

# Encouraging Metacognition Through Reflection Papers

Jacqueline Jensen-Vallin

Department of Mathematics  
Lamar University

28 July 2017

*Encouraging Early Career Teaching Innovation*

# Outline

- 1 Abstract
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- 3 Samples
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# ABSTRACT

Students who think about how they are learning and forge connections between topics they are studying will understand material better. We can encourage (force?) them to reflect on what they are learning and to make connections through weekly directed writing assignments. We will discuss a possible prompt for these assignments, provide some examples, and discuss upcoming changes to implementation.

# Definitions

## Definition

**Metacognition** is awareness of one's own thought process.

“It involves self regulation, reflection upon an individual’s performance strengths, weaknesses, learning and study strategies.”

<http://www.epsi-usa.com/approach/metacognition.htm>

# Effects

- Build self-sufficiency
- Ability to monitor and modify one's own habits
- Recognition of one's strengths and weaknesses

# Assignment(s)

Exam Wrappers (see IBL mini-conference)

Homeworks with one resubmit possible

Daily vocabulary quizzes

“Usual” exams

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## Weekly Reflection Papers

# Prompt

Every Monday at the beginning of class, you will submit a written summary of what occurred in class during the previous week. This will be well-written in complete sentences. Your summary should include definitions of important terms as well as a summary of ideas. It does not need to include all information presented, but it should be able to be used as a summary for a classmate if he or she had missed the week's classes. The last part of this assignment should mention any questions you still have about the topic.

Think of these as you writing yourself a summary of the class,  
to be used to study for an exam or the final.

# Sample Responses

List of definitions

## Sample Responses

I would also like to note that on Friday, when the students ran the class, it was very informative as we each put up problems from the previous home works and were there to answer any question someone had. It was productive and got us, the students, more engaged with each other to the point I shared my number with several students so that in the future if I am having trouble I have the ability to reach out to them.

## Sample Responses

On Monday, we proved that the carnality of the natural numbers=the carnality of the integers=the carnality of the rational numbers, and that they are all countably infinite. I had never seen this done before, so it was really amazing. Infinities are always a blast for me.

Wednesday we re-defined a few key definitions, then discussed. I really enjoyed the review because I had already studied these definitions so I was able to pay more attention to the discussion. It definitely helped when I was doing the homework.



## Sample Responses

On Wednesday, the class moved on with new material. The class learned about cosets. Cosets are elements in a group, that when a math operation is performed on the group, it gives back all the elements in the group (i.e, the set of all  $gH$  or  $Hg$  such that  $h \in H$  is an element in the subgroup  $H$ ). In short, those outputs partitions the entire subgroup. The notation for left and right cosets respectively are  $gH$  and  $Hg$ . Jensen used examples to show that cosets partitions a subgroup, namely the quaternions and the set of integers.

# Upcoming changes

Better discussion of metacognition as motivation

Better directions?

Example papers?

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THANK YOU!

[jacqueline.jensen@lamar.edu](mailto:jacqueline.jensen@lamar.edu)

Facebook: Jacqueline Jensen Vallin

Twitter: @jajensen681