

Integrating Biomimicry in an Undergraduate Leadership Course

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Introduction

The background of the slide is a close-up photograph of a honeycomb. The hexagonal cells are filled with a golden-yellow substance, likely honey. Several bees are visible on the right side of the frame, their bodies and wings partially obscuring the honeycomb cells. The overall color palette is warm, dominated by yellows and oranges.

- To thrive in a knowledge focused world, students must be able to think critically and integrate what they learn across disciplines, contexts, and throughout their lives (Huber & Hutchings, 2004).
- By facilitating connections between science and leadership, students are presented with opportunities to develop skills and competencies needed to think critically and solve problems in new and innovative ways.

What is Biomimicry?



- Biomimicry is an approach to innovation “that seeks sustainable solutions to human challenges by emulating nature’s time-tested patterns and strategies.” (Biomimicry Institute, 2017)
- In other words, how can we use the natural world to find solutions?

One example of how biomimicry is being used...



- Researchers discovered that the bumps at the front edge of a whale fin greatly increase its efficiency by reducing drag and increasing lift.
- Companies are applying the lessons learned from the research to the design of wind turbine blades. The technology also has the potential to improve airplane safety.

(Biomimicry Institute)

Biomimicry and Leadership



- Biomimicry has applications that extend beyond engineering or design.
- From communication to collaborative work environments, the natural world is filled with examples of sustainable practices applicable to leadership education.

Biomimicry and Leadership



- Three student interns paid to develop learning modules integrating biomimicry and leadership
- Interns had training from an expert in biomimicry and assistance instructional designers
- Linked leadership concepts with honey bee behavior for an introductory agricultural leadership course
- Used Articulate Storyline 2 software

Biomimicry and Leadership



- The modules focused on leadership topics including managing conflict, group decision making, organizational structure, and organizational culture. Learning objectives and pre and post-test assessments were established for each of the four topics.
- An overview lecture was also included that defined and introduced biomimicry as a conceptual frame.

Module Example

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ALED 202- Intro to Leadership Resources

Menu Transcript

- Intro
 - Opening**
 - Objectives
 - 3 Things to Ask In Any Setting
- Identifying Culture
- Living Within Multiple Cultures
- Communities

Wrap Up

- Module Review
- Review Question #1
- Review Question #2
- Review Question #3

ALED 202 Biomimicry Module: Cultures and Communities
Enter the "Review Objectives" section to begin!

Kyle Southern Review Objectives

Menu Transcript

- ▶ Intro
- ▶ Identifying Culture
- ▼ Living Within Multiple Cultures
 - How can honey bees exhibit mult...
 - Multicultural Appreciation Tabs
 - 5 Cross-Cultural Competencies
 - How do honey bees and humans ...
 - Question #1
 - Question #2
 - Question #3
- ▶ Communities
- ▼ Wrap Up
 - Module Review
 - Review Question #1
 - Review Question #2
 - Review Question #3

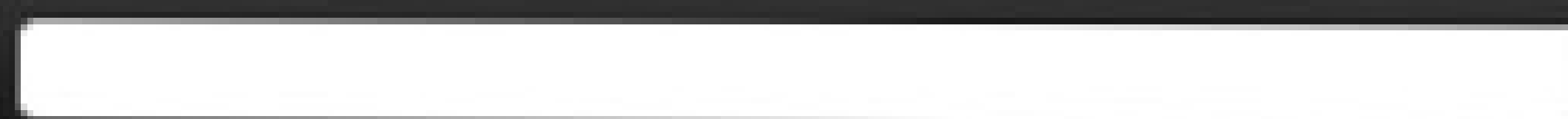
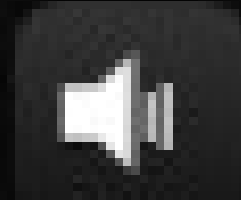
How do honey bees and humans compare in terms of multiple cultures?

honey bees

humans

Honey bee hives are supported by different roles within the hive that each play a part in maintaining balance.

People represent any of the thousands of cultures on earth. Learning about and getting to know them helps to create a peaceful, livable planet.



◀ PREV

NEXT ▶

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The 5 Cross-Cultural Competencies For Leaders

First

Second

Third

Fourth

Fifth

Learn the perspectives, tastes, trends, and technologies of many cultures.



◀ PREV

NEXT ▶

Biomimicry and Leadership

- The modules were incorporated into the curriculum of a pilot-test section of an undergraduate introductory agricultural leadership course (n = 17 students).
- At the end of the semester, a field trip to a Central Texas honey production facility was conducted so students in the leadership course could identify leadership concepts or behaviors discussed throughout the course.



Biomimicry and Leadership

- At the conclusion of the course, students applied critical thinking by developing their own creative naturalistic solutions.
- Long-term goals include combining principles of biomimicry into other undergraduate agricultural leadership courses and stand-alone trainings.

