Use of In-Class, Group, Question Sets to Improve Self-Direction and Critical Thinking for Students Enrolled in a College of Agriculture

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... the beginning of a Fourth Industrial Revolution

“Shelf-life” of skill sets are shortening

Core skills assist adaptation

Skills necessary for success for 2020 and beyond:
  - reading comprehension,
  - oral expression,
  - written expression,
  - critical thinking,
  - creativity,
  - cognitive flexibility,
  - visualization,
  - social skills,
  - mathematical reasoning, and
  - active listening

The Course: Introduction to Agriculture Economics

• Traditional lecture course, 5 sections, 40 students per section
• Problem sets
• Students form groups of two – three members
• Given approximately 20 minutes to complete as much work as they can
Overview of the Problem Set Process

- Can use any supporting materials they want
  - course textbook
  - class lecture notes
  - worked examples (from previous session)
  - notes from any other course that might be relevant, and/or
  - help of other groups
Overview of the Problem Set Process

- At the end of 20 minutes, representatives from each group volunteer to answer the questions
- Instructor steps in to ...
  - correct any errors made,
  - answer student question, and
  - uses the exercise as the basis for talking about other related concepts.
• What is our output?
• What is our input?
• Which cost in the chart represents the lease for the two packing machines?
• We hire workers by the week. How much does one week of labor cost?
• Which column(s) reflect productivity measures?
• What is the equation for APP? Double-check their calculations.
• What is the equation for MPP? Double-check their calculations.
• In what stage of production are we operating?
• What is our break-even price?
• If the labor cost increases, which cost column(s) in the chart will change?
• If we sell a box of pecans for $8 each, calculate our profit for each level of output.
## Example – Production Concepts

<table>
<thead>
<tr>
<th>Quantity of Workers</th>
<th>Boxes of Pecans per Week</th>
<th>MPP</th>
<th>APP</th>
<th>Cost</th>
<th>Cost</th>
<th>Total Cost</th>
<th>Total Cost</th>
<th>Marginal Cost</th>
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<td>-</td>
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</table>
Student feedback

Perceived better understanding of course concepts
Perceived increase in motivation
Perceived better mastery of course objectives through the use of the group exercises
More enjoyable classroom environment
In some cases, built a network with fellow students that extended outside of the classroom
Any questions?
Thank You!

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