Multi-State and Multi-disciplinary Partnership Effort:
Nexus of Food and Nutritional Security, Sustainability and Hunger Graduate Course

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Introduction

• This grant-funded project developed a new course to enhance graduate education in Food, Nutritional Security and Hunger—a critical and emerging USDA-NIFA priority related to the triple burden of malnutrition (undernutrition, over-nutrition and micronutrient deficiencies).

• The course was a collaborative educational partnership among Texas A&M University, Purdue University, and Ohio State University.
Introduction

• The goal of this course was to promote interdisciplinary learning by engaging a diverse group of students from different disciplines and multiple institutions to think critically about food and nutritional security and encourage students to analyze the local relevance and global importance of key indicators.

  • Flipped class model
  • Experiential learning activities
  • Innovation of this course was to address the need for a 21st century grand challenge to be learned from a variety a perspectives (i.e., disciplines, institutions, and local-regional-global contexts)
Interdisciplinary education and research helps students think critically and outside the box to learn complex issues. Many challenges are more global and complex in nature, the creation of interdisciplinary programs, research groups, centers and institutes is rapidly becoming an integral feature of academia (Ewel 2001, National Academy of Sciences et al. 2005).

Advances in technology and active learning have brought forth the “flipped classroom” model to better engage students. Flipping the traditional classroom had positive outcomes in feasibility and in regards to student learning preference (McLaughlin et al., 2014).

Educating the leaders of the future will be key to the U.S. commitment to food security and will pay exponential dividends as motivated, experienced, educated students effect change on local and global levels (APLU, 2009).
Collaborative Partnership

- 4 Partner Institutions
- 30 Students
  - Texas A&M University (10)
  - Texas A&M University Kingsville (4)
  - Purdue University (7)
  - The Ohio State University (9)
Interdisciplinary Lectures

- 19 Guest Lecturers Across Disciplines
- Coming from several Universities, Governmental Agencies, & Non-Governmental Organizations
- Participated in Curriculum Development
Flipped Class Model & LCT

- 13 Modules
- ~60 Minute Online Lectures
- Case Study Method
- Distance Learning
- Synchronous Discussions
- Asynchronous Discussions (Classroom Website)

MODULES

- INTRODUCTION: GLOBAL PERSPECTIVES
- FOOD SECURITY AND NUTRITION INDICATORS AND ANALYSIS CONTEXT AND INDICATORS
- FRAMING THE COURSE AND FRAMING THE PROBLEM
- EXPERIENTIAL LEARNING AND CURRENT TOPICS
- FOOD MALNUTRITION AND DISEASE PREVENTION
- FOOD-WATER-ENERGY SECURITY UNDER CLIMATE CHANGE
- FOOD PRODUCTION ENVIRONMENT AND SOILS
- CONFLICT MIGRATION AND HUMAN CAPITAL
- NUTRITIONAL EDUCATION, BEHAVIORAL CHANGE AND COMMUNICATION
- INNOVATING FOR ENVIRONMENTAL SUSTAINABILITY
- AGRICULTURE, FOOD SECURITY & SUSTAINABLE INTENSIFICATION: CAN WE FEED THE WORLD?
- FARM AND FAMILY DECISIONS: MANAGING RESOURCES AND CONSTRAINTS IN SMALLHOLDER FARM SYSTEMS
- SUSTAINABILITY OF ALTERNATIVE FRUITS AND VEGETABLE PRODUCTION INCREASE FOOD SECURITY
Place Based Experiences (Experiential Learning)

- Practical Application of skills was a major component
- Combining classroom experience with real-world application
- Using the 4 key areas, student teams:
  - Developed a Needs Assessment for a respective local area
  - **Nutrition**- Interacted with Nutrition Educators within their University/Community
  - **Sustainability**- Visited local farms that use sustainable agricultural practices
  - **Human Impacts**- Shadowed Extension Educators who’s work relates to Food Security
  - **Hunger**- Visited Local Food Banks to understand their role in the local food system
E-Learning Tool/Case Study Modules

- Student Teams produced E-Learning Case Study Modules engaging them with:
  - Interactive Media (i.e. Nearpod, Ed-Puzzle)
  - Videography
  - Lesson Planning
  - Assessment Planning
  - Micro-Teaching
  - Teaching Practicum
  - Solution Oriented Critical Thinking
  - Reflection
Student Outcomes

• Contextual Knowledge
• Key Indicators
• Local/Global Analysis
• Interdisciplinary Thinking
• Teamwork & Communication Skills
Post-Test Questionnaire Highlights

With regard to the Multi/Interdisciplinary approach of the course:

• 18 out of 19 (94%) students felt that this course “developed their ability to thin in an interdisciplinary way.”
• 17 out of 19 (89%) students felt that “in this course they were challenged to see the relationships of complex content.”

• Student Reflections to Confirm:
  • “I enjoy the multidisciplinary makeup of our classroom. This is very helpful especially with our group project.. our project is made easier by having a diverse team and more realistic to how the real world works where there is collaboration across disciplines to solve multidisciplinary problems.”
Post-Test Questionnaire Highlights

With regard to how Experiential Learning helped students apply concepts:

• 16 out of 19 (84%) felt that “Engaging in experiential learning experiences helped them understand the content in the course more.”

• 17 out of 19 (89%) students felt that the “experiential learning experiences were valuable to them.”

• Student Reflections to Confirm:
  • “For me, this project has opened my eyes to poverty and the strain it causes in accessing healthy food...this local project has brought some surprising findings to the fore that I would expect in developing countries, but not within a 15 minutes’ drive from the campus.”
Post-Test Questionnaire Highlights

With regard to how Learner Centered Teaching engaged students:

• 17 out of 19 (89%) students felt that “they were motivated to learn in this course.”

• 16 out of 19 (84%) felt that “this course improved their understanding of concepts and principles in this field.”

• Student Reflections to Confirm:
  • “It has pushed me to look at the slides and into the lecture presentations more in depth because I want to ensure that I am knowledgeable. I believe that this model gives me an opportunity to not be confined to an in-class lecture.”
References


