

# Assessing collections-based learning in online classes



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1. Opportunities
2. Distance Education
3. Assessment

**Educational Value**

**Are delivery methods equivalent?**

**Academic Dishonesty**

**How prevalent is it?**



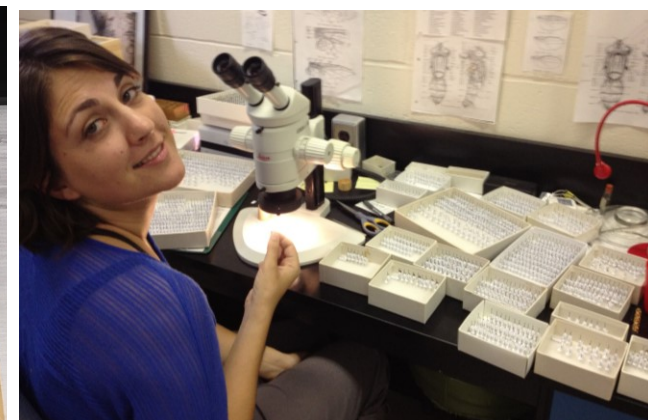
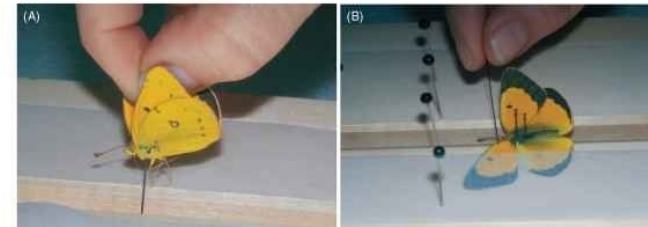
*Your subjects*

- ~~Insects~~ are everywhere
- Everyone can go outside; hands-on learning
- Local reference materials available

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#### Few Exceptions:

Deployed Students  
Particular habitats





# The Value of Collection-Based Projects



|   |   |  |   |
|---|---|--|---|
| <br>Calcite<br>Nuevo Leon,<br>Mexico | <br>Ruby in Zoisite<br>Mundarara Mine,<br>Tanzania | <br>Fluorite<br>Rogery Mine,<br>England         | <br>Sodalite<br>Bimaung Complex,<br>Greenland            |
| <br>Opal<br>Virgin Valley,<br>Nevada | <br>Melonite<br>Grenville, Quebec,<br>Canada       | <br>Calcite<br>San Vicente, Coahuila,<br>Mexico | <br>Colemanite<br>United States Mine,<br>Calico Mine, CA |

# Application to Other Fields



***Collections management!***



# Courses with Insect Collections

## (Face-to-Face and Distance)

### Introductory

### Principles of Entomology



Who are they?

### Advanced

### Insect Classification



**Undergraduates:** Entomology Majors, Minors / Gen-ed students  
Workplace Advancement / Pest Control Certificate

**Graduates:** MS, Distance MS, PHD / REC Grads / Other universities

***Diverse backgrounds and goals!***

## The Online 'Lab'

- **Goal**

Provide experience **equivalent** to classroom

- **Methods**

Translate in-class activities

Assess learning / course success

- **Results (ideally)**

Same goals met by same or different activities

Equivalent assignments work equally well in class & online

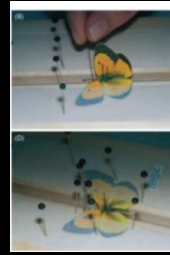


# Collection Assignment

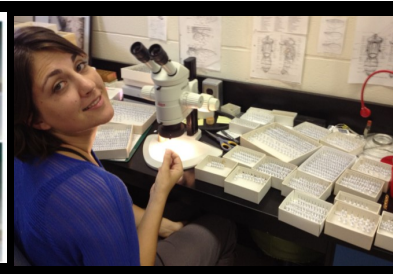
Collect



Curate



Identify



Specimens

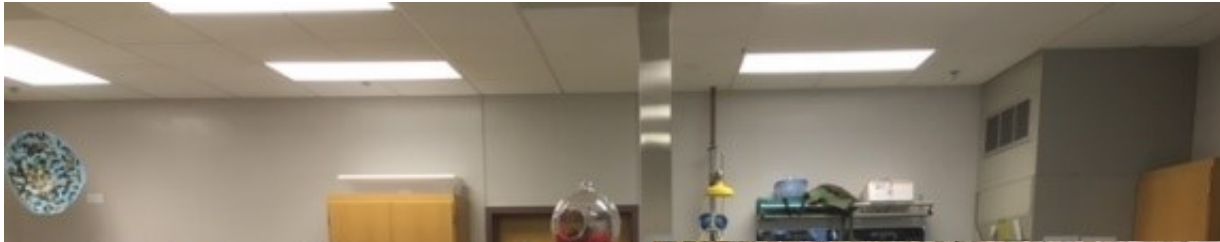


Documentation





# Distance Education



Too bad!



Too good...

*Unique Challenges...*

# Assessing Success

## 1) Are delivery methods equivalent?

- Are there differences in learning gains between face to face and online sections?

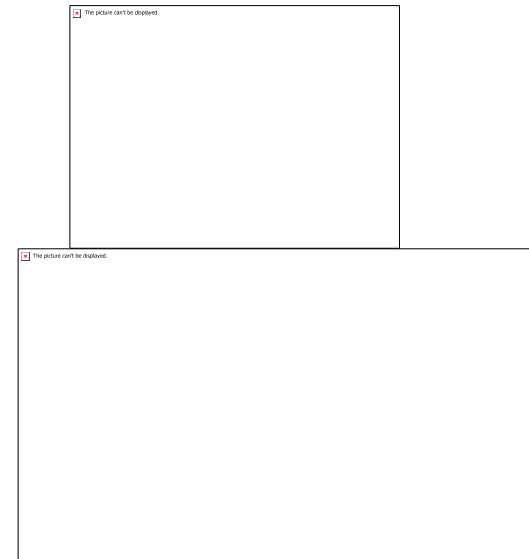
## 2) How prevalent is academic dishonesty?

- Is academic dishonesty more of a concern in distance learning than in the classroom?

# Pre- and Post-course learning assessment

## Advanced: Insect Classification Survey

- **50 insect ID questions**
- **Ungraded**
- **First and last assignments**
- **157 students over 10 semesters**
  - **Online (5 semesters)**
  - **Face to Face (5 semesters)**







# Assessment

## 1) Are delivery methods equivalent?

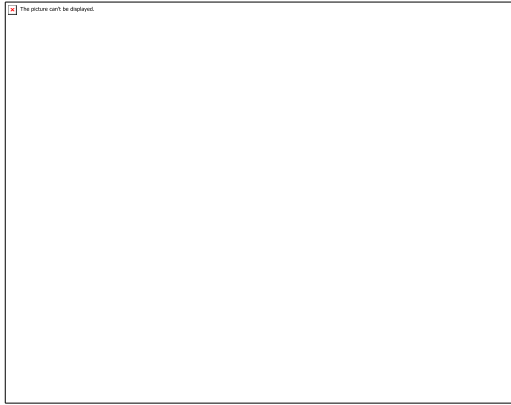
- Are there differences in learning gains between face to face and online sections?

## 2) How prevalent is academic dishonesty?

- Is academic dishonesty more prevalent in distance learning than in the classroom?

The picture can't be displayed.

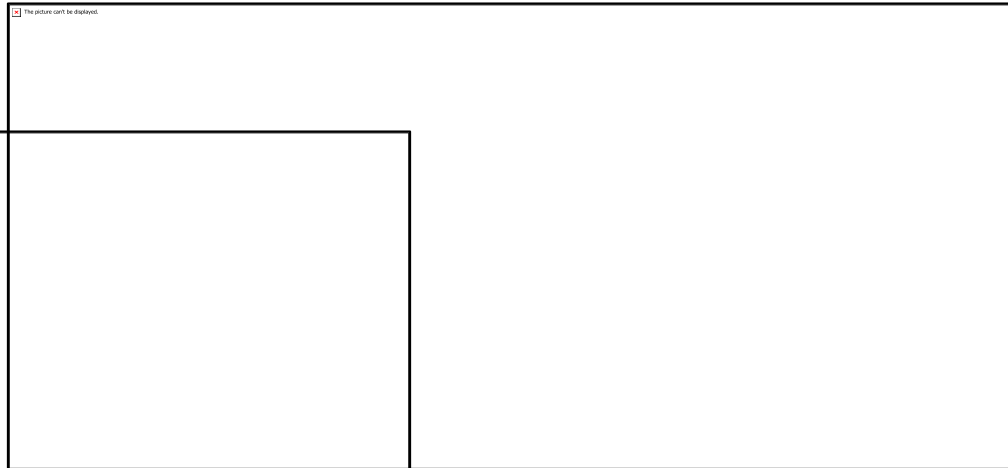
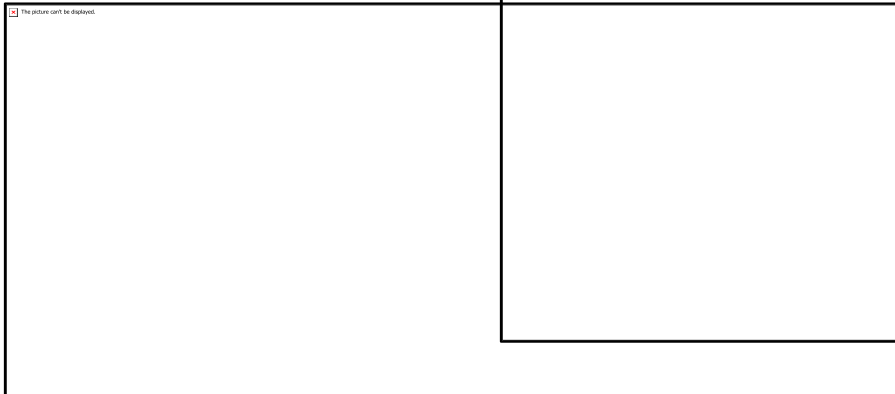
# Academic Honesty



2012

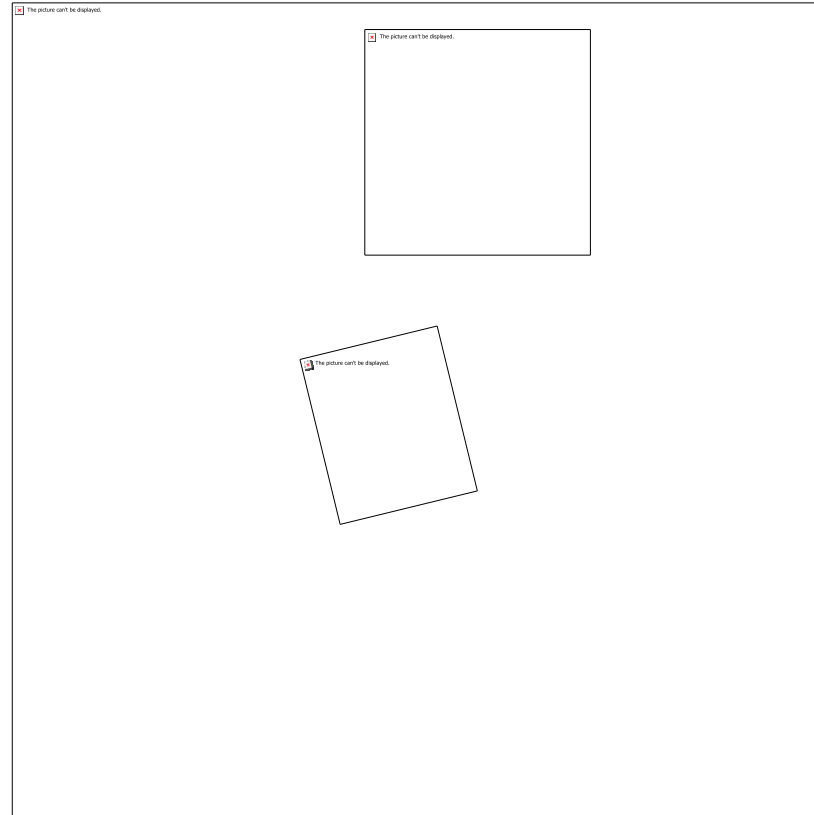


2013 ?





# Academic Honesty



# Insect Specimen Police

# Mark-Release-Recapture



1. Mark
2. Release
3. Recapture

Look for red flags ...

# Academic Honesty

## Technology

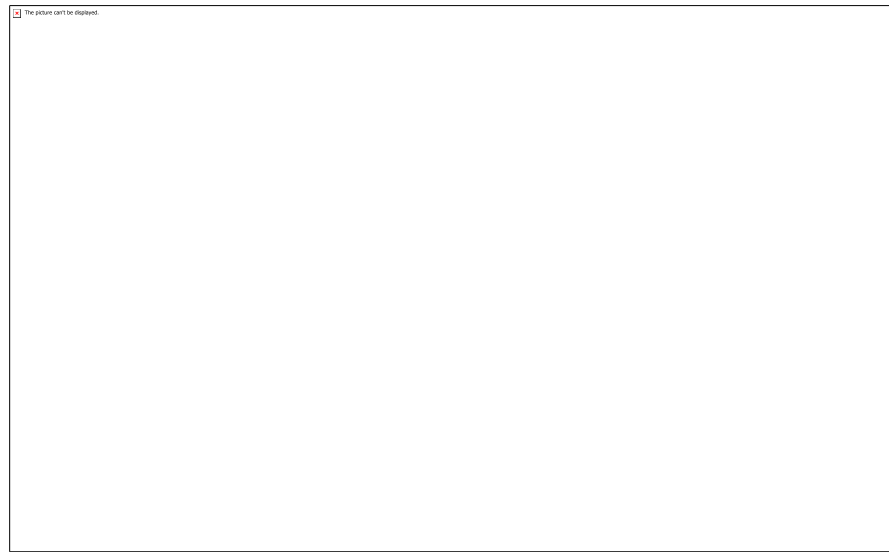
- Forensic marking methods

## Teamwork

- 2 courses, 4 faculty, online/in-class

## Expert Witnesses

- Entomologists, UF IT Help Desk, student TAs









# Summary

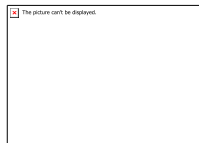
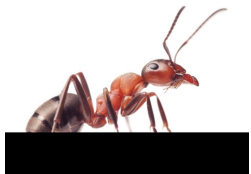
## Collections-based courses benefit online learners

No distance / face to face knowledge disparity

but...

## Academic dishonesty is more prevalent online

Plagiarism is not very common (< 2% of all students);  
Online students 9.5 x more likely to cheat;  
Cheating is equally common across courses

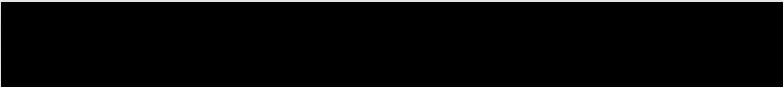




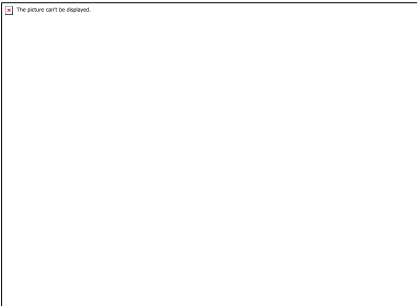
# Detection to deter cheating

- Established departmental policy and procedures
  - Dean of Students Office
  - Updated course Syllabus
- Online improvements
  - More & better interactions with students!
  - Clarity, Reminders, Opportunities to ask questions





- Colleagues: Marc Branham, Rebecca Baldwin, Christine Miller and Teaching Assistants 2012-2017
- UF CALS Distance Education Mini Grant
- UF E-learning Helpdesk, Dean of Students Office
- UF Teaching Resources Center Travel Award
- UF IRB #201700949



# Abstract

Assembling and curating a specimen collection is a valuable activity to integrate lessons on finding, preserving, identifying, organizing and interpreting an assemblage of objects - be they insects, plants or something else. Traditionally, collection projects are used in face-to-face classes, but they can also be successfully adapted for distance education. Challenges in doing this are similar to those in modifying lecture or laboratory classes. Primary concerns about using collection projects in distance education are 1) whether online students gain as much benefit as in-class students and 2) if academic dishonesty is a greater problem online than in-person. To address both concerns, this study assessed learning outcomes in pre- and post-course surveys in an advanced course and specimen-based plagiarism (students submitting specimens collected by someone else) in two entomology courses with in-person and online sections. A five-year 'mark-release-recapture' experiment involved marking thousands of specimens submitted in student collections, which were released back to students. In subsequent semesters collections were checked to detect recaptured specimens. Comparison of advanced entomology students' identification abilities revealed that online and in-class students entered the course with significant differences in knowledge (T test:  $t=4.557$ ,  $p<0.0001$ ), but end-of-course outcomes were equivalent (T test:  $t=1.028$ ,  $p=0.153$ ). In contrast, academic dishonesty was more prevalent in online than face-to-face sections of both classes (logistic regression:  $z=2.473$ ,  $p=0.0134$ ). These results highlight the fact that collections can be effective teaching tools in online education, but underscore the need for instructors to consider how to maintain academic integrity and deter cheating in online classes.

15 min slot (12-min talk)