Faculty-Librarian Cooperation for Virtual STEM Based Courses: Creating Successful Learning Experiences for Undergraduate Students at UCF

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Faculty-Librarian Cooperation for Virtual STEM Based Courses:
Creating Successful Learning Experiences for Undergraduate Students at UCF

Dr. Nicole Lapeyrouse, Chemistry Lecturer
Sandy Avila, Science Librarian
University of Central Florida

Special Libraries Association Annual Conference
August 12, 2021
Today’s Speakers

Sandy Avila
Science Librarian

Dr. Nicole Lapeyrouse
Chemistry Lecturer
Outline

- About UCF
- Background on Faculty-Librarian Collaboration
- Transition to Online Teaching
- Helpful Online Engagement Strategies
- Benefits to Faculty-Librarian Collaboration
- What’s Next for Us
- Q&A
About the University of Central Florida

• One of 12 public universities in the state
• Located about 13 miles east of downtown Orlando
• 72,000 students¹
• UCF was ranked 16th most innovative university in the US (tying with Cornell University) and placed top 20 in best online bachelor’s programs in the nation by U.S. News & World Reports in Sept. 2020²

A Diverse Student Population

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>33,307</td>
<td>46.3%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>19,818</td>
<td>27.5%</td>
</tr>
<tr>
<td>Black</td>
<td>7,418</td>
<td>10.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>4,622</td>
<td>6.4%</td>
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<tr>
<td>International</td>
<td>3,069</td>
<td>3.9%</td>
</tr>
<tr>
<td>Multiracial</td>
<td>2,817</td>
<td>4.3%</td>
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<tr>
<td>Not Specified</td>
<td>698</td>
<td>1%</td>
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<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>107</td>
<td>0.1%</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>92</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Faculty/Librarian Collaboration
Establishing the Connection

We met as needs arose to have library instruction in a Geology course.

Initial request involved only coming to the class, but a Course Research Guide was developed and other services/resources discussed.

Use of information literacy modules proposed, creation of unique videos to be embedded in the classroom were mentioned, and other projects were brainstormed.

A formal introduction to graduate students was made and librarian met whole research team.

Once pandemic struck, we jumped to implement online tutorials and other one-on-one research consultation support via Zoom since campus/library closed.
Transition to Online Teaching
Course Structure

Traditional
Course is taught in a face-to-face instruction with mandatory class time. Limited to some online course content.

Hybrid/Mix-Mode
Course has a reduced seat time and replaces face-to-face instruction with online content.

Online
Course has no face-to-face instruction. All course material and assignments are delivered through an online platform.

Emergency Remote Teaching
Emergency instruction that is done in the moment. This is a temporary shift when teaching has been transitioned to be distant learning.
## Course Structure

### Assignment Break Down

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided notes</td>
<td>15%</td>
</tr>
<tr>
<td>Discussions</td>
<td>20%</td>
</tr>
<tr>
<td>Weekly assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Exams</td>
<td>30%</td>
</tr>
<tr>
<td>Final exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Streams and Floods

- **Getting Started: Streams and Floods**
- **Lecture video: Streams and Floods**
- **Lecture video: Flood Hazards**
- **Lecture video: Flood Preventatives**
- **Supplemental Resources: Streams and Floods**
- **Weekly Assignment: Water Cycle**
  - Mar 12 | 5 pts
- **Weekly Assignment: Streams and Floods Quiz**
  - Mar 12 | 10 pts
- **Guided Notes: Streams and Floods**
  - Mar 14 | 10 pts
- **Case Study: Moving to Higher Ground! Ecosystems, Economics and Equity in the Floodplain**
  - Mar 14 | 10 pts
Helpful Online Engagement Strategies
Course Structure

Features
The following HSP content types may be added to your video:

- Multiple choice questions with one or more correct answers
- Free text questions
- Fill in the blank questions
- Drag and drop questions
- Interactive summaries
- Single choice question sets
- Mark the word activities
- Drag and drop text
- Images
- Tables
- Labels
- Texts
- Links

All question types can be configured to perform adaptive behavior, meaning that a correct answer could cause the user to skip to a specified place in the video while an incorrect answer could take the user somewhere else in the video. Typically, submitting a wrong answer will cause the user to be directed to the place in the video where the answer to the question is presented.

You may also add bookmarks so that your users can skip to specified sections of the video on demand.

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Benefits to Faculty/Librarian Collaboration
Mini-Research Project
Class Assignments & STEM Videos

Mini-research project: Geological time

This discussion you will be creating an interactive poster board using genially (how to use genially). This assignment cannot be used as a dropped discussion. You will need to pick a point on the geological time scale and go over the following points:

1. The name of the point of time you are presenting on
   - How long did it last?
   - Include if it is an eon, era, period, etc.
2. What was the world like (for example the climate or the atmosphere)? What organisms lived during this time?
3. What major event occurred?
4. Include a few interesting facts about this point in time
5. Be creative and have fun!

You will need to include pictures (2 at max) and include 2 references. Respond to at least 2 different post and reply to anyone that comments on your post.

You must embed the poster board as an iframe following the instructions in the file.

Rubric:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>pts</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>The name of the point of time you are presenting on</td>
<td></td>
</tr>
<tr>
<td>How long did it last?</td>
<td></td>
</tr>
<tr>
<td>Include if it is an eon, era, period, etc.</td>
<td>5.0</td>
</tr>
<tr>
<td>World</td>
<td></td>
</tr>
<tr>
<td>What was the world like?</td>
<td></td>
</tr>
<tr>
<td>Include a description or representation</td>
<td>2.5</td>
</tr>
<tr>
<td>Events</td>
<td></td>
</tr>
<tr>
<td>Includes major events that happened</td>
<td>2.5</td>
</tr>
<tr>
<td>Facts</td>
<td></td>
</tr>
<tr>
<td>Includes minimum of 3 facts</td>
<td>5.0</td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
</tr>
<tr>
<td>Visually appealing and includes hot spots</td>
<td>2.5</td>
</tr>
<tr>
<td>References</td>
<td></td>
</tr>
<tr>
<td>Includes 2 references</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Pleistocene Epoch
2.6 million years ago - 11,700 thousand years ago

Global Weather Warning: Please be advised that you may experience drastic glaciation cooling and dry weather throughout the next 100,000 years.

THIS WEEK

<table>
<thead>
<tr>
<th>Day</th>
<th>Temp</th>
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</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0°</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-3°</td>
</tr>
<tr>
<td>Wednesday</td>
<td>-2</td>
</tr>
<tr>
<td>Thursday</td>
<td>0°</td>
</tr>
<tr>
<td>Friday</td>
<td>-4°</td>
</tr>
<tr>
<td>Saturday</td>
<td>-5</td>
</tr>
<tr>
<td>Sunday</td>
<td>-1°</td>
</tr>
</tbody>
</table>

Max Temp. 25°
Min Temp. 12°
Precipitation 10%
Humidity 15%
Wind 18 km/h
Climate Change Globally

According to Ahmed:

Climate Change is:
- the variability of the climate system
- includes the atmosphere, biogeochemical cycles, the land surface, ice and biotic and abiotic components

Global Warming is:
- The rise in temperature primarily due to carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) - these are greenhouse gases (GHGs) - being trapped in the atmosphere
- Intergovernmental Panel on Climate Change (IPCC) suggested to stop global warming at 1.5°C above preindustrial levels as warming beyond this level might lead to heat extremes, alter insect and plant phenology (Phenological shifts) and more occurrence of vector borne diseases
- Meanwhile, the author elaborates that frequency and intensity of rainfall and drought will grow that might cause flooding, erosion, runoff, and famine

Risks Associated with Climate Change:
- Global temperatures have risen over 1°C
- Animals struggle with climate change as their habitats change
- Weather events become more severe, agriculture is affected

How is Europe affected?

According to Feehan, Harley, and Minnen:
- Some animals migrate away from changing climates, while others thrive in warmer temperatures
- By the end of the late 21st century, distributions of European plant species are projected to have shifted several hundred kilometres to the north, forests are likely to have contracted in the south and expanded in the north
- 60% of mountain plant species may face extinction

How is Ireland affected?

According to Berry, Dawson, Harrison, and Pearson:
- Loss of suitable habitat for animals is occurring due to climate change, as well as competition and habitat destruction

According to Kiley:
- An increase in annual precipitation and a much greater portion of extreme rainfall events occurred after 1975. Flood analysis and protection is a concern.

How is Ireland reacting?

According to the Ireland Department of the Environment, Climate, and Communications:
- The government set a goal in 2020 to cut carbon emissions each year to reach carbon neutrality by 2050
- The Climate Action and Low Carbon Development Bill of 2021 provides that the first two five-year carbon budgets proposed by the Climate Change Advisory Council should equate to a total reduction of 51% emissions over the period to 2030, in line with the Programme for Government commitment

Sources:
- Jane Feehan, Mike Harley, Jel van Minnen. https://link.springer.com/article/10.1051/agro:2008096
What’s Next for Us

Next BIG THING
Continuing Our Work

- Additional **creation of resources for class specific instruction**
  - expansion to include the General Chemistry I courses
- **Formal assessment of resources** students have already been using
- **Introduce more students** to their subject librarian early on
- **Continue graduate student research consultations**
  - providing one-on-one research support for advanced work
Public Domain Image References


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Thank you! Any questions?
Feel free to contact us

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