DIGITAL LEARNING INITIATIVE

MAY 8, 2020 WEBINAR

Virtual Labs

The webinar will begin at 11:00 a.m.

Use the chat window if you have questions during the webinar

Your microphone has been muted (please do not enable video)

If you experience any issues please email:

epcallesis@northcarolina.edu

DIGITAL LEARNING INITIATIVE

WELCOME TO THE DIGITAL LEARNING INITIATIVE WEBINAR

James Garner Ptaszynski, Ph.D.
Vice President, Digital Learning
jimp@northcarolina.edu

May 8, 2020

DIGITAL LEARNING INITIATIVE

OVERVIEW OF VIRTUAL LABS

DIGITAL LEARNING INITIATIVE

In the vast shift to online teaching caused by the new coronavirus, one of the most common questions raised was: But what about lab classes? Is it even possible to move a lab course quickly online and still meet your learning objectives?

https://www.chronicle.com/article/how-to-quickly-and-safely/248261

DIGITAL LEARNING INITIATIVE

How to Quickly (and Safely) Move a Lab Course Online

By Heather R. Taft | MARCH 17, 2020

Getty Images

https://www.chronicle.com/article/how-to-quickly-and-safely/248261

UC Berkeley

Berkeley News Research People Campus & community

CAMPUS & COMMUNITY, CAMPUS NEWS, WORK LIFE

Coronavirus forces hands-on learning to go online and hands-off

By Robert Sanders, Media relations | MARCH 23, 2020

Tweet Share 463 Email Print

L21: Discussion Worksheet

Consider a galvanic cell consisting of the following two half-cells:

$Cu^{2+} + 2e^- \rightarrow Cu$ $E° = +0.34$ V

$Ni^{2+} + 2e^- \rightarrow Ni$ $E° = -0.25$ V

1. Which species will be oxidized and which will be reduced?

OXIDIZED: Ni

REDUCED: Cu^{2+}

2. What will you observe as the galvanic cell discharges?
a. the size of the copper electrode decreases
b. the size of the nickel electrode increases
c. the Cu^{2+} solution becomes darker blue
d. the Ni^{2+} solution becomes darker green

Calculate the cell potential (ΔE_{cell}) assuming the concentration of Cu^{2+} is 2.0 M and the concentration of Ni^{2+} is 1.0 M.

Andy Lin (top right) interacting with GSI colleagues as he prepares for online 'virtual' office hours using Zoom. (UC Berkeley image by Andy Lin)

https://news.berkeley.edu/2020/03/23/coronavirus-forces-hands-on-learning-to-go-online-and-hands-off/

INSIDE HIGHER ED

How to Rethink Science Lab Classes

John D. Loike and Marian Stoltz-Loike have identified five objectives for online labs that are critical to any science laboratory experience and lend themselves well to online teaching.

By John D. Loike and Marian Stoltz-Loike // April 8, 2020 16 COMMENTS

The rapid transition from college classrooms to online classes in the wake of COVID-19 has given faculty members little to no time for planning and preparation. Challenging pedagogical issues must still be addressed, particularly regarding the best way to educate undergraduates in online science laboratory courses. Science labs at the undergraduate level can be taught effectively online, however, with some modifications -- and some of these modifications may be valuable even after academic life returns to normal.

ISTOCKPHOTO.COM/VECTORCOOKIES

Touro College, with two decades of experience in online education, routinely provides rigorous training to faculty who teach our asynchronous online courses. During this current transition, we have used that expertise to help

https://www.insidehighered.com/advice/2020/04/08/five-objectives-online-science-labs-lend-themselves-virtual-teaching-opinion

DIGITAL LEARNING INITIATIVE

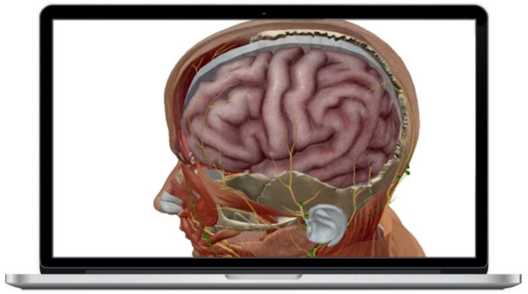
- **Instructor Created Labs**
- **Lab Kits**
- **Virtual Labs**
- **Simulations**

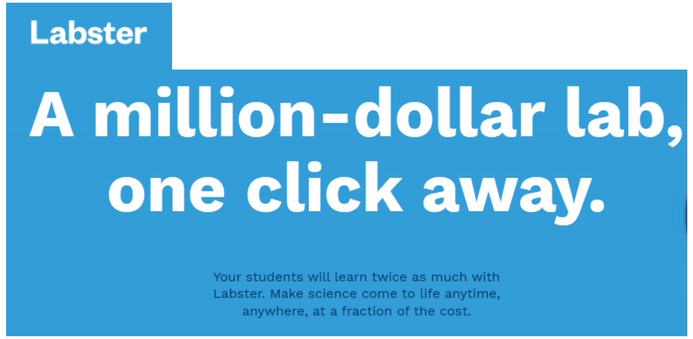
eScience Labs

hhmi | BioInteractive

PhET INTERACTIVE SIMULATIONS

Pearson





https://www.chronicle.com/article/how-to-quickly-and-safely/248261

DIGITAL LEARNING INITIATIVE

THE UNIVERSITY OF NORTH CAROLINA SYSTEM
DIGITAL LEARNING INITIATIVE

UNC System Digital Learning Webinar

Special Edition: Virtual Labs Landscape

May 8, 2020, 11:00 AM – 12:00 PM

Login: https://mcnc.zoom.us/j/943706306
Phone: (646) 558-8656 **ID:** 943 706 306

11:15 AM – 11:25 AM
Labster and McGraw-Hill Connect Virtual Labs

Appalachian State University

Sarah Arrington, Ph.D.
Program Director / Lecturer, General Biology

Tom Van Gilder
Director, Learning Technology Services, Center for Academic Excellence

11:25AM – 11:35 AM
Campus Developed Virtual Labs

NC STATE UNIVERSITY DISTANCE EDUCATION AND LEARNING TECHNOLOGY APPLICATIONS

Cathi Dunnagan
Senior Instructional Designer

John Gordon
Associate Director, Instructional Media Productions

David Howard
Director of Instructional Innovation Services

David Tredwell
Team Lead, Multimedia Development

11:35 AM – 11:45 AM
Commercial Products and Publisher Offerings

Bill Prensky
Chief Executive Officer
CNDG

Ani Simon-Hart
Head of Operations
CNDG

Benoit Buyse
Head of Product Development and Innovation
CNDG

Dolly Womack
Executive Director, Strategic Partnerships
Pearson

DIGITAL LEARNING INITIATIVE

- The **problem you were trying to solve** (e.g.. give students a lab experience online when they could not physically go to a lab).
- The **alternatives you considered** – did you come up with any check-lists or rubrics when considering solutions or commercial products before rolling your own?
- Any **changes** you had to make in the f2f learning objectives in order to move from a physical class to online?
- Overall, **how difficult** was it to create these virtual labs and was the effort worth it? What is the **cost**?
- Other **lessons learned**?

DIGITAL LEARNING INITIATIVE

VIRTUAL LAB OVERVIEW

Presented by Sarah Arrington, Ph.D. & Tom Van Gilder, Director LTS
Appalachian State University

DIGITAL LEARNING INITIATIVE

WHY GO VIRTUAL?

1. To provide greater access to general education laboratory courses

2. To supplement in-class laboratory experiences

3. To allow development of hybrid lab courses to provide better on-campus space utilization

4. To provide continuity of instruction when access to campus is not accessible or for circumstantial reasons

Virtual Labs ≠ Hands-on Experience

OPTIONS EXPLORED

Labster

- Pilot: Fall 2019 – Spring 2020
- F19: ~290 Students
- Sp20: ~290 Students
- Majors & Non-Majors Biology
- 6 Virtual Lab Simulations
- Total Cost: $ 17,472 (pilot)

<u>To Continue with Labster</u>

- $65 - $85/student
- 6 lab simulations

McGraw Hill connect

- Covid: Sp20 last 8 weeks
- Sp20: ~588 Students
- Majors & Non-Majors Biology
- 6 Virtual Lab Simulations
- Total Cost: $ 0 (pilot)

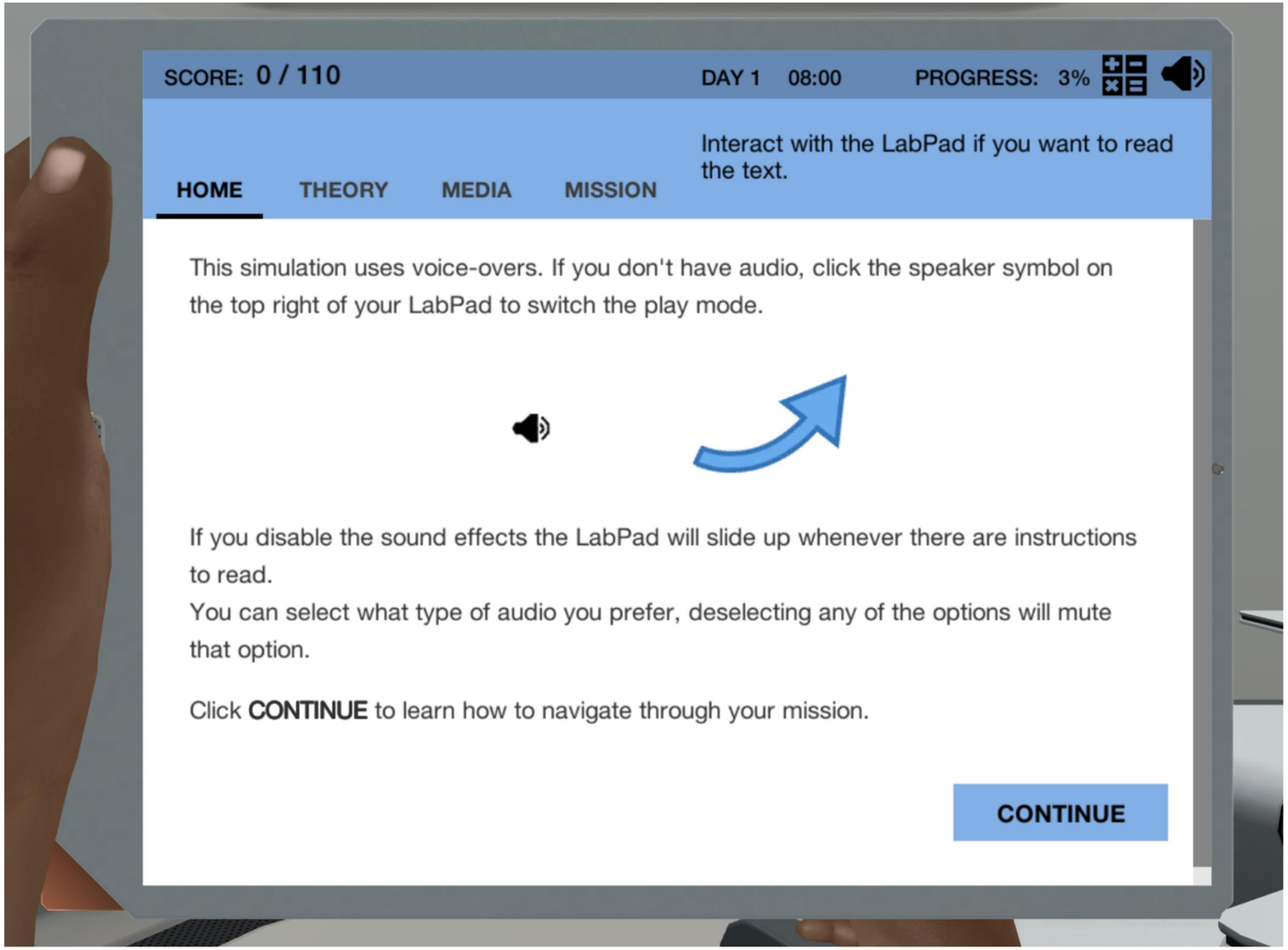
<u>To Continue with Connect</u>

- $60/student – part of textbook rental program
- Unlimited lab simulations

DIGITAL LEARNING INITIATIVE

Labster DEMO

At the start of each lab, students are provided instructions about how Labster simulations work. They are given the option to turn off the narration.



DIGITAL LEARNING INITIATIVE

Labster DEMO

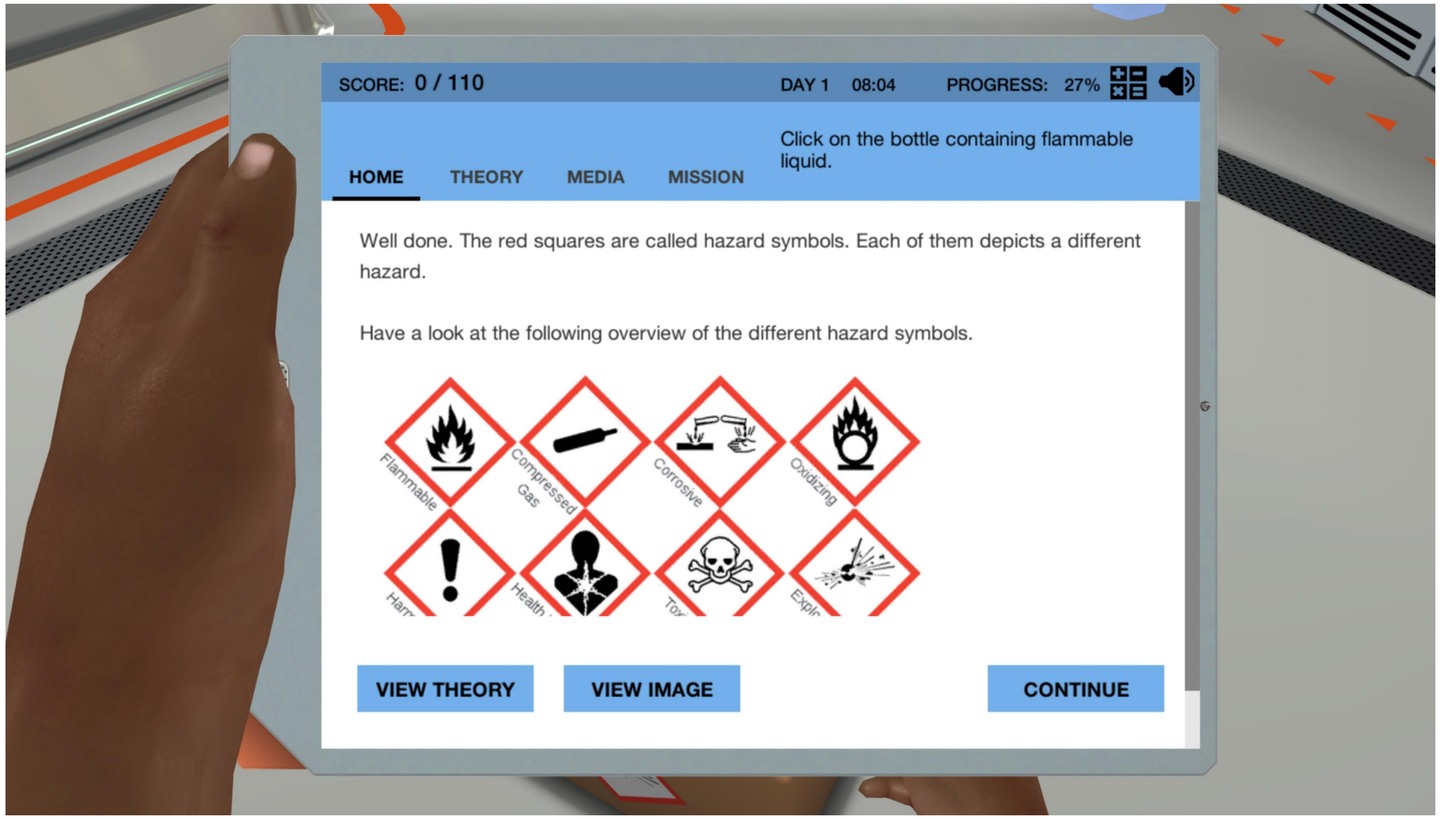
Excellent graphics that allow students to navigate around the lab.

The instructions of what to do are shown in the bottom left corner as well as being verbally expressed by the narrator.

DIGITAL LEARNING INITIATIVE

Labster DEMO

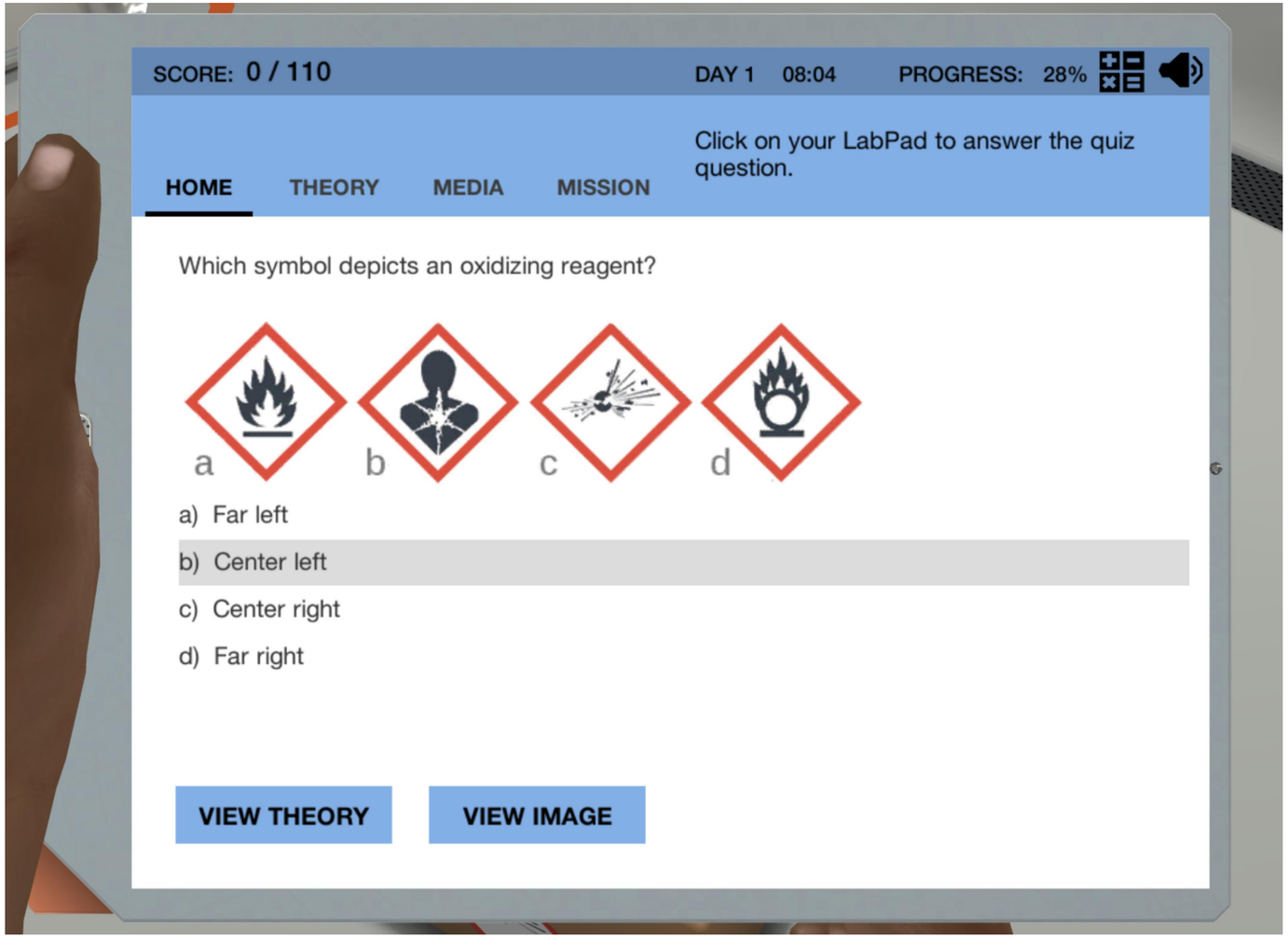
Students are introduced to real-world applications, such as the GHS labeling system.



DIGITAL LEARNING INITIATIVE

Labster DEMO

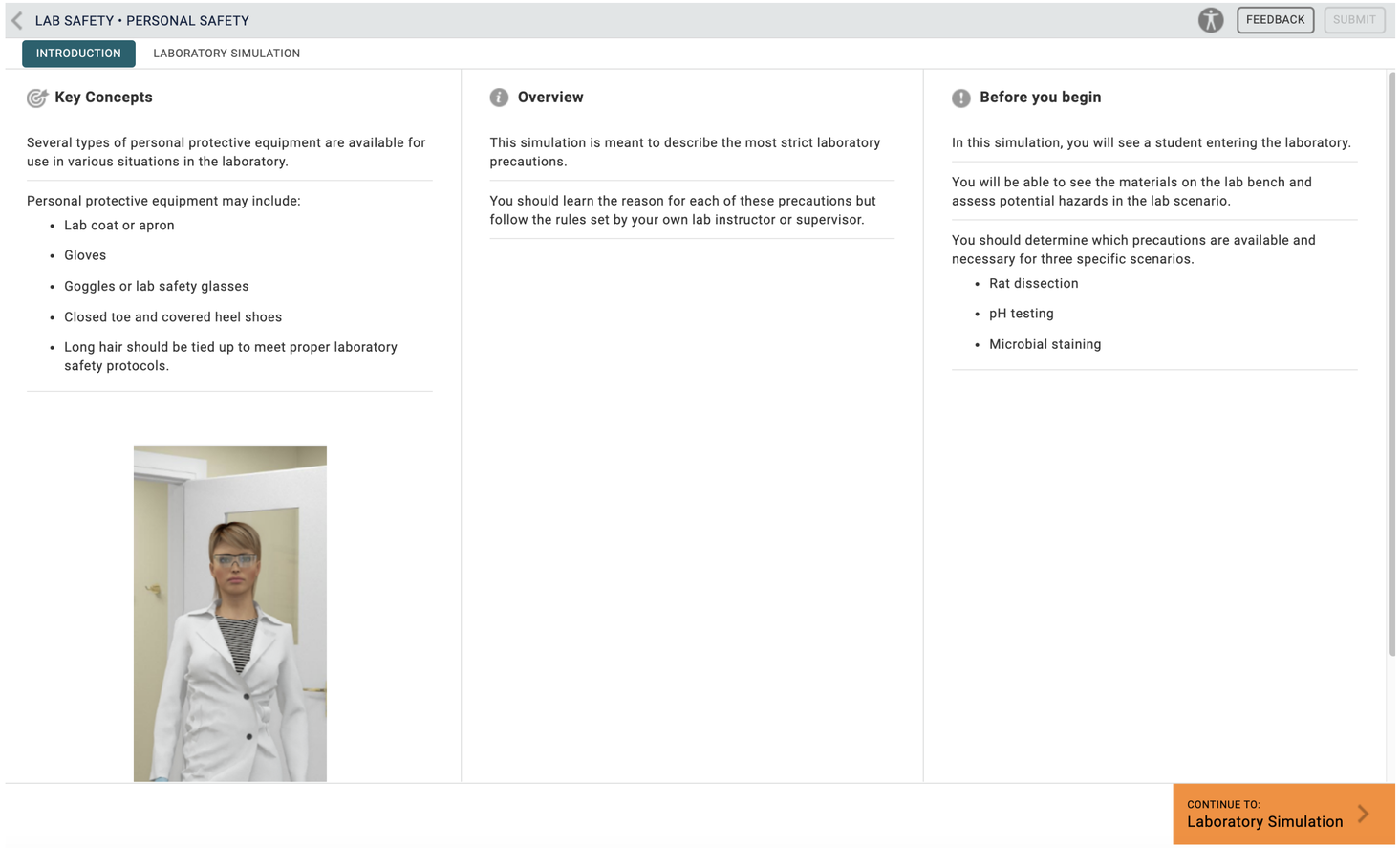
Periodically throughout the simulation students are presented with questions to check their understanding. These scores can be recorded in your LMS grade book.



DIGITAL LEARNING INITIATIVE

Mc Graw Hill connect DEMO

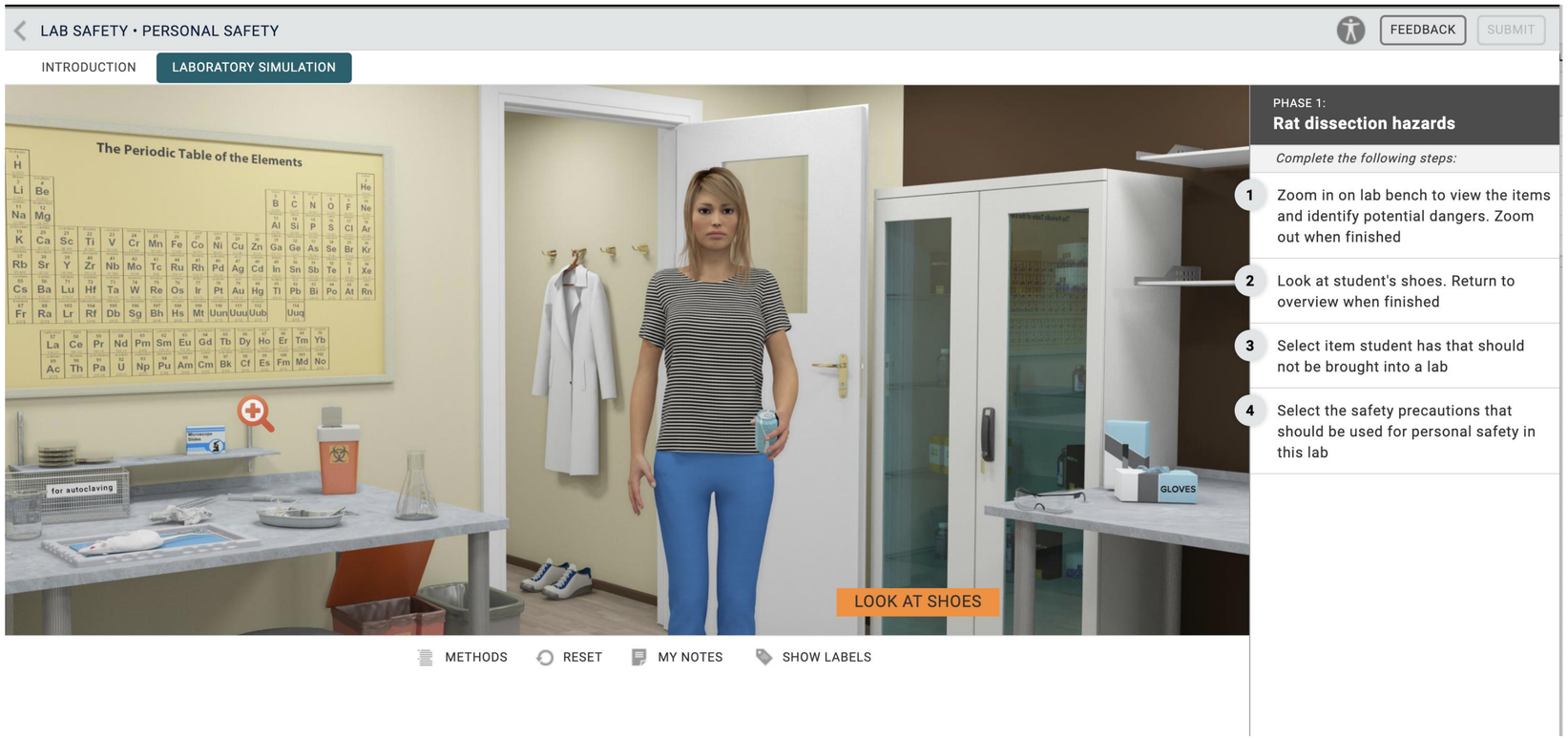
Each lab starts with an overview of what will be covered along with key concepts that they will need to know.



DIGITAL LEARNING INITIATIVE

connect DEMO

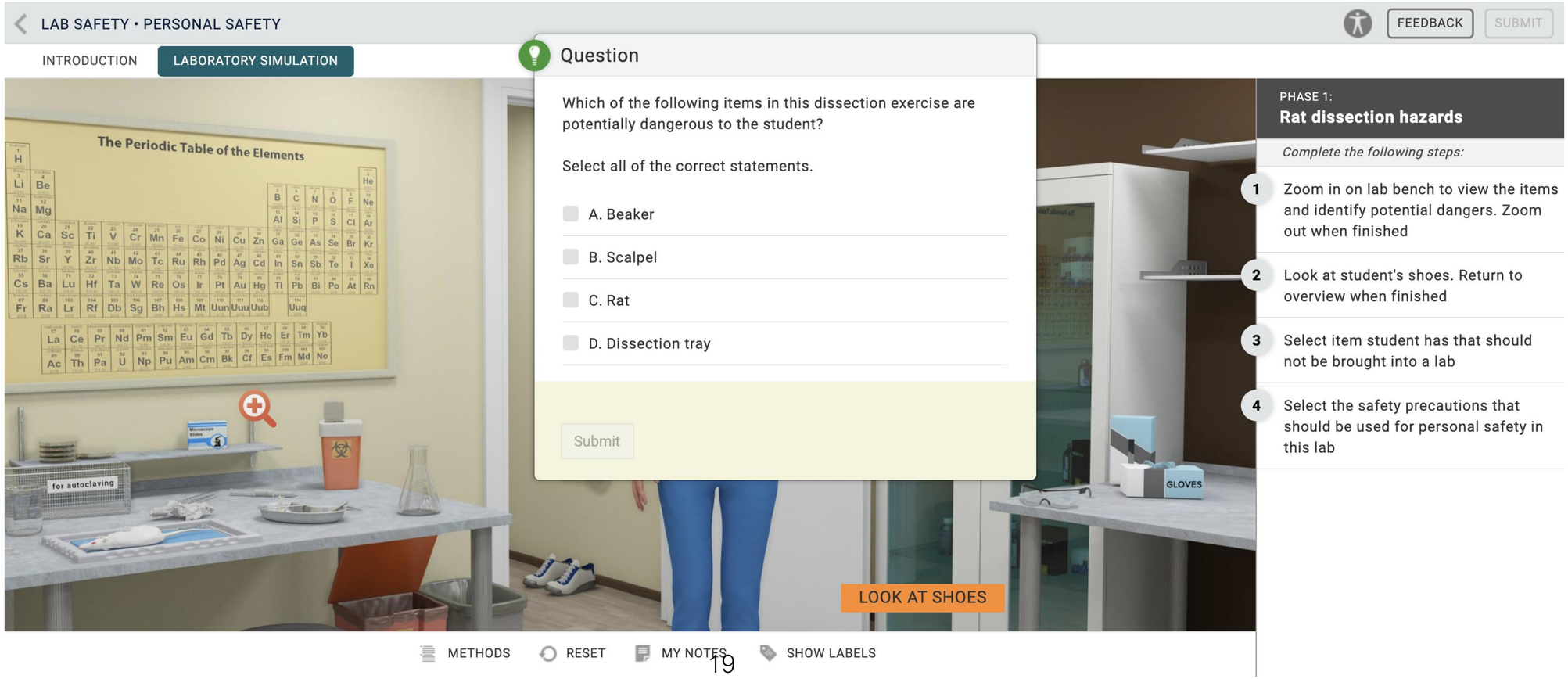
Students are guides through the exercises, referred to as phases, by the navigation panel on the right.



DIGITAL LEARNING INITIATIVE

connect DEMO

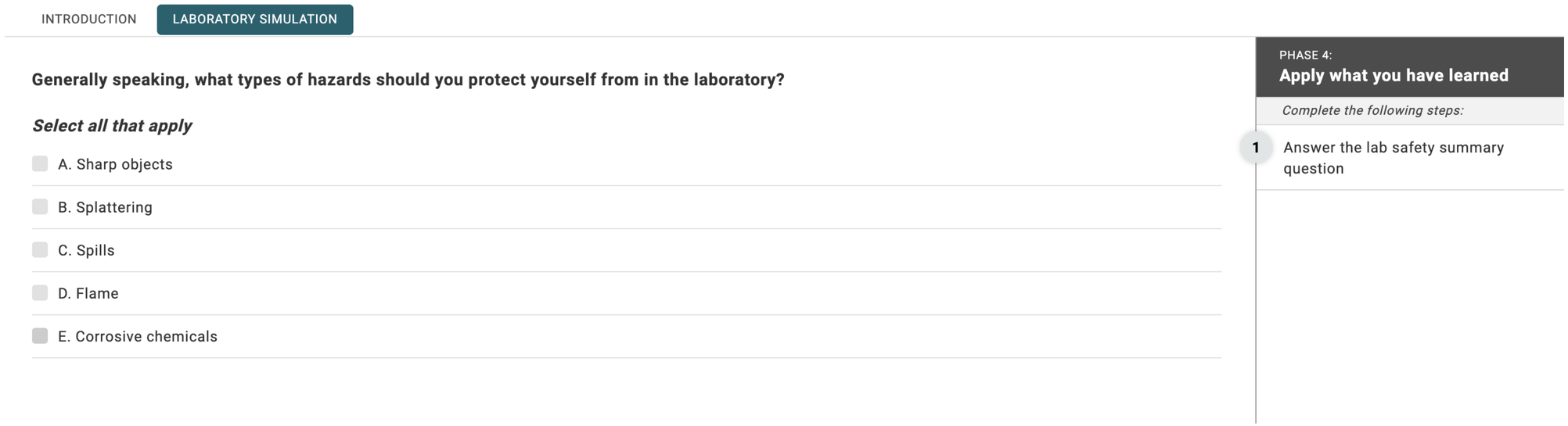
Frequently throughout the simulation students are asked questions about the lab they are performing. They cannot advance until they get the answer correct.



DIGITAL LEARNING INITIATIVE

Mc Graw Hill connect DEMO

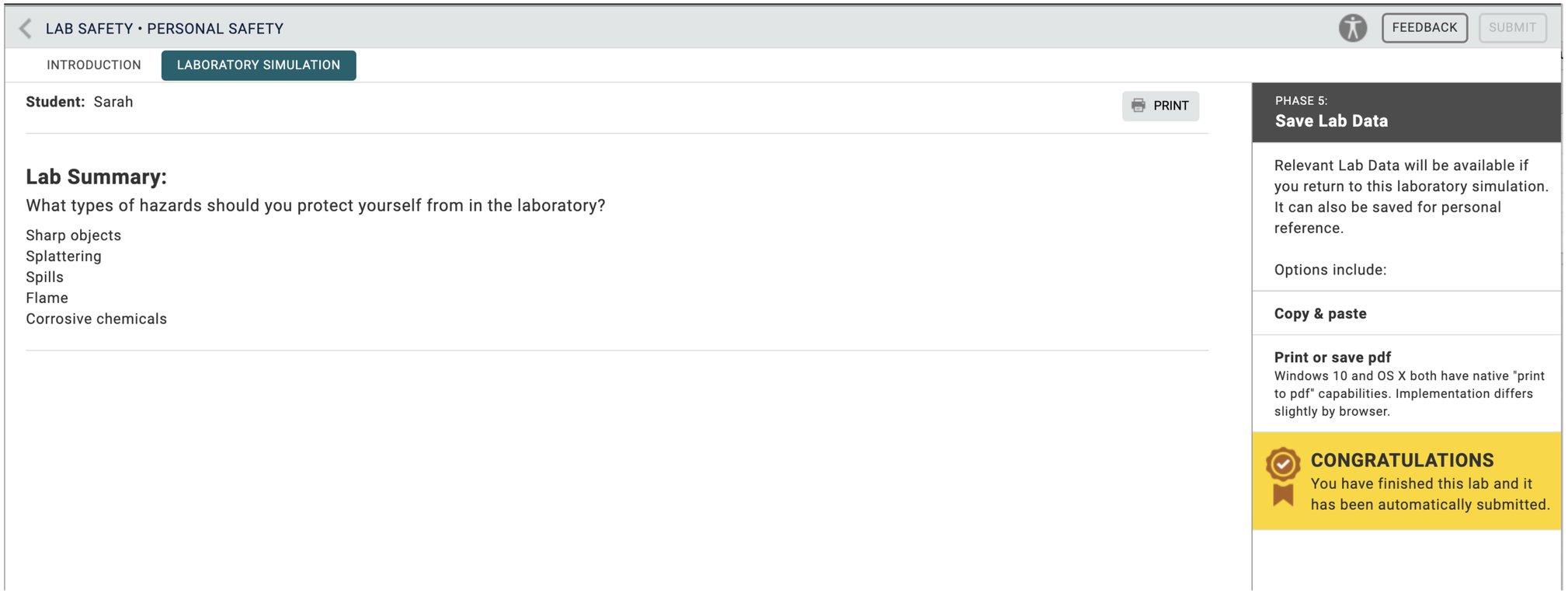
At the end of the simulation, learners are asked questions that require them to apply what they have learned.



DIGITAL LEARNING INITIATIVE

Mc Graw Hill connect DEMO

The last phase of each simulation provides a summary of what was covered, and will include any lab notes, graphs, and data collected throughout the simulation.

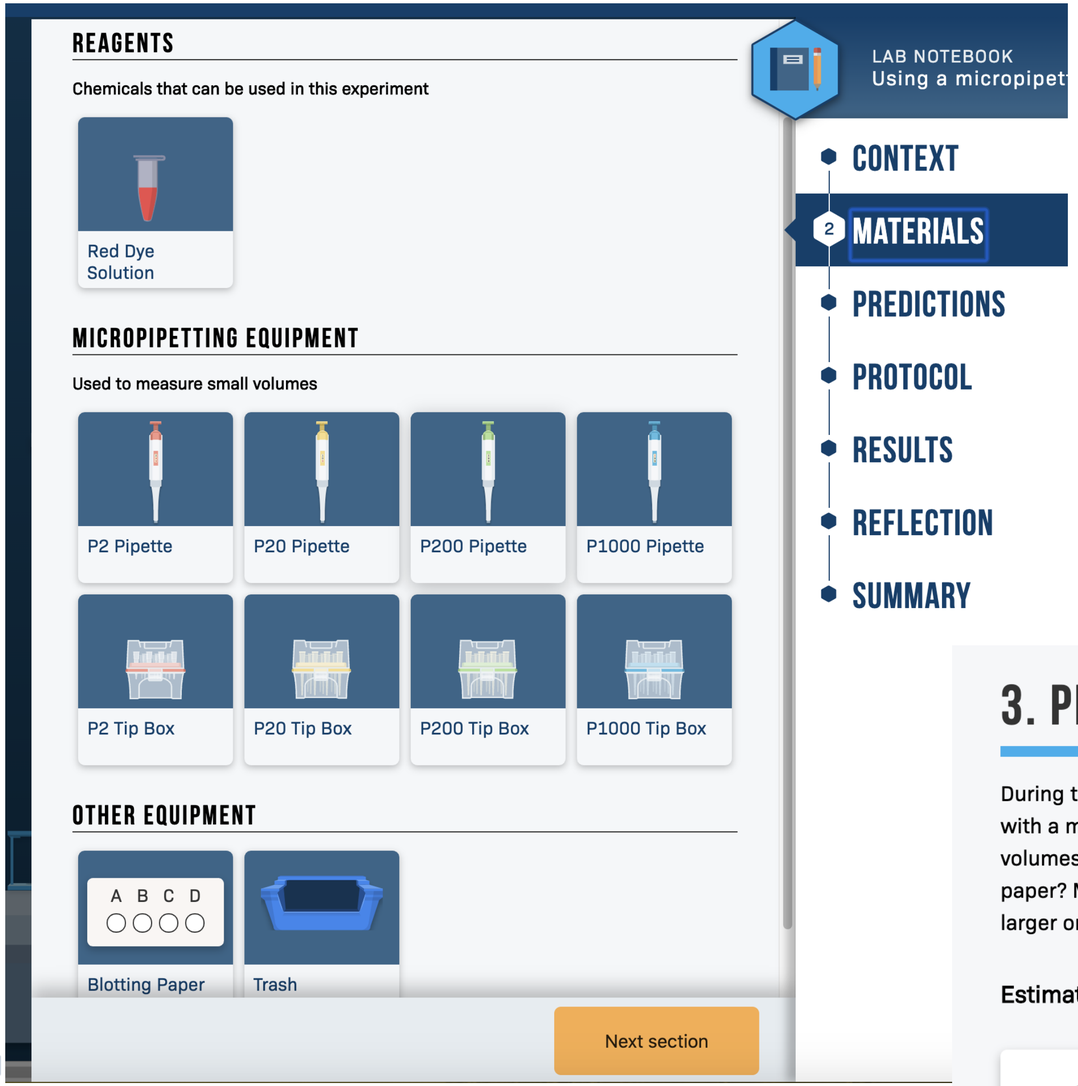


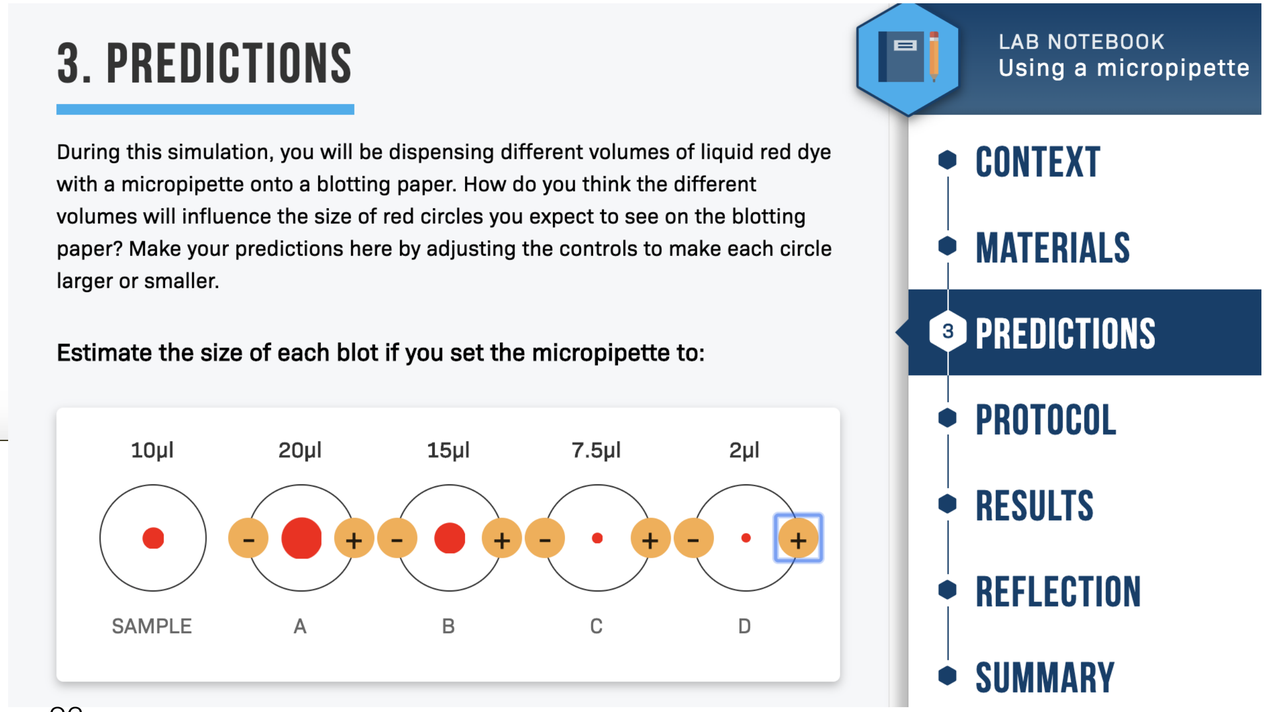
DIGITAL LEARNING INITIATIVE

ADDITIONAL RESOURCES: OPEN SOURCE

DIGITAL LEARNING INITIATIVE

ADDITIONAL RESOURCES: OPEN SOURCE





DIGITAL LEARNING INITIATIVE

ADDITIONAL RESOURCES: OPEN SOURCE

HOW TO DECIDE WHAT TO GO WITH

1. Who is your audience?

2. Will the simulations be used to supplement a hands-on lab or will it be used as a stand alone learning resource?

3. Are the products accessible? Think ADA compliance, software application requirements, etc.

4. What is your budget? Who will pay for the virtual labs?

CONTACT INFORMATION

- Appalachian State University: Sarah Arrington arringtonsa@appstate.edu
- Labster: https://www.labster.com/pricing/
- McGraw-Hill Connect: Britney Ross, britney.ross@mheducation.com
- LabXchange: https://www.labxchange.org/
- NC BioNetwork: https://www.ncbionetwork.org/educational-resources

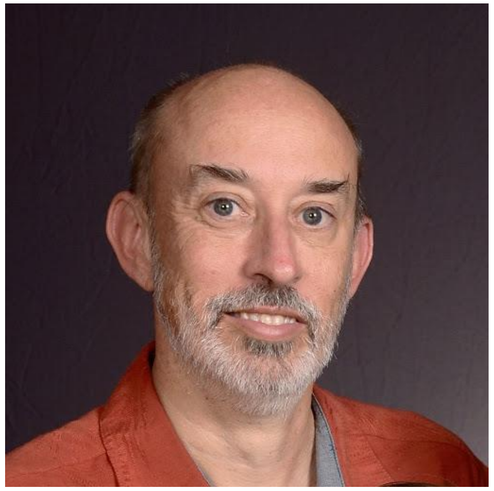
NC STATE UNIVERSITY

DISTANCE EDUCATION AND
LEARNING TECHNOLOGY APPLICATIONS

DIGITAL LEARNING INITIATIVE

CATHI DUNNAGAN
Senior Instructional Designer
cathi_dunnagan@ncsu.edu

JOHN GORDON
Associate Director
Instructional Media Production
john_gordon@ncsu.edu



DAVID HOWARD
Director, Instructional Innovation Services
david_howard@ncsu.edu

DAVID TREDWELL
Team Lead, Multimedia Development
datredwe@ncsu.edu

SUMMER SUPPORT

- NC State Distance Education and Learning Technologies (DELTA) reached out to summer faculty to offer support.
  - What can we do to help in a few weeks? Consultations, online resources and existing solutions were the focus.
- Asked Associate Deans what courses were a priority. (This turned into an open call for support that got distributed through department heads.)
- Proactively emailed faculty with large courses
  - Sections with 75+ students (that weren't already planned for online delivery)
  - Courses where all sections totaled 100+ students
- **Proactively emailed faculty teaching labs**

TIPS FOR PIVOTING LABS

- Based on Long Term Production Projects to create DE Labs

- Separate the in-person lab into its component parts
  1. Pre-lab
  2. Instrument, Equipment, Technique and Safety
  3. Experiment
  4. Analysis
  5. Assessment

PARTS OF A LAB

1. Pre-lab
   - Lab overview / introduction *[Idea: TA with whiteboard]*

2. Instrument, Equipment, Technique, and Safety
   - Separate videos that can be reused in multiple labs
   - Require viewing as pre-lab activity

PARTS OF A LAB

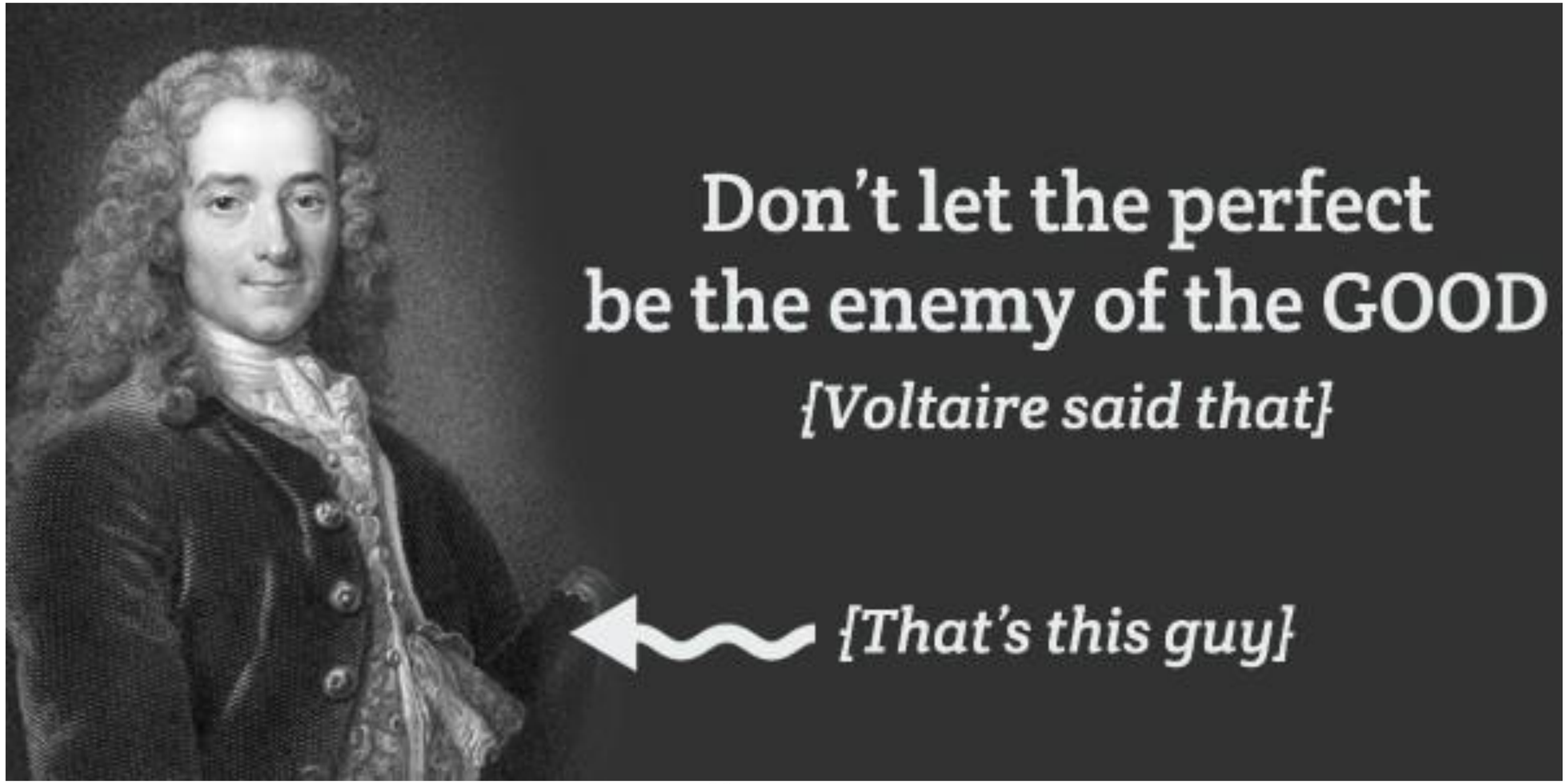
3. Experiment
   - "Perfect lab" taught by "perfect TA"
     - Eliminate need for branching into all possible outcomes
     - Preserve known typical accidents and sources of error
   - First-person POV in lab coat and gloves; hide physical attributes
     - Help viewer see themselves as the "virtual scientist / analyst / technician"
   - Minimize video locations
     - **Lab Station** – begin with all equipment and chemicals within reach
     - **Instrument Room** – begin in place with all equipment within reach

PARTS OF A LAB

4. Analysis
   - Option: TA with whiteboard explains experiment results
   - Option: Zoom session to discuss results

5. Assessment
   - Pre-lab Assessment – Quiz or Worksheet
   - Post-lab Assessment – Worksheet
     - Case study approach: *Data required for analysis is presented as part of the lab content and students must do analysis and turn in, as usual*

REDEFINE PERFECTION



DON'T DISTRACT FROM LEARNING

- Provide best AUDIO possible. More important than video.
- Keep camera in focus. Avoid auto-focus.
- Review footage before moving forward

EDITORS EDIT

- Try to find someone to edit your material

WHAT IS THE **ONE** THING?

- Name one thing your students will know after watching…
  - … AND GIVE IT TO THEM
- Don’t distract from the ONE thing
- Make two videos if there are TWO things, etc.

SHOOT EACH VIDEO THREE TIMES

- Wide Shot with key audio
- Wide Shot but NO talking

CLOSE-UPS

- Direct attention to what's important (graphics, close-ups, call-out)

YOU ARE YOUR BEST SELF

- Be honest
- Be yourself
- Be the Genuine you.

INTERACTIVE VIDEO

- Online tools can transform existing videos into different kinds of activities
- Content
  - Annotations
  - Instructor commentary
  - Additional imagery
  - Key point highlights
- Interactions
  - Pauses
  - Time jumps
  - Questions
  - Discussions

NC STATE UNIVERSITY

DISTANCE EDUCATION AND
LEARNING TECHNOLOGY APPLICATIONS

DIGITAL LEARNING INITIATIVE

ORGANIC CHEMISTRY VR

- Developed over the last two years, used with select students
- In mid-March, all Organic Chemistry students pivoted to these labs
- **Free** and **Available** to use!!!

GO.NCSU.EDU/VRLABS-ORGCHEM

MARIA GALLARDO-WILLIAMS
Director of Organic Chemistry Labs
mtgallar@ncsu.edu

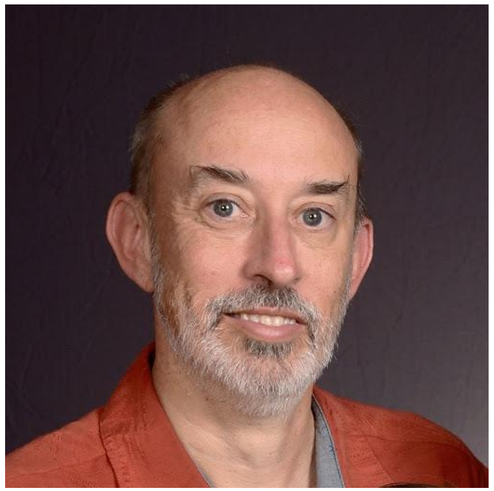
NC STATE UNIVERSITY

DISTANCE EDUCATION AND
LEARNING TECHNOLOGY APPLICATIONS

DIGITAL LEARNING INITIATIVE

CATHI DUNNAGAN
Senior Instructional Designer
cathi_dunnagan@ncsu.edu

JOHN GORDON
Associate Director
Instructional Media Production
john_gordon@ncsu.edu



DAVID HOWARD
Director, Instructional Innovation Services
david_howard@ncsu.edu

DAVID TREDWELL
Team Lead, Multimedia Development
datredwe@ncsu.edu

A VIRTUAL ENVIRONMENT DESIGNED FOR LEARNING

Ani Simon-Hart | Benoit Buyse | Bill Prensky


UniVirtual
Real-time immersion for virtual learning

DIGITAL LEARNING INITIATIVE

May 22, 2020

GUIDING FACULTY INTO REMOTE TEACHING AND OPERATING IN THE "NEWISH" NORM

Jennifer Cutts, Ed.D.
Director, Curriculum and Innovation
Kenan-Flagler Business School
UNC Chapel Hill

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

CONNECTING THE DOTS: LEVERAGING CONNECTIVISM TO SUPPORT COMPETENCY BASED LEARNING

Sheri Conklin, Ed.D.
Assistant Professor
UNC Wilmington

Eric L. Richardson, Ph.D., MPH, MBA, PHR, SHRM-CP, CHHR, ACHE
Program Coordinator, Master of Healthcare Administration (MHA)
Assistant Professor | School of Health and Applied Human Sciences
UNC Wilmington

Nikki Strawn, M.S.
Instructional Designer
UNC Wilmington

UNCW UNIVERSITY of NORTH CAROLINA WILMINGTON

NEXT WEBINAR FRIDAY MAY 22

Comments or suggestions for future webinars?
Please contact:

jimp@northcarolina.edu
or
jjfalchi@northcarolina.edu

Remember to checkout the Digital Learning Initiative Blog

dli.northcarolina.edu