Study Skills Project 1

Calculus 1

Objective and Purpose

This project is designed to help you develop the study skills needed for math and science courses in college. You might already know or do some or all of these things – but probably there's something new you'll try because of this project.

There are a number of sections. Each section is independent and does not rely on the other parts of this project, hence they can be completed in any order. They are:

- Study Sessions
- Notetaking
- Reading a textbook
- E-mailing a professor
- Solving exercise problems
- Creating flash cards

Due Date and Submission Instructions

You have two weeks for this project – due September 27th on Blackboard as a PDF document. A late submission suffers a 0.2% per hour penalty, while an incorrect submission format suffers a flat 20% penalty.

A word document version of this is available on Blackboard, please place your answers directly into the document by replacing the blue italicized text with your answers.

Study Session – Small blocks or large blocks?

In this part you'll need to study for a total of four hours. It does not need to be for calculus, but that's a great class to study for!

Method One – Large Block

- Choose a block of time that you have two hours free. Study for your chosen class for the entire two hours. Be sure you do not have any distractions such as music, television, or roommates playing video games. (You might think these things help you, but research indicates they do not)
- Plan a reward for yourself once you finish two hours of uninterrupted studying. It could be a snack, walk, a TV show, puzzle, or anything that you enjoy.

Method Two – Small Blocks

- Choose 4 times that you have 30 minutes free. Study for your chosen class during each of these short times.
- Use the first 5 minutes of each session to review big concepts in the class.
- During the middle 20 minutes study however you like.
- Use the last 5 minutes of each session to plan what you will do during the next session.

Write a reflection (maximum one-half page) on which method worked better for you, and why.
[Answer goes here]

Notetaking

In this part you'll experiment with different notetaking strategies. It does not need to be for calculus, but that's a great class to use! In any event, choose two lecture classes of the same course.

Method One – Record Everything

- Bring two colors of pencil or pen to class. Use one color to write down what the professor writes or displays on the projector. Use the other color to record notes on what the professor says. The idea is to come away from the class with a complete transcript of what the professor was trying to teach to help you use to study later.

Method Two – Focus on Listening

- Do not write down the vast majority of what the professor says or writes during class. Instead focus on listening to what the professor says or writes, and thinking about what it means. In your mind, rephrase everything he says or writes into your own words.
- If there is an idea, picture, or term, that seems to be particularly important, you can jot it down. Your notes are not meant to be a transcript of what occurred, but rather only simple reminders of important ideas. The idea is that you're learning during class and hopefully do not have the need to go back to your notes. Notes from an entire 50-minute class should not have more than five or ten words.

Post-Class-Debrief

Write a reflection (maximum one-half page) on which method worked better for you, and why.
[Answer goes here]

Reading a Textbook

Reading a mathematics textbook is a bit different from reading a humanities textbook. In particular, our calculus textbook has only a few paragraphs and is mostly filled with examples. Choose a section we've either just covered or are about to cover, and use this method to read it:

- Read the opening paragraphs and any other prose before the first example. If there is a "proof", skip it for now.
- When you get to the first example, take a sheet of paper or other object and physically hide the solution. Then read the problem and try to solve the example on your own paper.
    - Once you've completed (Or became stumped) on the example, reveal a single line of the example. If what you did was different from what they did, go back and rework the problem.
    - Repeat the process of revealing one line at a time until you reveal the answer.
- Repeat this method of reading and attempting the examples until you've finished reading the section.
- If you are inclined to develop a deeper understanding of why the mathematics you've been learning works, go back and read the proof(s) you skipped.

Post-Reading-Reflection

Write a reflection (maximum one-half page) on this method for reading a math textbook. Be sure to answer the following question in your reflection:

- Which section did you read?
- How long did it take you?
- Do you feel like you understand the material better after reading it? Why or why not?
- Do you feel like this method will be helpful for you in the future? Why or why not?
- Why does Dr. Beyerl recommend this method compared to the way you read, say, a history textbook?

[Answer goes here]

E-mailing a Professor

In this part you'll craft two professional e-mails to a fictitious professor. Pay particular attention to figuring out how to convey what you need to say while also being respectful.

Background: You know the following things about your professor:

- Name: Elizabeth Smith
- Course: College Algebra
- Field of Expertise: Trigonometry
- Degree: Doctorate from the University of Florida
- Preferred pronouns: She/Her
- Your impression of her from class: Forgetful but organized and very smart. Probably leans toward the Democratic Party and might be religious, but you can't tell for sure.
- Hobbies: Painting, hiking, and 3D printing.

Relevant information: Which items above are relevant to composing a professional e-mail about the class you're enrolled in?
[Answer goes here]

E-mail One – Asking for assistance

You're working on a homework problem, "Solve $x^2 + 5x + 6 = 0$". You know that you can factor it as $(x + 2)(x + 3) = 0$, but for the purpose of this assignment, pretend you don't know what to do next. Craft an e-mail to the professor asking for help on this problem, taking into account the following items:

- The E-mail subject should include the course you're enrolled in.
- The E-mail should include a salutation line.
- The E-mail should include a signature line.
- The E-mail body should be contained between the salutation and signature, be descriptive, respectful, and concise.
- The E-mail body should express both what you know and what you want to know.

E-mail Subject: *[Answer goes here]*

E-mail Body:
[Answer goes here]

E-mail Two – Missed a quiz

Your course had a quiz scheduled for Thursday March 8th. However, your roommate left some pizza in the fridge that you ate last night. Unknown to you, your roommate had left the pizza at room temperature on the counter for 6 hours and a bacteria colony took hold. Long story short, you were throwing up and disoriented throughout the day Thursday and you missed class as well as the quiz. Friday morning you went to the student health center, received antibiotics, and you're feeling a bit better now. You are going to craft an e-mail to your professor and ask if you can take a make-up quiz. You would also like to know if there was a new homework assignment given. Take into account the following items:

- The E-mail subject should include the course you're enrolled in.
- The E-mail should include a salutation line.
- The E-mail should include a signature line.
- The E-mail body should be contained between the salutation and signature, be descriptive, respectful, and concise.

E-mail Subject: *[Answer goes here]*

E-mail Body:
[Answer goes here]

Solving Exercise Problems

In this part you'll work toward solving exercise problems. Choose a section from calculus that we've recently covered.

Computational exercises in a mathematics textbook are grouped into types. Each type has anywhere from 4 to 20 or so problems. Each problem of that type can be solved essentially the same way. For each type of problem in the chosen section, use the method below:

- Completely solve the first odd-numbered problem. Check your answer with the back of the textbook.
    - If you solved that problem with no trouble, look at the next odd-numbered problem. Can you see all the steps in your mind? If you can, solve it, check your answer, and move on to the next type.
    - If you solved the problem but had some trouble somewhere, attempt the next odd numbered problem until you can solve one with no trouble.
- Repeat this method on the other types of problems in that section. There should be 5-10 different types of problems, depending on the section you've chosen.

Post-Reading-Reflection

Write a reflection (maximum one-half page) on this method for solving exercise problems. Be sure to answer the following question in your reflection:

- Which section did you choose?
- How long did it take you?
- What method do you usually use to solve exercise problems?
- Why does Dr. Beyerl recommend this method compared to what you usually do?

[Answer goes here]

Creating Flash Cards

Flash cards can be an effective study tool. In math, there are two reasons you typically create flash cards:

- To memorize key conceptual ideas
- To practice key computational skills

Let's use the section on the product and quotient rules for this section. This is section 3.3 in our textbook. If you feel confident, you may modify the directions below to use a different section instead.

The two key concepts are the product rule and the quotient rule. On one side of a flash card write the name of the rule, on the other side give the equation.

For computational skill practice, we'll create flash cards with exercise problems. Create three flash cards for each rule. On one side place a practice problem. On the other side place the answer. Choose problems that aren't too simple, you want them to effectively demonstrate the rule.

To show that you've completed this section, place your flash cards on a table and take a picture of them. *[Picture goes here]*