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
WELCOME TO THE DIGITAL LEARNING INITIATIVE WEBINAR

Virtual Labs

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

May 8, 2020
OVERVIEW OF VIRTUAL LABS
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?
How to Quickly (and Safely) Move a Lab Course Online

By Heather R. Tafel  MARCH 17, 2020

UC Berkeley
Berkeley News
Research  People  Campus & community

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

By Robert Serna  Media Relations  03/23/2020

How to Rethink Science Lab Classes

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

https://www.chronicle.com/article/how-to-quickly-and-safely/248261
https://news.berkeley.edu/2020/03/23/coronavirus-forces-hands-on-learning-to-go-online-and-hands-off/
https://www.insidehighered.com/advice/2020/04/08/five-objectives-online-science-labs-lend-themselves-virtual-teaching-opinion
• Instructor Created Labs
• Lab Kits
• Virtual Labs
• Simulations

https://www.chronicle.com/article/how-to-quickly-and-safely/248261
UNC System Digital Learning Webinar

**Special Edition: Virtual Labs Landscape**

May 8, 2020, 11:00 AM – 12:00 PM

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

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

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

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

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

Asi Simon-Hirt
Head of Operations

Benoit Buyse
Head of Product Development and Innovation

Daily Wrennack
Executive Director, Strategic Partnerships

Participants:
- CNDG
- CNDG
- CNDG
- Pearson
• 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?
VIRTUAL LAB OVERVIEW

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

To Continue with Labster
- $65 - $85/student
- 6 lab simulations

To Continue with Connect
- $60/student – part of textbook rental program
- Unlimited lab simulations

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)

Connect
- Covid: Sp20 last 8 weeks
- Sp20: ~588 Students
- Majors & Non-Majors Biology
- 6 Virtual Lab Simulations
- Total Cost: $ 0 (pilot)
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.
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.
Students are introduced to real-world applications, such as the GHS labeling system.
Periodically throughout the simulation students are presented with questions to check their understanding. These scores can be recorded in your LMS grade book.
Each lab starts with an overview of what will be covered along with key concepts that they will need to know.
Students are guides through the exercises, referred to as phases, by the navigation panel on the right.
Frequently throughout the simulation students are asked questions about the lab they are performing. They cannot advance until they get the answer correct.
At the end of the simulation, learners are asked questions that require them to apply what they have learned.

**Laboratory Simulation**

Generally speaking, what types of hazards should you protect yourself from in the laboratory?

Select all that apply

- A. Sharp objects
- B. Splattering
- C. Spills
- D. Flame
- E. Corrosive chemicals

**Apply what you have learned**

Complete the following steps:

1. Answer the lab safety summary question
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.
ADDITIONAL RESOURCES: OPEN SOURCE

https://www.labxchange.org/library/pathway
ADDITIONAL RESOURCES: OPEN SOURCE
ADDITIONAL RESOURCES: OPEN SOURCE

Microscope Overview

SLIDE (2 of 13):

Eyepiece:
These lenses, also known as ocular lenses, are typically 10x, but also come in 5x, 15x and 20x varieties. The eyepiece lens is what you actually look through to see your specimen. The interocular distance is adjustable so that you can keep both eyes open when looking into the microscope.
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
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
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 let the perfect be the enemy of the GOOD

{Voltaire said that}

{That’s this guy}
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

EDITOR'S 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
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
A VIRTUAL ENVIRONMENT DESIGNED FOR LEARNING

Ani Simon-Hart | Benoit Buyse | Bill Prensky

www.cndg.info
Real-time immersion for virtual learning
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

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
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