

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

Christina Esquivel, Graduate Student

Theresa Murphrey, Associate Professor

Texas A&M University

Background

- ... 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 Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, World Economic Forum, January 2016.

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.

Exercise Questions

- 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

				Total	Total		Average	
				Fixed	Variable	Total	Total	Marginal
Quantity of Workers	Boxes of Pecans per Week	MPP	APP	Cost	Cost	Cost	Cost	Cost
0	0	0.0	----	\$ 400.00	\$ -	\$ 400.00	\$ -	----
1	200	200.0	200.0	\$ 400.00	\$ 650.00	\$ 1,050.00	\$ 5.25	\$ 3.25
2	450	225.0	250.0	\$ 400.00	\$ 1,300.00	\$ 1,700.00	\$ 3.78	\$ 2.60
3	550	183.3	100.0	\$ 400.00	\$ 1,950.00	\$ 2,350.00	\$ 4.27	\$ 6.50
4	600	150.0	50.0	\$ 400.00	\$ 2,600.00	\$ 3,000.00	\$ 5.00	\$ 13.00
5	625	125.0	25.0	\$ 400.00	\$ 3,250.00	\$ 3,650.00	\$ 5.84	\$ 26.00
6	640	106.7	15.0	\$ 400.00	\$ 3,900.00	\$ 4,300.00	\$ 6.72	\$ 43.33

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!

Christina Esquivel (ch.esquivel@tamu.edu)

& Theresa Murphrey

Texas A&M University