Ideas for Gamification in Online Classes

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I just really enjoyed the class and for the first time in a really long time, I felt confident at math! That's been such a wonderful surprise! Thank you for your time and work to make this class less of a worry and more of a blessing. You rock!

Thank you for this class and your time put into setting it up so we can be successful!
Background: The Problem

- Engagement in Online Classes
- Student Learning in Online Classes
- More Thinking in Online Classes
- Different types of Student Interaction
New Ideas

- LAMP Fellow at the University of Wyoming 2018-2019
- Christine Boggs- Instructional Designer at UW Spring 2020
- Redesign of Problem Solving Summer 2020
- Redesign of College Algebra & Calculus & Math for Elementary School Teachers
- Coffee and Conversation Talk Fall 2020
The four traits of a game:

- **A Goal:**
  Provides players with a sense of purpose

- **Rule:**
  How can players achieve the goal...unleashes creativity and fosters strategic thinking.

- **Feedback System:**
  Allows players to see that the goal is achievable and increases motivation.

- **Voluntary Participation**
  Allows challenges to be “safe and pleasurable”
How I Used the Traits of Games to Design My Classes

• Goal:  
  What grade do you want in the class?

• Rule:  
  This class is set up as a points based class. Where it is possible to get enough points to not have to take the final exam.

• Feedback System:  
  There are “extra points” throughout the class. There is a lot of writing and interaction with other students and the instructor.

• Voluntary Participation:  
  Choice of Assignments. Flexibility of Timing for Completing Assignments.
Grading Scale

- 1525 points = A
- 1305 points = B
- 1085 points = C
- Below 1085 = F

All assignments and exams are due on the due date in the schedule. No late work will be accepted.

There will be roughly 70 points per section and there are 13 sections in the course. You need 55 points for an “A”, 45 for a “B”, and 35 for a “C” in each section. However, any extra points you receive will be counted towards your grade and can help you if you are not a good test taker.

Additionally, there will be three 300 point exams given during the semester. You need 270 points for an “A”, 240 for a “B”, and 210 for a “C”.

### Module Design: Problem Solving

#### Module 1: Venn Diagrams & Ratio, Proportion, & Percent

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>Pearson MyLab and Mastering</td>
<td></td>
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<tr>
<td>Reading Review</td>
<td>9 pts</td>
<td>Feb 29</td>
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<tr>
<td>Venn Diagrams - Two Circles watch first 4 minutes</td>
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<tr>
<td>Venn Diagram 3 circles</td>
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<tr>
<td>Tables and Venn Diagrams (Ignore the probability)</td>
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<tr>
<td>1C Video Summary</td>
<td>5 pts</td>
<td>Feb 29</td>
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<tr>
<td>1C Brief Review</td>
<td>16 pts</td>
<td>Feb 29</td>
</tr>
<tr>
<td>1C Problem Set</td>
<td>20 pts</td>
<td>Feb 29</td>
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<tr>
<td>1C Venn Diagram Project</td>
<td>10 pts</td>
<td>Feb 29</td>
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<tr>
<td>Discussion 1C</td>
<td>5 pts</td>
<td>Feb 29</td>
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<tr>
<td>1C Group Project</td>
<td>10 pts</td>
<td>Feb 29</td>
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<tr>
<td>1C Bonus Points</td>
<td>0 pts</td>
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<tr>
<td>2A - Unit Conversions</td>
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<td>Title</td>
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<tr>
<td>Shifts, Reflections, and Stretching of Basic Graphs</td>
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<tr>
<td>Textbook Shifts, Reflections, and Stretching (Copy)</td>
<td>2 pts</td>
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<tr>
<td>Video: Shift, Reflect, and Stretch</td>
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<tr>
<td>Introduction to Using Geogebra for Graphing</td>
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<tr>
<td>Video Summary Shifts, Reflections, and Stretching</td>
<td>5 pts</td>
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<tr>
<td>Project - Shifts, Reflections, and Stretching of Graphs</td>
<td>10 pts</td>
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<tr>
<td>Project - Equations from Graphs</td>
<td>5 pts</td>
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<tr>
<td>MML 4: Shifts, Reflections, Stretching</td>
<td>20 pts</td>
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<tr>
<td>Discussion Shifts, Reflections, and Stretching</td>
<td>5 pts</td>
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<tr>
<td>Module 2 Summary</td>
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<tr>
<td>Summary Discussion Module 2</td>
<td>5 pts</td>
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<tr>
<td>Module 2 Quiz</td>
<td>10 pts</td>
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Video Summary

- Many Short Videos – Between 5 and 15 min
- 5 points each

For this video assignment, you must watch the Youtube videos that your instructor has provided (not the Pearson Video Assignment). Once you have watched the videos for this section, you need to provide a summary. The summary should include:

- A summary of the information in each of the videos provided in the videos.
- Any formulas that were provided in the videos.
- Questions you have after watching the videos.
- Any other information, for instance what was the most interesting part of the video. What did you find most helpful in the video? What was least clear to you in the video.
Discussions

- **3 points per submission**
- Choose one problem from the problem set. Post a complete solution to the problem on the discussion. You should be able to add a photo to your discussion post. You must complete explain your answer and show all your work (especially if the question in MML is a multiple choice question).
- **Please use the example below to help you format your solutions and posts. I expect solutions to be typed in the discussion and photos to be added within the text of the discussion.** Use the math tool bar $x\sqrt{}$ to write out formulas. There is a video of how to use these tools in the getting started section.
- Make sure you include the problem number.
- Give a summary of the problem you are trying to solve.
- Use the equation editor where necessary to explain your work or when writing math symbols, equations, or expressions.
- Upload photos of diagrams or work done by hand. Do Not Add Attachments. Use the Embed Image on the tool bar to upload photos.
- **2 point per submission**
- Ask a homework related question. Be specific. Where are you having problems? Where did you get stuck? What have you tried?
- Answer a question for a fellow student. Explain how you would solve the problem.
- Post a website or video or other resource you found helpful. Write 2-3 sentences about why you found this helpful and what topics it covered.
- Bonus – You can get 2 extra points if you upload a video of yourself doing the problem.
Projects

- Adapted from group work I have done in face to face classes
- In Problem Solving have tried some group projects
- Try to have students use technology or connect different concepts
- Usually involve writing and explaining
Find a partner to do this project.

Each Partner will make a Venn Diagram with three Circles and Create a Table as on page 35 Example 9. Then exchange the table only with your partner and create a Venn Diagram based on their table. Exchange these Venn Diagrams. Explain anything you found difficult about their table or any problems you see with their Venn Diagram.

Upload the following:

1. Your solution to your Venn Diagram which includes both a diagram and the table you sent your partner.
2. A copy of the Venn Diagrams you sent back to your partner with any comments you have about the table or your partners solution.
2A Group Project

With a Partner, plan a trip to at least 5 different South American Countries. Use a currency exchange website to get all of the exchange rates you need. Make a power point presentation showing the currency you will need and the value of each currency in dollars. Look up the cost of a souvenir or dinner in each county. Use unit conversion to show the cost in American dollars. (Use the same item for each as a comparison of the cost.) The last slide explain what you and your partner found interesting and difficult about this assignment.
Landscaping Project.
Suppose that you are planning to landscape a portion of your yard that measures 60 feet by 35 feet. Determine the price of the needed items by looking online. You will need to provide a link to the website where you found the item as part of your solution. Use the prices to answer the following questions.

A) How much would it cost to plant the region with grass seed. You must show all the unit conversions using a chain of unit conversions as given in the book and the videos provided. Are there other costs associated with this? Explain. 2 pts
B) How much would it cost to plant the region with sod? (Again show all unit conversions.) Are there other costs associated with this? Explain. 2 pts
C) How much would it cost to cover the region with high quality top soil and then plant two flowering bulbs per square foot? Show your work. 6 pts
Use your Calculator or GeoGebra to graph the following functions and draw a rough sketch. Most basic graphs start or go through (0,0). Label the point this moves to in these examples.

1. \( f(x) = x^2 \)
2. \( f(x) = (x + 4)^2 - \)
3. \( f(x) = (x - 2)^2 + 3 \)
4. \( f(x) = -x^2 - \)

5. Explain what you see happening. How do the symbolic representations of functions relate to the graphical representations? Be as specific as possible.

6. Write a new equation using the function \( f(x) = |x| \). Explain what the graph should look like for this function and then graph it to check your work.
Module Quizzes

• Timed Quizzes
• Make Videos With Solutions
• Ungrading(?)
Comment on both of these topics. You should have 2-3 sentences at least for each. You might include formulas or pictures if that makes sense to you.

**Review without Refreshing (2pts)**
Think back over Module 1. Without looking back over your notes write a summary of the topics covered. Discuss what made sense and what did not and why.

**Review after Refreshing (2pts)**
Look back over your notes. Add any other comments after looking at your notes. Think about what you might study for an exam.

Comment on one other person post. (1 pt) You will not be able to see other posts until you write your own.
This Discussion is worth 50 points on your exam.

For each section covered in this module, you need to pick one problem from the book or from the homework that you think is likely to be on the exam. Additionally, pick one problem that you found very difficult and do the same. For this Exam you need at least 5 questions.

1. Write down each the problem with the instructions about what you are supposed to do and solve it showing all of your work. Take a picture of this and upload it to this post. (35 points)

2. Answer the following questions:

   - What as the most challenging part of the chapter for you? (5 pts)
   - What is one thing you do to help yourself prepare for an exam? (5 pts)

3. Comment on at least 1 post from a classmate about the problems they chose or what they found most challenge or their preparation for the exam. (5 pts)
I have redesigned this course this semester. I would like your feedback on how the course is going, so that I can make improvements to it in the future.

You do not have to do this assignment, however, I will give you points for responding to the questions.

Thank you for your thoughtful responses.

- When you compare this class to other math classes and online classes, what are the most noticeable similarities and differences?
- What do you like most about this class?
- What would you do to improve this class for future students?
- What has been your favorite assignment in the class and why did you like it?
- About how long do you spend per week working on this class? Does the amount of work seem reasonable to you for a 3 credit class (please explain).
- Are there any other comments or concerns you would like to make regarding the class?
Final Thoughts

- What about time?
- Design takes time
- Take it slow