

Lesson Redesign Using m-learning
OLTD 508
Kym Toporowski

Web tool used: Aurasma found at <https://www.aurasma.com/>

Context

I teach in a face to face, brick and mortar high school in Abbotsford. I teach Science classes (Sc. 9, Bio 11 and Bio 12) to a diverse group of students in a rather affluent area of town. Most students (approximately 25/30 in any given class) have a smartphone that they bring daily to school. Although my students have access to a personal device, many students do not have a data plan to support an Internet connection. My school district is gradually implementing a BYOD program to encourage students to use their smartphones in the classroom. In doing so, students are able to access the Wi-Fi in the building and thereby, allow students to access the Internet without having to purchase a data plan.

I came across the app, Aurasma, while investigating augmented reality in OLTD 509 and thought that this tool would work well in my classroom. Aurasma allows the user to bring object or images 'alive' by linking them to video, images or other forms of media. Students download this free app to their phones. Once the app is launched, they simply point their camera to the object that has had an Aura created for it and the app takes the student to the desired multimedia that is attached to that object.

Aurasma also interested me for another reason. My school has very few computers that are accessible to students and those that are in the labs (library and a designated computer lab) that are difficult to slot time for continuous use because many teachers at my school are starting to implement technology into their teaching practices. While in OLTD 511, Blended Learning, I was intrigued by the station rotation model of blended learning. However, given my current situation and budget restraints at my school, obtaining additional computers/tablets for my classroom is not possible. Nonetheless, students themselves are holding mini computers in their hands in form of a smartphone. Using the app, Aurasma, would allow my students to connect and interact with Web material at a self-paced and individualized manner that would otherwise be unachievable.

Lesson Prior to using m-learning in the classroom

Lesson Topic- Microscopes

Learning Outcomes

- Students will learn about the different kinds and purpose of the various types of microscopes (light, dissection, scanning electron and transmission microscope)

- Students will know the parts and functions of a light microscope
- Students will learn how to take care and carry the microscope
- Students will learn how to focus a specimen on low, medium and high power

Previous Lesson Prior to Implementing m-learning

Before the use of m-learning, the outcomes for this lesson would be achieved by having me stand at the front of the classroom and deliver the information in a lecture to my students. To learn the parts and functions of the microscope, students would use their textbook as a reference to fill in a worksheet. The worksheet has an image of a microscope with blanks for the parts of the microscope and then a chart to fill in the functions of the various parts. For care, focusing and types of microscopes, the students would receive several note pages. As a class, we would cover the material by having them fill in closed notes. I typically use videos to show the various types of microscopes and the steps used to focus the microscope to help augment the lesson with some technology. The follow up lesson would include a lab where the students would use the microscopes to focus on a variety of different specimens.

Worksheets and Supplemental Material

Included as a PDF

Lesson with m-learning

To implement m-learning in my class, I found an augmented reality, web tool called Aurasma. I chose this tool for a couple of different reasons. Firstly, it is a free app that students can download onto their smartphones (Android or Apple). The app allows students, once the app is open, to point their cameras at specific objects that act like 'targets'. The 'targets' are then linked to videos, images, keys or any other web based materials. The instructor uses the Aurasma app or the Web based version of the program to create an online lesson by making the 'target' link to any materials that would be needed to complete the lesson.

The second reason why I chose this too is because I think it will make the lesson more dynamic than using a tool such as QR codes. Working in a Science lab, there are lots of opportunities to tie the objects/models into the lesson. Using the Aurasma tool, will allow students to receive a personalized, self-paced lesson while they have the object in front of them. Often when I give instructions from the front of the class on how to use a microscope or a triple beam balance, it is difficult to sustain everyone's attention for the entire class. Often instructions need to be repeated and students are left with questions. Hopefully, with the students having the instrument in their hands and an instructional video that they can pause or review, they will feel more confident whilst being more proficient at using the Science equipment.

Below is my plan to take my traditional classroom lesson and change it to m-learning. For each step of the lesson, the target is what the students would point their phones at so as to launch

the Web material lesson. The video is either a preexisting YouTube video or a screen cast made by myself that matches the intended learning outcome for a specific part of the lesson. Students are then given a task which demonstrates their learning and at the end of the lesson, students are assessed.

a. The three different types of microscopes (20min)

Target/object in the classroom: image of TEM from <http://jiam.utk.edu/facilities/microscopy/tem/index.php>

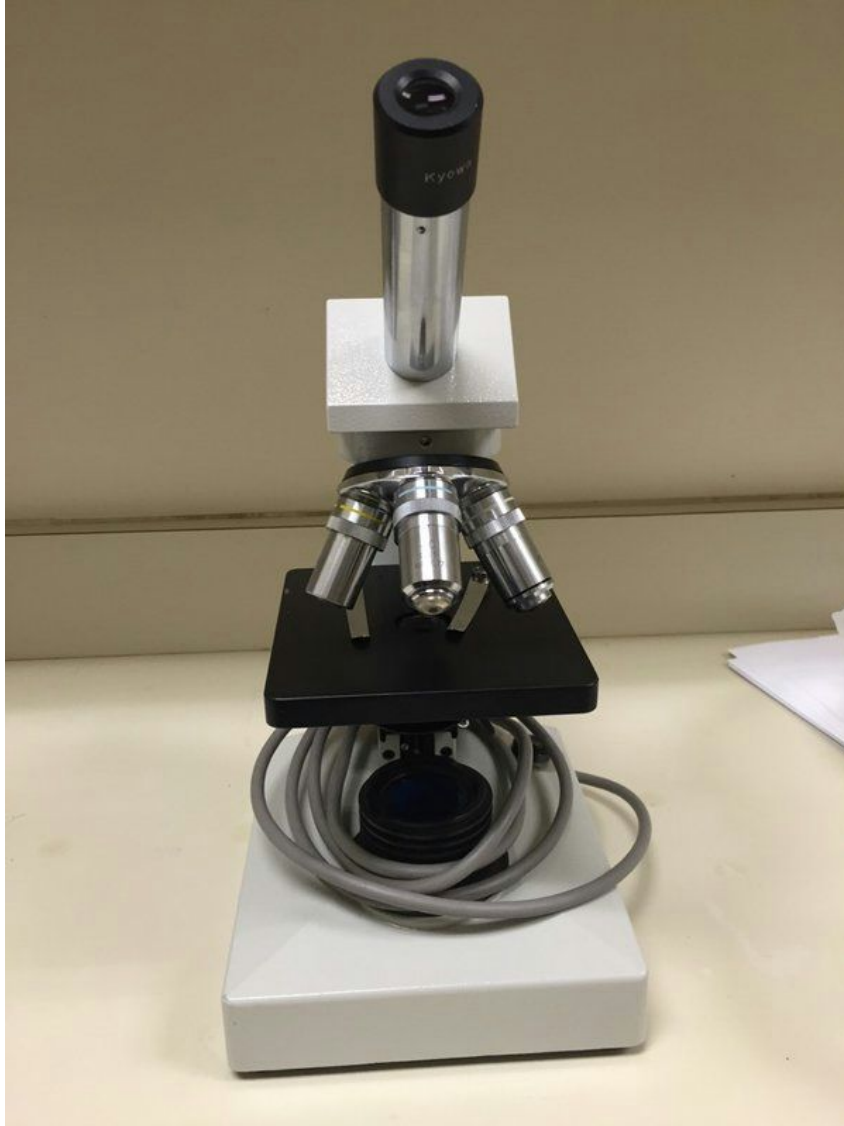


Target is linked to a video: various microscopes and the images they make <https://www.youtube.com/watch?v=b4WOsYktdn4>

StudentTask: respond to the questions on the board; what are the 3 types of microscopes, how does each one work, what are the advantages and disadvantages of each

b. Microscope Parts and functions (40min)

Target/object in the classroom: light microscope



Target is linked to a video: parts and functions

<https://www.youtube.com/watch?v=HOHf7LauOys>

Student task: students go to <http://www.biologycorner.com/microquiz/> and try the online quiz for the parts of the microscopes

c. Microscope care and focusing (20min)

Target/object in the classroom: microscope with dust cover on from

<https://biofrontiers.colorado.edu/core-facilities/microscopy-core/user-resources-1/confocal-shutdown/cover-microscope/view>



Target is linked to a video: care of micro and focusing
<https://www.youtube.com/watch?v=p3NOIDHE2Dk>

Student task: students will show me how to focus a slide their microscope prior to putting it on the cart

Assessment 1 (20min)

Target/object in the classroom: student emails a picture taken with a smartphone of a focused, wet mount slide

Student task: focuses prepared slide and takes a picture with a smartphone

Assessment 2 (30min)

Target/object in the classroom: a blank quiz which is linked to a Google forms that the students answers and fills in

Student task : takes microscope quiz and then checks answers

Quinn's 4C's (compute, content, communicate, capture)

Compute

Students are taking in information presented in the videos and repurposing it by filling in diagrams, learning lab skills (taking care of and focusing the microscope)

Content

Students are interacting with several different videos and documents throughout the entire lesson

Communicate

Students will be working in collaborative groups in the lab and will be sending me a photo of their focuses slide which then can be shared on a school website or via twitter.

Students will also communicate their understanding of the parts and functions of the microscope by completing a Google form

Capture

Students are using the camera on their mobile device to take a picture of their focused slide then send it via email to the teacher

Advantages and disadvantages

Changing this lesson from a traditional lecture style to one that implements mlearning will have a variety of advantages and disadvantages. On a positive note, using Aurasma will allow students to progress through the lesson at their own pace. For a large portion of this lesson, students are navigating through several different videos. If they understand the material, they can progress from one video to the next independently; however, if a student is struggling, they can always pause or rewind the video. Another advantage of using m-learning is that the instructor is freed up to circulate around the classroom to offer assistance and guidance. Without the use of m-learning, I would typically be standing at the front of the classroom and delivering material. Aurasma allows students to explore the learning outcomes independently and the teacher then moves to the guide on the side. Lastly, using m-learning allows students to implement technology in the classroom by providing a 1:1 ratio of device to student. In the best case scenario, all students will bring their smartphones to class and will have access to the school's Wi-Fi. If this is the case, then everyone will be able to engage in a more meaningful experience as they learn how to use the microscope with the instrument in front of them and an individualized lesson from their smartphone.

Changing over to using Aurasma to create augmented reality lessons will also have its downsides. Primarily, issues might arise if students do not have daily access to their smartphones. In my current classes of Senior Biology, every student does have a phone, but not everyone has a data plan that would allow them to use the Internet. In my district, we do have a BYOD policy that allows students to bring in their own device and then they are set up on the school's Wi-Fi with the assistance of our district's technical support staff. Although this a solution to gaining Internet access for the entire class, it can be a slow and lengthy process that might take upwards of a couple of weeks to sort out. We also have a class set of iPads that could be signed out from the library if a student does not have his/her phone to use in class. Another hurdle is the amount of time it would take to recreate lessons to transition them into Web based lessons. The Web tool, Aurasma, is not difficult to use, but it does take time to change everything over to this new format. Lastly, as everyone knows when dealing with technology, unforeseen glitches can occur at any time. As an experienced teacher, it's not difficult to change or adapt on the fly. Regardless to the issues, implementing m-learning and trying this lesson with my students, far outway the downfalls.