Integration of Social Science Dimensions into an International Animal Agriculture Course

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Introduction

- Iowa State University (ISU) requires all undergraduate students to fulfill an “international perspectives” requirement prior to graduation.
- The purpose of the requirement is to “promote students’ understanding of cultural diversity and interdependence on a global scale.”
- Requirement can be met by completion of:
  - three credits of approved course work, or
  - equivalent alternative academic experience (such as a study abroad program)
- To be designated as an approved international perspectives course, a course must meet two of five student learning outcomes approved at the university level.
- Each college within the university determines its own approved courses list to ensure relevance to majors within the college.
Background

- To expand global perspectives of ISU students, an International Animal Agriculture course (AnS 441) was developed in 2013 by ISU animal science distinguished professor Max Rothschild.

- AnS 441 was designed to compare and contrast livestock production systems in developing nations and the U.S.

- Major course topics include:
  - 1. role of animal-source foods in fulfillment of human dietary nutrient requirements
  - 2. importance of livestock production systems in attainment of global food security
  - 3. sustainability of animal production systems, including alternative species
  - 4. resilience and gender roles
Background

- AnS 441 course instructor changed in 2018
- Content was revised to increase the social science dimensions of the course
- Goals of the course content changes were two-fold:
  - 1. to provide objective measures by which to compare developing countries
  - 2. to prepare students for careers in international animal agriculture development
Objective

- The objective of this presentation is to describe the impact of integrating economic and other social development indicators into a technically-oriented animal science course
Methods

In spring semester 2018, economic and social development indicators were incorporated into AnS 441.

Economic indicators obtained from World Bank data (https://data.worldbank.org/indicator) included:

- Gross domestic product (GDP, in current US $)
- GDP per capita
- Gross national income (GNI, Atlas method, in current US $)
- GNI per capita, PPP (purchasing power parity; in current US $)
- GINI coefficient (measure of income distribution within a country)
  - 0 = perfectly equal income distribution; 1 = one person controls all wealth
Methods
Methods

- Social development indicators included:
  - Human Development Index (HDI)
    - Scale from 0 (worst) to 1 (best)
    - Based on life expectancy at birth, education (years of schooling), per capita income
  - Human development indices were obtained from United Nations Development Programme data (http://hdr.undp.org/en/data)
Methods

After explaining these economic and social development indicators, students were asked to incorporate them into a 15-minute oral presentation regarding animal agriculture in their assigned developing country.

Other information required in the presentation included:

- Geographical location, predominant language(s) and religion(s), government structure
- Livestock and poultry numbers and productivity data, livestock and poultry live animal and product imports and exports, land area and description (all from FAOSTAT)
- Animal genetic resources, feed resources, disease challenges

Feedback from students was obtained via Plus/Delta surveys, assignment feedback questionnaires, and course evaluations.
Results

Below is an example of how students typically presented economic and social development indicators for their assigned country:

<table>
<thead>
<tr>
<th>Economic Indicator</th>
<th>Ghana</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Domestic Product (GDP)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP (current US $)</td>
<td>$59.0 billion</td>
<td>$19.4 trillion</td>
</tr>
<tr>
<td>GDP, Purchasing Power Parity (current int'l $)</td>
<td>$129.5 billion</td>
<td>$19.4 trillion</td>
</tr>
<tr>
<td><strong>Gross Domestic Product (GDP) Per Capita</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP per capita (current US $)</td>
<td>$2,046</td>
<td>$59,532</td>
</tr>
<tr>
<td>GDP per capita, PPP (current US $)</td>
<td>$4,492</td>
<td>$59,532</td>
</tr>
<tr>
<td><strong>Gross National Income (GNI) Per Capita</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI per capita, Atlas method (current US $)</td>
<td>$1,880</td>
<td>$58,270</td>
</tr>
<tr>
<td><strong>Human Development Index</strong></td>
<td>.579 (Rank: 139th)</td>
<td>.920 (Rank: 10th)</td>
</tr>
<tr>
<td><strong>GINI Coefficient</strong></td>
<td>.435</td>
<td>.415</td>
</tr>
</tbody>
</table>
Results

- Based on end of semester course evaluations in 2018, a detailed handout explaining the various economic and social development indicators was developed.
- In 2019, this handout was distributed to students after introducing the indicators during lecture.
- Example student feedback:
  - I loved diving into one specific country and discussing all of the socio-economic/cultural aspects of agriculture that we had talked about in class.
  - Helped me get a better understanding of economic situations in developing counties.
  - Helped to compare how we live with what people in other countries are going through.
  - The FAOSTAT and World Bank databases were a great way to research a country. I am grateful to know about these for future reference.
Conclusions/Recommendations

- Social science concepts were successfully integrated into an animal science course

- Based on our experience, we recommend that agricultural science educators:
  1. form partnerships with social science educators who can bring a cross-disciplinary perspective to their courses
  2. introduce social science aspects into their courses to facilitate student cognition of the intertwinement of natural sciences and social sciences in agriculture
Questions?