956). [Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain](#). New York: David McKay Co Inc

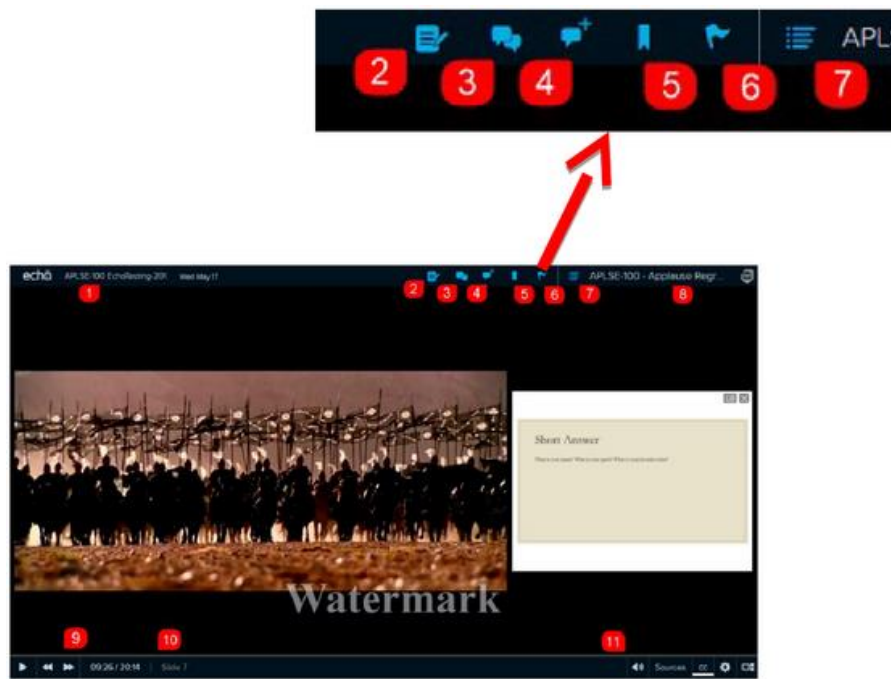
- Biggs JB, and Collis K. (1982). Evaluating the Quality of Learning: The SOLO Taxonomy (Structure of the Observed Learning Outcome). *New York: Academic Press*.
- Nulty DD. (2011). Peer and Self-Assessment in the first year of university. *Assessment and Evaluation in Higher Education*; **36**: 493-507
- Topping K, Ehly S. (1998). Peer-assisted learning. *ERIC, Institute of Education Sciences*. 371
- Shaw J, Kominko S, Terrion JL. (2015). Using LectureTools to enhance student - instructor relations and student engagement in the large class. *Research in Learning Technology*; **23**: 1-14
- Green RA, Whitburn LY. (2016). Impact of introduction of blended learning in gross anatomy on student outcomes. *Anat Sci Educ*; **9**: 422 - 30
- Price and Kirkwood. (2013). Using Technology for Teaching and Learning in Higher Education: A Critical Review of the Role of Evidence in Informing Practice. *Higher Education Research and Development*; **33**: 549-564
- Chickering AW and Gamson ZF. (1987). Seven principles for good practices in undergraduate education. *American Association for Higher Education Bulletin*; 39: 3-7
- Huijser H, Kimmins L, Evans P. (2008). Peer assisted learning in flexi-mode: Developing an online learning community. *Journal of Peer Learning*; **1**: 51–60
- McGuire SY. (2006). The impact of Supplemental Instruction on teaching students how to learn. *New Directions for Teaching and Learning*; **106**: 3-11
- Ning HK and Downing K. (2010). The impact of supplemental instruction on learning competence and academic performance. *Studies in Higher Education*; **35**: 921-939
- Thalluri J. (2016). Bridging the gap to first year health science: Early engagement enhances student satisfaction and success. *Student Success*; **7**: 37-48
- Adelaide, U. o. Active learning Platform. From: <https://www.adelaide.edu.au/technology/your-services/learning-teaching/active-learning-platform-announcement.pdf>
- Canberra, U. o. (2016). What is the Active Learning Platform and why use it? From: <http://learnonline.canberra.edu.au/mod/book/view.php?id=962725>
- Medicine, U. o. N. S. W. (2016). Technology Teaching Toolkit: ECHO360 Active Learning Platform. 2016. From: <https://teachingtools.med.unsw.edu.au/tool/echo360>
- ECHO360. (2015). ECHO360 Active learning: Student engagement and education that works for students. From: <http://echo360.com/how-it-works/engagement>
- Mather C, Caesar L, Chin C, Fei J. (2014). Class attendance and use of Echo360 in Australia: A comparison between undergraduate nursing and maritime disciplines. *Procedia - Social and Behavioural Sciences*; **174**: 2839 – 2845
- Fei J, Mather C, Elmer S, Allan C, Chin C, Chandler L. (2013). Use of Echo360 generated materials and its impact on class attendance. *30th ascilite Conference 2013 proceedings*. P288-292

Appendix

Appendix 1. Echo360 Instructions for students

We are going to trial the Echo360 Active Learning system in BIOL126 - please read the notes below which will enable you to gain the following benefits from this new lecture format:

- Flag a slide as confusing so staff can respond to this
 - Take notes next to the lecture slides (your notes remain available while you have access to the unit)
 - Bookmark important slides for revision
 - Ask questions about a slide (you can also answer questions with your peers)
 - Answer interactive questions the lecturer has prepared
-
1. Bring a computer, tablet or smart phone to your lecture
 2. Log into LEO and then BIOL126
 3. Click on Lecture Recordings; this should open the ECHO360.org website with lecture recordings preloaded
 4. The green 'play' button is the recording. The interactive presentation where you can ask questions, give feedback or answer MCQ questions is shown by a green 'screen'
 5. Press the green screen of the relevant session (date and time) –and then press 'view'
 6. You now have the slides in front of you; you can move through these 'live' as the presenter clicks from one slide to another. Alternatively you can work through these slides in your own time
 7. You can make posts, ask questions or start discussions on each slide, therefore giving staff the opportunity to see where you may be struggling. Other students are also able to respond to your questions
 8. Staff will respond to any questions posted here for 1 week after the lecture was delivered so please use this opportunity to address areas that are confusing you
 9. What can you see when you open up the lecture on ECHO360, and what does it mean?



2 = *Notes*: open this to take notes in class. Each entry is tagged to the current slide

3 = *Conversation bubble*: opens a discussion panel allowing you to view any questions or comments others may have entered and to respond or ask your own questions

4 = *Conversation bubble with plus sign*: opens the discussion panel but with a new question entry box for input; if relevant, please select 'reference class content' so your question is linked to that slide. You can also post anonymously if you wish

5 = *Bookmark*: use this to bookmark a slide; this will appear in your study guide so you can return to the location and view it as necessary

6 = *Flag*: use this to mark any content you find confusing

7 = *List*: returns you to the list of lectures/recordings for the unit

Appendix 2. Echo360 Instructions for staff

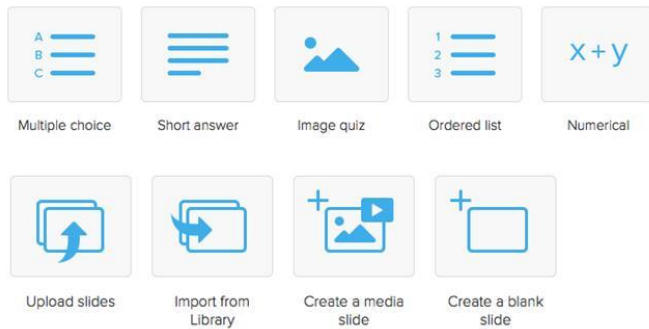
Echo360 ALP is a suite of add-ons designed to help academics engage students and includes video, engagement and analytic tools.

Video tools: enable lecture recording (Lecture capture), recording from your desktop or laptop (Personal capture) or from a mobile device (Mobile capture).

Engagement tools: During your lecture presentation on Echo360 you are able to engage students with the addition of media slides or activities, for example polling activities of MCQs, SAQs, images, or numerical quizzes. Students are also able to start and/or respond to discussion points, make contextual notes and provide confusion alerts (eg. Students may alert you to a confusing slide).

How do I use ECHO360 to engage students?

Slides can be created as usual in PowerPoint and uploaded into your Echo360 library where you can add engagement tools to your slide images. Alternatively, a tool called the ribbon (see below) can be downloaded and added to your PowerPoint allowing you to add these features from within PowerPoint – this can then be uploaded to your library. Once you have uploaded your slides you can add activities or more slides.



The ECHO360 ribbon allows you to:

- Prepare ECHO360 interactive slides in PowerPoint
- Upload your presentation to ECHO360 with a single button (or update it if you change the PowerPoint)
- Use PowerPoint to show your presentation in the lecture which allows you to use all PowerPoint features (eg. Transitions, embeds, links etc) along with the ECHO360 interactive slides to gain student feedback

How do I create my PowerPoint using the ribbon?

1. First you need to get the ribbon
2. Log into LEO and then the unit you want to use ECHO360 functionality
3. Click on Lecture Recording; this should open the ECHO360.org website with lecture recordings preloaded
4. Click on the cogwheel in the top right corner, click download and then download the version appropriate to your computer (usually 32 bit). Instructions are found at:
http://help.echo360.org/#t=Instructor_Guide%2FIGTopics%2FWorking_with_Slides%2FUsing_the_PowerPoint_Ribbon.htm
5. [Once the ECHO ribbon is installed into PowerPoint you need to log in \(top left hand side in PowerPoint\); use your ACU email address and create a password](#)
6. [You can now add questions \(eg. MCQs\) using the 'add activity' tab into your already prepared PowerPoint presentation](#)
7. [When finished, click 'publish' and follow the instructions to upload onto LEO \(note that the quality is not as good using the 'publish' route in PowerPoint as it is uploading directly via the Echo360 website; see below\)](#)

How do I upload my powerpoint presentation NOT using the ribbon?

1. Log into LEO and then the unit you want to use Echo360 functionality
2. Click on Lecture Recording; this should open the Echo360.org website with lecture recordings preloaded
3. Press the blue 'plus' button
4. You can now choose to upload a file, import from your library or create a new presentation
5. If you want to upload a file (the most likely scenario) please click 'upload' and then drag your Powerpoint across
6. It is now ready for you to add questions if required

How can this help my students?

- You can add questions which students can respond to live
- Students can use their smart phone, tablet or laptop to:
 - Flag a slide as confusing so you can respond to this
 - Take notes next to the lecture slides
 - Bookmark important slides for revision
 - Ask questions about a slide or respond to their peers queries
 - Answer interactive questions you have prepared
 - You can use the analytics to see how your students are interacting with the learning materials (eg. which slides were viewed or were confusing for students, which students engaged with your lecture)

Why might you not use Echo360 to deliver your lectures?

- If you need to fade in diagrams, flow charts, etc at different times delivery via Echo360 may not be for you; the version on Echo360 is a single image and this functionality is absent. Think of each slide having been converted to a single image file. However, you can still upload your file for students to use in Echo360 whilst delivering your PowerPoint at the same time; this allows the best of both Worlds and this is recommended.
- The internet is down; your Echo360 presentations are saved in the cloud. **Always take a backup of your presentation on a USB stick**

Issues we have discovered

- When you upload your PowerPoint sometimes it will not format correctly – this is frequently observed with tables and when text overlays images (for example this text may disappear); therefore please ensure you check your slides before giving access to students. If you upload your file as a PDF file instead of a PowerPoint this issue will be resolved.
- You can't see the 'student view' so you just have to presume it will work for them!!

Useful links and webpages:

- Instructions on how to use the powerpoint ribbon
http://help.echo360.org/#t=Instructor_Guide%2FIGTopics%2FWorking_with_Slides%2FUsing_the_PowerPoint_Ribbon.htm
- [Creating a password for direct Echo360 login](http://help.echo360.org/#t=Creating_or_Changing_Your_Echo360_Password.htm%23Create_direct_password)
http://help.echo360.org/#t=Creating_or_Changing_Your_Echo360_Password.htm%23Create_direct_password

Copyright Disclaimer

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).