Integrating Formative Assessments in Principles Courses

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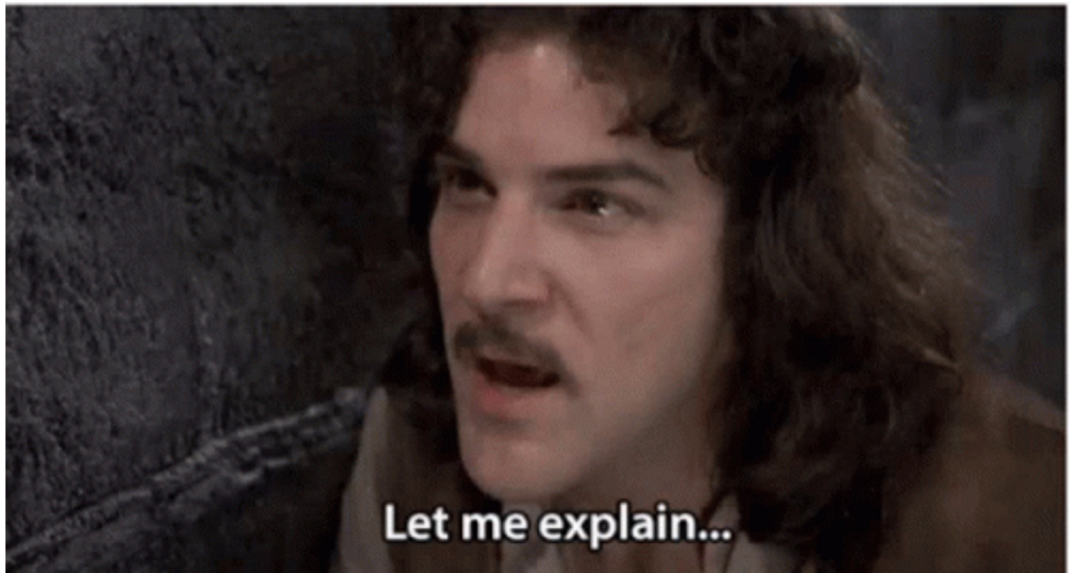
What the research says....

Here's a good article from the Kappan on formative assessments

Royce Sadler's article is probably the gold standard "Formative assessment and the design of instructional systems."



Basics on formative assessments

Four core elements:

1) **Identifying the "gap" in learning**
    - What do students know and what do you want them to know?
2) **Provide feedback**
    - To both students and teachers on where they are relative to where the goal is.
3) **Student involvement**
    - Students need to be actively involved in the learning.
4) **Learning progression**
    - Formatives should help student learning progress towards the learning objective.

Example #1 basic check for understanding

Formative assessments can easily fit into existing content.

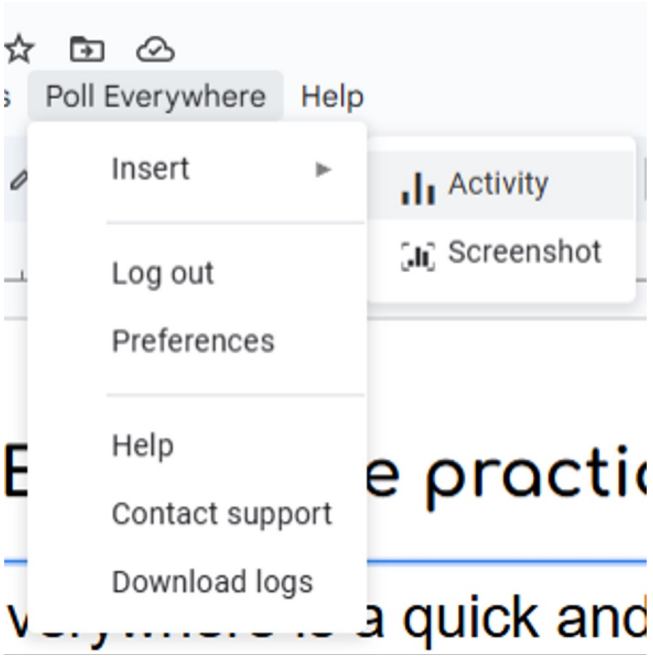
I have found it best to think of the types of questions you will ask on your summative first (*identify the gap*), then build in formative assessments to allow students a chance to build their knowledge (*student involvement*).

Poll Everywhere practice!

Poll Everywhere is a quick and easy way to provide formative assessments to your classes

All you need to do is add the Poll Everywhere extension to Chrome and viola!

Lots of other polling software options



Think about the functions of money (unit of account, store of value, medium of exchange), do cryptocurrencies qualify as money?

YES, crypto for life! 0%

No 0%

What are cryptocurrencies?!?! 0%

Poll Everywhere practice!

Backup plan!

Tips for implementing

I pose this question immediately after introducing the functions of money.

This opens up a conversation on the importance of each of the functions of money.

It also helps prepare students for a short answer question they will see on the summative assessment.

Checking on growth with a summative

Your friend gets into an argument with Professor Kruggel about Bitcoin. They argue Bitcoin ushered in a new era of digital currency. Prof. Kruggel disagrees, he believes Bitcoin (and all cryptocurrencies) fail to meet the requirements needed to be considered currency.

-Which function(s) of money would Prof. Kruggel argue Bitcoin fails to satisfy and why?

<u>Alternative version</u>

-Which function(s) of money would your friend argue Bitcoin satisfies and why?

2-3 sentences max

Example #2 check for understanding

Pre-class slides are another great way to implement formative assessments. (stole this idea from Jadrian)

- I add some basic Econ in the News content
  - (Super easy thanks to Monday Morning Economist and MRU's Econ in the News, Fed press releases are also a great resource)...
- And combine a few practice questions covering content from the previous class.

Here are a few pre-class the slides from this spring.

Practice question

Assume there is a housing shortage and the government prevents prices from rising.

Is this an example of a price floor or ceiling?

Does this create a surplus or shortage?

What impact does this have on total surplus?

Pre-class slide practice question

Econ in the news

Costs of production

Monday Morning Economist

The Penny Problem Isn't Solved—It's Just Moved to the Nickel

Eliminating the penny might sound like a smart way to cut costs, but when nickels are even more expensive to produce, are we really saving anything?

JADRIAN WOOTEN

FEB 17

Are We Trading One Bad Coin for Another?

Getting rid of the penny might seem like a no-brainer—it costs more to make than it's worth, and hardly anyone uses it. But there's a catch: eliminating the penny would likely increase demand for the next smallest coin—the nickel. And from a cost perspective, **the nickel is an even worse deal for taxpayers**.

Right now, each penny costs about 3.7 cents to make, meaning the government loses roughly 2.7 cents per penny minted. A nickel? Each one costs over 12.5 cents to produce. While the penny costs relatively more as a percentage, nickels cost more as an absolute value. Every time the U.S. Mint produces a nickel, it results in a loss of 7.5 cents—more than *twice* the per-unit loss of a penny.

Pre-class slide topic (can be tied to previous content as a formative)

Practice question

Pre-class slide practice question (answer)

Assume there is a housing shortage and the government prevents prices from rising.

Is this an example of a price floor or ceiling?

Ceiling

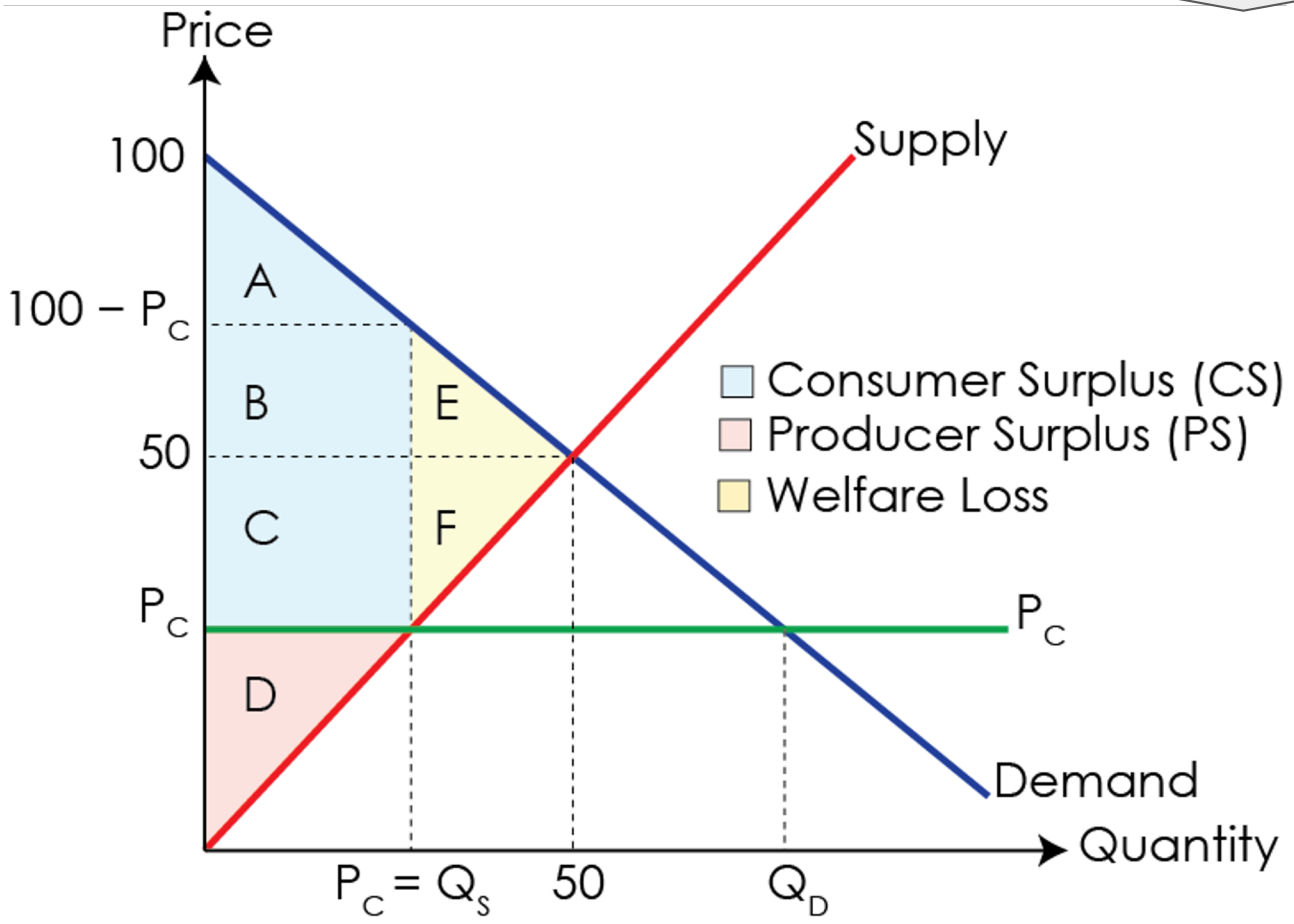
Does this create a surplus or shortage?

Shortage (binding PCs go below equilibrium)

What impact does this have on total surplus?

Practice question

Pre-class slide practice answer graphing connection



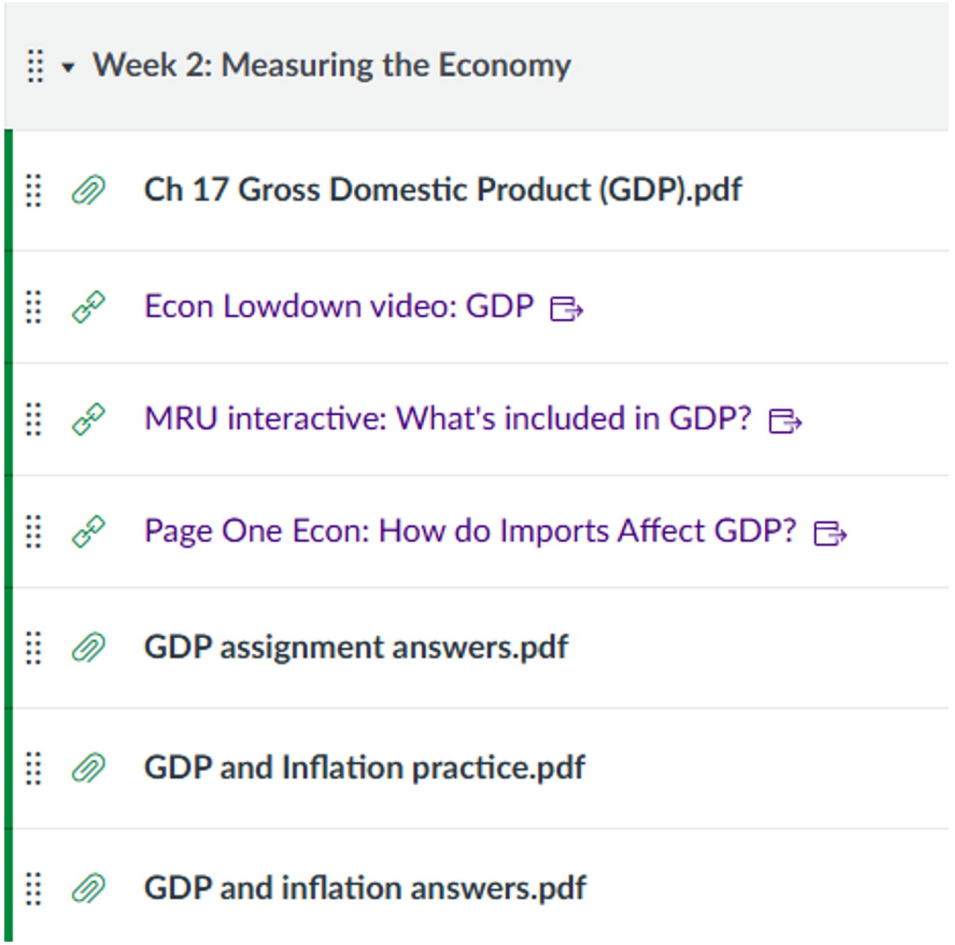
Reinforce if needed

If I notice students struggling with this concept (or others) I will guide them to additional help on Canvas.

(*provide feedback*)

(*student involvement*)

MRU interactives, Economic Lowdown videos, ACDC Econ videos, Textbook review questions, etc.

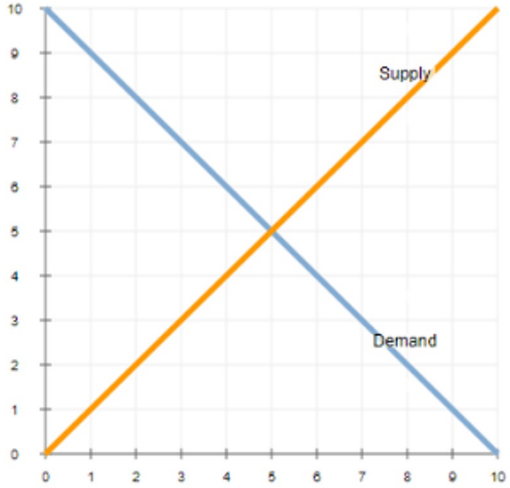


Checking on growth with a summative

5. A binding price ceiling creates a _____ and will _____.
   a. Surplus; create excess supply
   b. Surplus; create excess demand
   c. Shortage; create excess demand
   d. Shortage; create excess supply

Learning progression (hopefully)

8. The following graph shows the market for milk at equilibrium.



Suppose the government decides to impose a price floor of $2 per gallon in the milk market.

The price floor of $2 per gallon of milk will have what impact on producer surplus?

   a. Reduce producer surplus
   b. Increase producer surplus
   c. No impact on producer surplus
   d. Not enough information to answer this question.

Example #3 calculation practice

I find it helpful to use formative assessments to provide some scaffolding on expectations with any calculations for a summative. (*provide feedback*)

Example #3 calculation practice

My standard steps are pretty basic:

1) Have students practice via group work (5-10 mins).
2) Give them a short quiz over their calculations (10 mins either at the end of class or the start of the next class).
    - I tend to make the formative quiz and practice harder than the summative will be.
3) Test them again with question(s) on the summative.

Examples

In class practice (identifying the gap)

Quantity	FC	VC	TC	MC	AFC	AVC	ATC
0	$55		$99	–	–	–	–
1		$53.00					
2				$3.00			
3						$20.33	
4							$30.00
5	$55	$67.00		$2.00			
6						$12.50	
7			$132.00		$7.86		
8							$17.63
9		$95.00					
10	$55			$7.00			

Short check for understanding quiz (*provide feedback)*

1) Complete the following cost table for a perfectly competitive market.
Be sure to round to the hundredths place, (second decimal). Example: write 12.667 as 12.67
1 pt per blank

Quantity	FC	VC	TC	MC	AFC	AVC	ATC
0	**$55**		**$93**	**–**	**–**	**–**	**–**
1	**$55**	**$56**					**$111**
2	**$55**			**$30**			

Checking on growth with a summative

Short answer(ish) (*learning progression*)

20) Use the following cost table to answer the next question.

Output	Average Variable Cost	Average Total Cost	Marginal Cost
0	-	-	-
2	$2.50	$27.50	$2.5
4	2.00	14.50	1.5
6	2.00	10.33	2.0
8	2.13	8.38	2.5
10	2.30	7.30	3.0
12	2.50	6.67	3.5
14	3.00	6.57	6.0
16	4.00	7.13	11.0

The table shows cost data for a perfectly competitive firm. If the market price for the firm's produc is $6, what output level will the firm produce to maximize profits?

a) 0
b) 12
c) 14
d) 16

Multiple choice (*learning progression*)

16. Fill in this table for a competitive firm, use it to answer the following questions:
(½ pt per blank/ 11 total pts)

Output	Variable cost	Fixed cost	Total cost	Marginal cost
0	$0	$15		–
1	$12	$15		
2	$25	$15		
3	$42	$15		
4	$75	$15		

Assume your price is $30

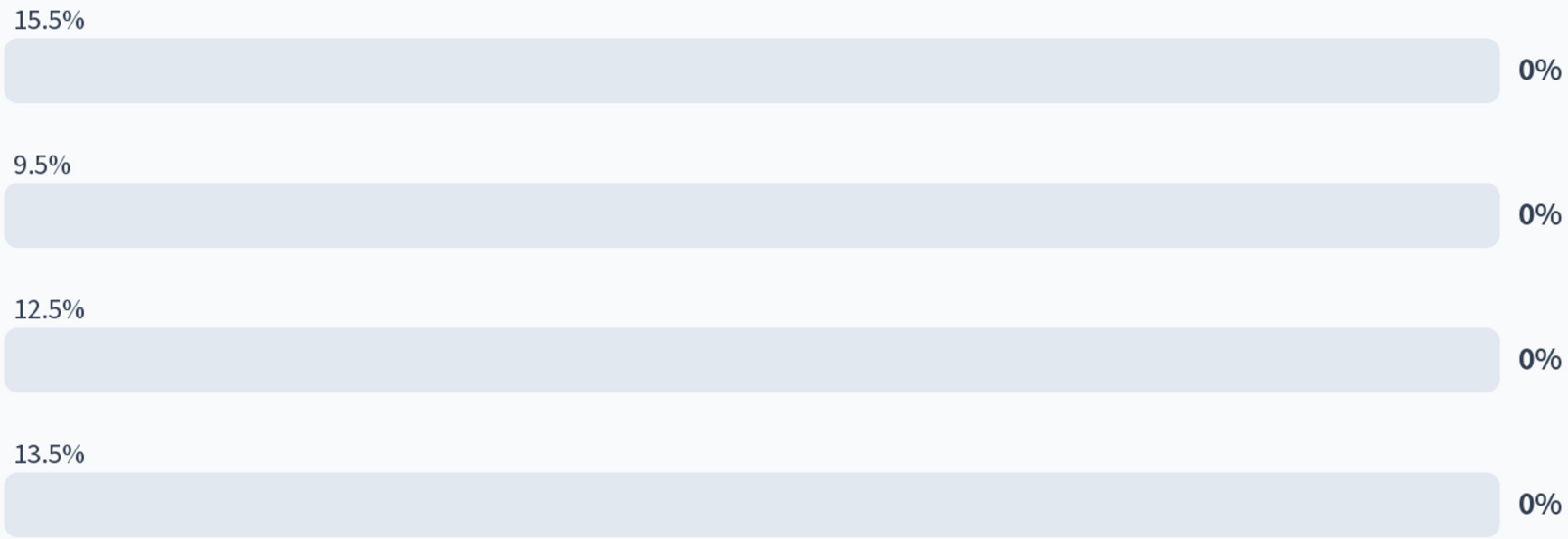
1. What is the marginal revenue for this firm? (½ pt)
2. What is the profit maximizing quantity for this firm? (2 pts)
3. At the profit maximizing quantity, what is the total revenue for this firm? (2 pts)
4. At the profit maximizing quantity, what is the firm's profit? (2 pts)

Example #3 calculation practice

Scaffolding with formatives also allow me to ask deeper understanding questions.

Here’s an example using labor calculations

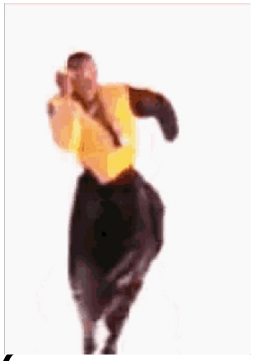
Canada has a labor force of 120M, 10M are currently frictionally unemployed, 5M are structurally unemployed. What is their natural rate of unemployment?



Poll Everywhere practice!

Backup plan!

Let's Break That Down!



Natural Rate of Unemployment=

Frictional + Structural

Labor force

So...Canada's Natural Rate of Unemployment=

(10M+5M)/120Mx100

So...

0.125x100=12.5%

Labor force and unemployment

Labor force = # of employed + # of unemployed

Unemployment rate =

$$\frac{\text{\# of unemployed}}{\text{labor force}} \times 100$$

Labor force participation rate =

$$\frac{\text{Labor force}}{\text{Adult population}} \times 100$$

Employment status, sex, and age	Sept. 2022
TOTAL	
Civilian noninstitutional population	264,356
Civilian labor force	164,689
Participation rate	62.3
Employed	158,936
Employment-population ratio	60.1
Unemployed	5,753
Unemployment rate	3.5
Not in labor force	99,667
Persons who currently want a job	5,834

Numbers in thousands

Let's do the math

Labor force = 164,689,000

Unemployed = 5,753,000

Unemployment rate (in percent) =

$$\frac{5{,}753{,}000}{164{,}689{,}000} \times 100 \cong 3.49\%$$

Unemployment rate	3.5

Example #3 calculation practice (cont.)

We practice the basic employment calculations together and I let them know I will ask them several questions about the labor force to test for depth of knowledge.

(*learning progression*)

Checking on growth with a summative

Question 1 2 pts

Answer the next question on the basis of the following information about the hypothetical economy of Kruggelton. All figures are in millions.

Unemployed	7
Total population	145
Employed	95
Discouraged workers	3

The labor force in Kruggelton is...

- ○ 145 million
- ○ 105 million
- ○ 102 million
- ○ 95 million

Basic calculation

Depth of Knowledge question

Question 14 2 pts

The total adult population of an economy is 175 million, the number of employed is 122 million, and the number of unemployed is 17 million. The percentage of adults who are not in the labor force is...

- ○ 20.6%
- ○ 30.3%
- ○ 13.9%
- ○ 25.3%

Conclusion

I hope you can use some of these tips/tricks in your principles courses!

If not…here's a picture of my new puppy.