

1 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
Does Prediction Enhance Engagement & Retention? Human Dimensions of Sustainability
WHAT (DESCRIPTION OF STRATEGY)
Use prediction to activate prior knowledge, anticipate content, and connect new knowledge to existing knowledge structures as well as to expand knowledge structures
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
To enhance retention and recall of content as well as help to build connections between existing knowledge and new knowledge
HOW (KEY IMPLEMENTATION STEPS)
<p>This “prediction” is a little different from a pre-quiz or other prediction activity, because students brainstorm what they think would be principles of sustainability, and then read key international documents that specify principles of sustainability.</p> <p>The week before introducing the Earth Charter and the UN Sustainable Development Goals, a group assignment was to brainstorm 3-5 principles that would promote well-being of people and the planet. Next, after reading the two documents the groups compared the principles they identified with principles in the Earth Charter and Sustainable Development Goals. The “prediction” served to activate their prior knowledge and think about what they would put into a document focusing on sustainability, and then connect their predictions with the principles in each of the documents. The comparison served to confirm some of their predictions, and then describe some additional principles they did not think of. Finally, each group created a 3-5 minute video about one of the principles, designed to educate their peers.</p>
RECOMMENDED RESOURCES/LINKS
CONTACT INFORMATION
Julia Torquati jtorquati1@unl.edu Department of Child, Youth and Family Studies

2 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE																													
"But HOW can I process more deeply?" A class activity and video resources to deepen students' levels of processing																													
WHAT (DESCRIPTION OF STRATEGY)																													
<p>In the first few days of the semester, I engage my first-year Introduction to Psychology students with a brief in-class activity developed by Dr. Stephen Chew at Samford University that demonstrates the importance of deep processing for improving their learning. (Activity details, theoretical and empirical roots, and student reactions can be found here: https://tinyurl.com/ybjv8y89.)</p> <p>The activity involves assigning students to complete a memory task under different instruction conditions and comparing performance across the conditions. I then lead a brief class discussion about ways to engage in deep processing while taking notes, reading, reviewing, and engaging in other academic activities. It works well in classes ranging from about 24 students to 400+ students. It is particularly valuable for first-year and sophomore students, but may convey benefit in any class in which students tend to process shallowly or struggle to make connections.</p>																													
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)																													
<p>Many students rely heavily on learning strategies that have low utility, such as highlighting and rereading (Dunlosky et al., 2013; Bartoszewski & Gurung, 2015). This reliance on low-utility strategies may be particularly widespread among entering college students who are still adapting to collegiate expectations and workload, and who have not yet learned about higher-utility strategies.</p> <p>The purposes of this activity from Stephen Chew are to demonstrate to students the value of deep processing and to provide them with specific suggestions and resources for implementing higher-utility learning strategies that involve deep processing.</p>																													
HOW (KEY IMPLEMENTATION STEPS)																													
<p>1. Have the class divide into four quadrants. Assign each quadrant its own set of instructions they will apply to a list of words you read aloud, without letting the other three quadrants see their instructions. I typically use the following conditions:</p> <table border="1" data-bbox="237 1257 1094 1549"> <tbody> <tr> <td style="text-align: center;"> Front left: Deep processing (Is it a pleasant word?) + Unexpected quiz </td> <td style="text-align: center;"> Front right: Shallow processing (Does the word contain E or G?) + Unexpected quiz </td> </tr> <tr> <td style="text-align: center;"> Back left: Deep processing (Is it a pleasant word?) + Expected quiz </td> <td style="text-align: center;"> Back right: Shallow processing (Does the word contain E or G?) + Expected quiz </td> </tr> </tbody> </table>						Front left: Deep processing (Is it a pleasant word?) + Unexpected quiz	Front right: Shallow processing (Does the word contain E or G?) + Unexpected quiz	Back left: Deep processing (Is it a pleasant word?) + Expected quiz	Back right: Shallow processing (Does the word contain E or G?) + Expected quiz																				
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<p>2. Read the word list aloud at a moderate speed, about 2-3 seconds per word, while the students indicate on a sheet of paper whether the answer to their instruction is YES or NO for each word.</p> <p>Word list:</p> <table border="1" data-bbox="188 1690 1401 1839"> <tbody> <tr> <td>1. Evening</td> <td>2. Country</td> <td>3. Salt</td> <td>4. Easy</td> <td>5. Peace</td> <td>6. Morning</td> </tr> <tr> <td>7. Pretty</td> <td>8. Expensive</td> <td>9. Poor</td> <td>10. Doctor</td> <td>11. City</td> <td>12. Dry</td> </tr> <tr> <td>13. Cold</td> <td>14. Love</td> <td>15. Bargain</td> <td>16. War</td> <td>17. Hate</td> <td>18. Wet</td> </tr> <tr> <td>19. Rich</td> <td>20. Nurse</td> <td>21. Pepper</td> <td>22. Hard</td> <td>23. Ugly</td> <td>24. Hot</td> </tr> </tbody> </table>						1. Evening	2. Country	3. Salt	4. Easy	5. Peace	6. Morning	7. Pretty	8. Expensive	9. Poor	10. Doctor	11. City	12. Dry	13. Cold	14. Love	15. Bargain	16. War	17. Hate	18. Wet	19. Rich	20. Nurse	21. Pepper	22. Hard	23. Ugly	24. Hot
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3. After presenting all of the words, ask everyone to recall as many words as they can. When they have finished, have students count the total number of words they recalled. If you'd like, you can reread the list quickly so they can check accuracy, but this is optional.
4. Present a brief overview of the levels-of-processing framework. You don't have to know much about cognitive science to make an important point here. At the Intro level I typically just say that shallow processing is when we encode unimportant characteristics (e.g., location of terms on the textbook's pages, exact wording of a definition, spelling or font of a word), and deep processing is when we engage in semantic analysis by considering factors such as the meaning of a term, how a concept is related to other concepts, how to apply a theory to a new situation, or how a phenomenon is personally relevant. I also point out that processing runs on a continuum from shallow to deep, so even if we don't always use the deepest possible forms of processing, it's still probably better than using shallower forms.
5. Reveal the conditions into which the four quadrants were placed, along with their corresponding instructions. Have everyone indicate their performance on the recall test by having them all stand up. Anyone who got 6+ words correct should remain standing. Then go up by 3s (9 words correct, 12 words, 15 words, etc.). At about 12 to 15, it should be obvious that the shallow processing groups (right side) recalled very few words, regardless of whether they were told there would be a quiz. The majority of people standing will have used deep processing (left side), and there should be similar numbers of people who were warned vs. not warned about the quiz (front left vs. back left).
6. By now (hopefully) students should see the value of processing deeply for learning more effectively and more efficiently. Close by giving students some concrete recommendations for processing deeply (see Recommended Resources/Links below). Tailoring this to your particular class and your particular students will make the recommendations more meaningful, memorable, and useful to students.

Extending the demonstration (time- and interest-permitting):

Suggestion 1: Prior to dividing the class into quadrants, ask the students which of the following they think is the MOST important ingredient for successful learning. They can vote for their choice by holding up the corresponding number of fingers:

1. The intention and desire to learn
2. Paying close attention to the material as you study
3. The time you spend studying
4. Learning in a way that matches your personal learning style
5. What you think about while studying

After they vote, indicate that you will demonstrate (not just tell them) the correct answer. At the conclusion of the demonstration, return to the question about the MOST important ingredient for successful learning. Explain why #1-4 are each incorrect, leaving #5 as the correct answer.

1. The intention and desire to learn → *Not correct, because the motivation of expecting to be quizzed (vs. not) appeared not to influence performance on the recall test*
2. Paying close attention to the material as you study → *Not correct, for the same reason as #1 (presumably those who were expecting a test paid closer attention)*
3. The time you spend studying → *Not correct, because performance differed drastically despite the fact that everyone spent the same time studying the word list*

4. Learning in a way that matches your personal learning style → *Not correct (though not directly tested by this activity); explain to students that current theories of learning styles have weak or no empirical support. Although it can be helpful to study using several different methods (e.g., visually), it doesn't mean you're a "visual learner"—everyone benefits from exposure to visual and auditory and tactile and other kinds of content delivery.*
5. What you think about while studying → *Correct answer! This is strongly supported by the empirical evidence, and (hopefully) by the results of your in-class activity.*

It is important to point out here that desire to learn, paying attention, and time studying *are* important and beneficial, but they are effective **only** if they cause students to use deep processing during study.

Suggestion 2: Incorporate one or more of the “How to get the most out of studying” YouTube video series (links below) into class or as part of an out-of-class assignment.

RECOMMENDED RESOURCES/LINKS

“How to get the most out of studying” 5-part YouTube video series: *An excellent overview of the videos and suggestions for student and classroom use can be found at* <https://tinyurl.com/ydaqyhz2>

1. **Beliefs that make you fail... or succeed (6m53s):** <https://tinyurl.com/dxfh2o6>
Presents 4 “beliefs that make you stupid,” including “learning is fast,” “knowledge is composed of isolated facts,” “being good at a subject is a matter of inborn talent,” and “I’m really good at multitasking.” Also introduces the concept of metacognition.
2. **What students should understand about how people learn (7m14s):** <https://tinyurl.com/jdk4z8l>
Basis for today’s presentation. If class time is scarce, instructors may assign students to view and respond to the video instead of doing the in-class demonstration.
3. **Cognitive principles for optimizing learning (5m45s):** <https://tinyurl.com/yb4julvr>
Presents research-based study tips to achieve deeper processing: elaboration, distinctiveness, personal relevance, and making study appropriate to retrieval and application. I often show or assign this video early in the semester and remind them of it a few weeks later.
4. **Putting principles for learning into practice (9m16s):** <https://tinyurl.com/ycayb4y8>
Includes recommendations for effective note-taking and group study.
5. **I blew the exam, now what? (7m28s):** <https://tinyurl.com/yax7w2bh>
Useful video to reduce students’ panic and denial, and increase their metacognition, following poor exam performance. Some instructors offer credit or extra credit to students who watch this video and use it to create an evidence-based study plan for future exams.

“Improving classroom performance by challenging student misconceptions about learning” popular press article by Stephen L. Chew (2010): <https://tinyurl.com/ybjv8y89>

“How should students study? Tips, advice, and pitfalls” popular press article by Regan A. R. Gurung & Lee I. McCann (2011): <https://tinyurl.com/yb5p5rqk>

“Improving students’ learning with effective learning techniques: Promising directions from cognitive and educational psychology” empirical journal article by John Dunlosky and colleagues (2013): <https://tinyurl.com/nq2ebuj>

CONTACT INFORMATION

Carolyn Brown-Kramer, PhD, Assistant Professor of Practice
UNL Department of Psychology
cbrownkramer2@unl.edu / 402-472-3865 / Burnett 221

Instructions for FRONT LEFT: You will receive a list of 24 words; do not write them down as I read the list. Your task is to consider each word as I read it, and circle Yes or No for that word based on whether it meets the following criterion:

Is it a pleasant word? (Yes or No)

1. Yes No	7. Yes No	13. Yes No	19. Yes No
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Does the word contain the letter E or G (or both)? (Yes or No)

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3 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
Implementation of group assessments to help increase student understanding
WHAT (DESCRIPTION OF STRATEGY)
Students will first complete a course quiz or exam independently to help ensure individual preparation and determine an individual score. During the same class period, students will subsequently be asked to retake the quiz or exam in small groups to allow for student collaboration.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
<p><u>Impact on Student Learning</u></p> <ul style="list-style-type: none"> -students must explain their reasoning to reach a consensus, facilitating discussion & peer-assisted teaching -several studies have reported improved student understanding of concepts & test performance -some studies have also reported improved knowledge retention (conflicting evidence) <p><u>Time Commitment</u></p> <ul style="list-style-type: none"> -instructors: <ul style="list-style-type: none"> -develop & grade quizzes/exams as usual; minimal additional grading time required for group portion -peer-assisted teaching can reduce the time required for instructor-led review of quiz & exam questions -no need to devote time to development of new classroom learning activities -students: <ul style="list-style-type: none"> -study & take course quizzes & exams as usual; no additional out-of-class preparation is required
HOW (KEY IMPLEMENTATION STEPS)
<p><u>Considerations</u></p> <ol style="list-style-type: none"> a) both individual & group assessments will be administered during class time b) students should not access computers, phones, notes, etc. between individual & group assessments c) lack of equal participation of all group members can cause frustration d) high-performing students do not appreciate being frequently paired with low-performing students e) low-performing students can reduce study efforts if knowingly paired with a high performing student f) risk of grade inflation depending on how points are assigned to the different assessments <p><u>Recommendations</u></p> <ol style="list-style-type: none"> a) for the group portion, allow 1/3 – 1/2 of the time allotted for the individual quizzes & exams b) provide activities (e.g. crossword puzzles, Sudoku) to prevent cheating & boredom between assessments c) rotate groups with each assessment to prevent recurrence of dysfunctional group pairings d) assign groups randomly; all students are just as likely to be paired with a high or low-performing student e) only inform students of their group assignment immediately prior to the group assessment f) do not assign separate points for group assessments; award bonus points for improved performance
RECOMMENDED RESOURCES/LINKS
<p>Berg, R M, Plovsing, R R, & Damgaard, M (2012). Teaching baroreflex physiology to medical students: a comparison of quiz-based and conventional teaching strategies in a laboratory exercise. <i>Advances in physiology education</i>, 36(2), 147-153.</p> <p>Cortright, R N, Collins, H L, Rodenbaugh, D W, & DiCarlo, S E (2003). Student retention of course content is improved by collaborative-group testing. <i>Advances in Physiology Education</i>, 27(3), 102-108.</p> <p>Giuliodori, M J, Lujan, H L, & DiCarlo, S E (2008). Collaborative group testing benefits high-and low-performing students. <i>Advances in physiology education</i>, 32(4), 274-278.</p> <p>Giuliodori, M J, Lujan, H L, & DiCarlo, S E (2009). Student interaction characteristics during collaborative group testing. <i>Advances in Physiology Education</i>, 33(1), 24-29.</p> <p>Leight, H, Saunders, C, Calkins, R, & Withers, M (2012). Collaborative testing improves performance but not content retention in a large-enrollment introductory biology class. <i>CBE-Life Sciences Education</i>, 11(4), 392-401.</p> <p>Vogler, J S, & Robinson, D H (2016). Team-based testing improves individual learning. <i>The Journal of Experimental Education</i>, 84(4), 787-803.</p>
CONTACT INFORMATION
<p>Renee McFee rmcfee3@unl.edu School of Veterinary Medicine & Biomedical Sciences</p>

4 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
Using Concept Maps in Undergraduate and Graduate Seminars
WHAT (DESCRIPTION OF STRATEGY)
Graduate and some upper level undergraduate seminars typically involve students reviewing and discussing journal papers. Students new to reading journal papers often struggle with identifying the research questions addressed in journal papers in addition to critically evaluating the methodologies used and the results. In class, I present a “how to read a journal paper” discussion that I couple with concept maps. Students using concept maps to summarize journal papers better comprehend the papers and better contribute to the discussion on the journal papers.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Help students learn to read journal papers and then constructively discuss them in a seminar.
HOW (KEY IMPLEMENTATION STEPS)
<ul style="list-style-type: none"> • Assign “How to read and understand a scientific paper: a guide for non-scientists” and a good journal paper for everyone to read. • In the following class I present how I read the journal paper using the steps in the “How to read...” reference. We follow the steps rigorously and I take the lead on presenting my thoughts on each step and then I ask them what their thoughts were. This sometimes takes two class periods to get through for the first journal paper. For this first paper, the students prepare a written summary of their thoughts on each step of the process and turn it in. • We then read a second journal paper with the students again preparing a written summary of their thoughts according to the “How to read...” process. For this second paper, the students take the lead on their thoughts by having one student per question state their thoughts and then ask the rest of the class for their thoughts. • The written summaries can be long and tedious to prepare and have gotten in the way of a good class discussion of journal papers, however. To encourage the students to follow the steps and come to class prepared for a good discussion, I transition to concept maps by going through a concept map of the first paper that I created. I then have them develop concepts maps for the second journal paper during class in groups of two or three. The groups then present their concept maps to each other and we develop a concept map as a whole class for the second journal paper. • The third and fourth journal articles are ones that I select and I select ones that are flawed. I let the students know that there are flaws in the papers and ask them to identify where the flaws are in their concept maps of the third and fourth journal papers. With written summaries, students were missing the flaws but with concept map summaries, most correctly identified the flaws. • With four purposely selected journal papers under their belts, students then choose their own topic areas for study through journal articles. • For the next 8 weeks, we cover 4 to 6 journal papers per week with good discussions where all students are contributing to the discussion with limited need for me as the instructor to keep any discussion going or on track and topic.
RECOMMENDED RESOURCES/LINKS
Raff, J (2013) “How to read and understand a scientific paper: a guide for non-scientists” https://violentmetaphors.com/2013/08/25/how-to-read-and-understand-a-scientific-paper-2/ Angelo, T.A., and Cross, K.P. (1993) <i>Classroom Assessment Techniques: A Handbook for College Teachers</i> , 2 nd Edition, Jossey-Bass, San Francisco.
CONTACT INFORMATION
Libby Jones libby.jones@unl.edu 402-554-3869

5 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
GREAT EXPECTATIONS: DISCUSSING STUDENT SUCCESS
WHAT (DESCRIPTION OF STRATEGY)
<p>These two activities can be easily incorporated into the first-day-of-class routine and followed up on in mid-semester and final course evaluations. One activity shares advice from previous students in the course; the other focuses on student expectations for the teacher. I have used these activities in both small skills courses and large lecture classes.</p>
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
<p>These activities help set a positive and encouraging tone for the semester. They demonstrate to students that the instructor wants and values their input and is committed to helping them succeed.</p> <p>The teacher expectation activity gives the instructor an excellent opportunity to explain his or her teaching philosophy and methods within the context of the student responses. The instructor also can ward off potential problems should students mention lofty or unrealistic expectations.</p> <p>The peer advice activity gives students helpful and actionable feedback to start the semester. The relatable advice of the peers reinforces the instructor's expectations.</p> <p>Used together, these activities help students realize they are part of a supportive community (the instructor and their peers) who care about their success. As a result, students may be more motivated to learn and achieve course objectives.</p>
HOW (KEY IMPLEMENTATION STEPS)
<p>Teacher expectations activity</p> <ol style="list-style-type: none">1. After discussing the syllabus and student expectations on the first day of class, I ask students to write on note cards their expectations for me as the instructor. Students can include as many as they want, and they can do so anonymously. (This also could be done in an online survey like Google form.)2. During the next class period, I review their expectations for me, using a Wordle (http://www.wordle.net/create) to highlight common keywords and themes. I discuss how I plan to meet their expectations and, in some cases, how I won't, if I find any expectations unrealistic or in need of being tempered.3. As part of mid-semester course evaluations, I ask students to rate my performance according to the common expectations they listed on the first day. If there are any issues, I can address those in class and make adjustments in my teaching.4. As part of my final course evaluation, I again ask students to rate my performance according to the common expectations. I use this information when I prepare course assessments and reflect on my teaching for the semester.

Peer advice activity

1. At the end of each semester, I ask students this question: *“What advice would you offer next semester’s students to help them be successful in this class?”* I include this question on an online course evaluation, but it could be easily be done in other ways.
2. During the following semester, I share this advice with new students on the first day of class, after discussing the course syllabus, assignments and student expectations. I also post it to Canvas. (I screenshot the peer responses from an online survey so students can see them as they were written.)
3. As part of a written mid-semester course evaluation, I repeat the peer advice as a reminder.
4. I include the advice question in the final course evaluation for the current student cohort to answer. Their advice then is shared the next semester.

RECOMMENDED RESOURCES/LINKS

CONTACT INFORMATION

Michelle Carr Hassler, Assistant Professor of Practice, College of Journalism and Mass Communications | mhassler3@unl.edu | 402.472.7050

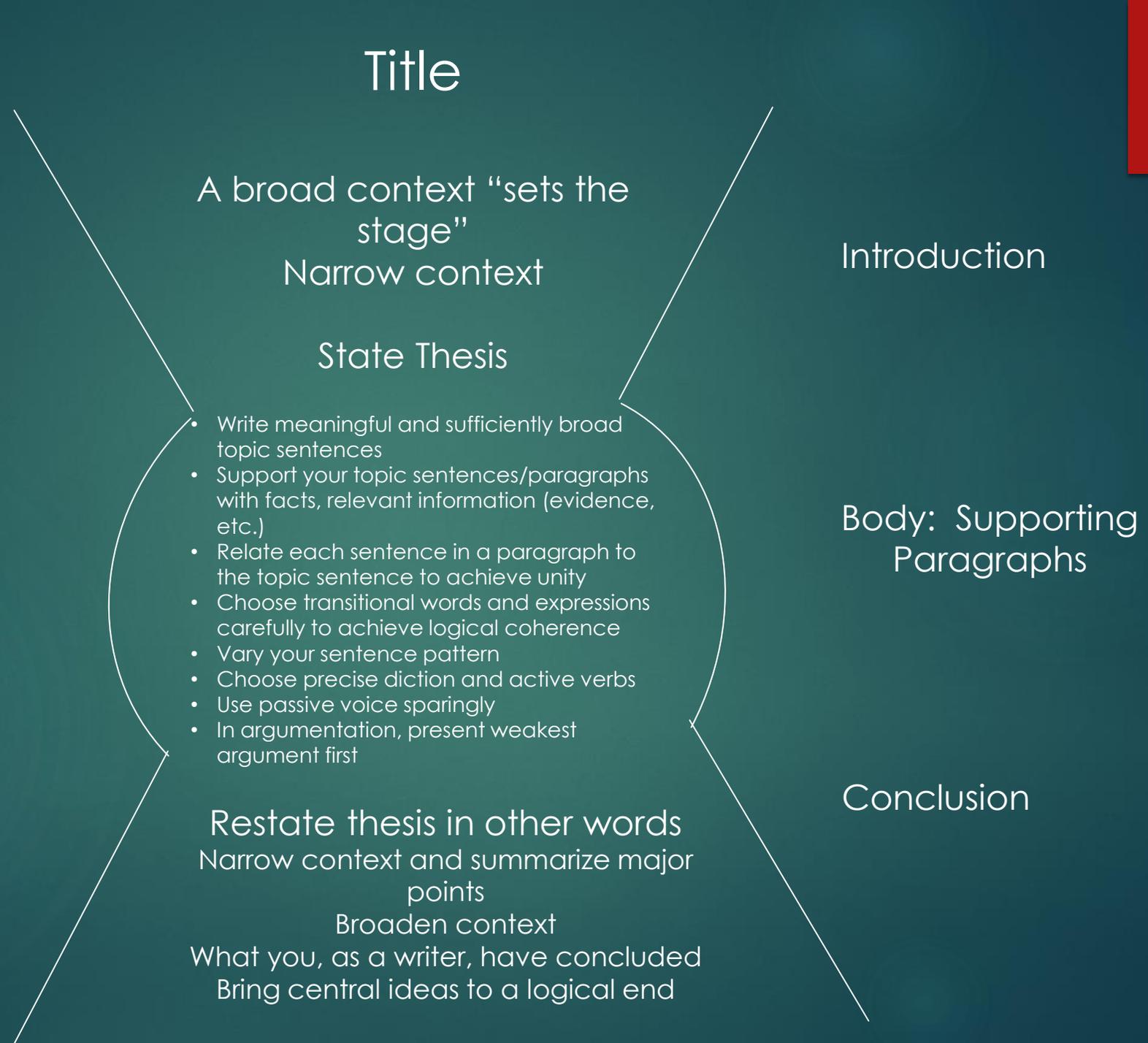


SPRING 2018
TEACHING AND LEARNING SYMPOSIUM
UNIVERSITY OF NEBRASKA-LINCOLN

**HELPING STUDENTS VISUALIZE A GOOD
COMPOSITION: A TOOL FOR THE 21ST
CENTURY LEARNER**

KATHERINE NASHLEANAS, Ph.D.
FACULTY OF GEOGRAPHY
knashleanas2@unl.edu

The Keyhole Diagram: Descriptive Format



The Keyhole Diagram: Organizational Format

Start with broad ideas then narrow sentence-by-sentence until you reach your thesis statement.

Introduction

Thesis Statement

Topic 1

Topic 2

Topic 3

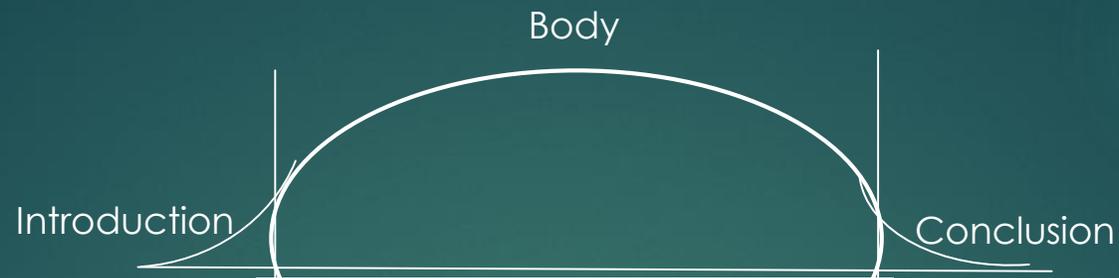
Each paragraph is a mini-keyhole beginning with a broad idea, then the topic sentence, followed with supporting ideas, examples, etc. Then restate the topic sentence in other words and write a concluding sentence. The concluding sentence should lead into the next paragraph.

Body: Supporting Paragraphs

Restate Thesis Statement

Conclusion

Summarize main ideas and most important supporting information.
Discuss what you learned
Find way to broaden topic or explore what you might want to know next



Example of a well-balanced essay



Overdeveloped introduction without enough supporting detail



Overdeveloped conclusion without enough supporting detail

Examples of Essays that are Out of Balance



No background or context for the ideas, no summary of main ideas



No development of ideas

6 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
Engaging Students in Large Lectures with the A-Team
WHAT (DESCRIPTION OF STRATEGY)
The A-Team is a rotating group of students assigned to spend one class period during the semester in the spotlight, ready to participate by responding when questions are posed, and held accountable for their classroom participation. This strategy helps to initiate classroom discussions, thereby eliminating the awkward silence that is uncomfortable for everyone and wastes valuable class time.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Professors' and students' visions for large lecture participation often run counter to one another. Professors want participation from students when posing questions, in hopes the lecture will be engaging and help them assess student comprehension. Many students want to remain anonymous, sitting back and listening to lecture rather than speaking up in front of peers. While this strategy requires students to formally participate on a single day, it can encourage them to be thinking and processing material every lecture, even when not officially in the spotlight. Having a single A-Team day takes the pressure off of them on other days; however, once an A-Team member has responded to questions, non-A-Team students tend to be more willing to engage as well.
HOW (KEY IMPLEMENTATION STEPS)
<ul style="list-style-type: none">• Mention the A-Team assignment on the first day of class as well as discuss it in the syllabus.• Provide A-Team information on Canvas (description, schedule, process).• Once roster is finalized, make A-Team assignments. (The larger the class, the greater the number of students that will be on each A-Team. I find it easiest to engage all A-Team members when the group does not exceed about 20).• Include a make-up A-Team day if desired.• Prepare name tents. Organize these by assigned day and bring to class. It is the students' responsibility to claim their name tent and sit in the assigned section on their A-Team day.• For each lecture, be intentional about places within your lecture where you will engage the A-Team. Have questions ready, but also be flexible and spontaneous, asking for examples, responses, or opinions intermittently.• Don't necessarily let the rest of the class (those not on the A-Team) off the hook. If it's a question where multiple perspectives would be valuable, ask the non-A-Team students their views after asking members of the A-Team.• After lecture is over, collect signed name tents (proof they were there).• As an incentive, I have A-Team participation worth twice as many points normal daily participation.
CONTACT INFORMATION
Amber S. Messersmith, Ph.D., Lecturer, Department of Management, College of Business amessersmith3@unl.edu 472-5222

7 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
EXPERIENCES IN TEACHING OFFLINE AND ONLINE VERSIONS OF THE SAME APPLIED PHYSICS COURSE
WHAT (DESCRIPTION OF STRATEGY)
Utilizing and incentivizing discussion boards posting in an online distance course helps students to understand the course material better and can increase their attainment of the learning outcomes.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Peer learning is a highly effective method for students understanding the subject matter. Encouraging peer learning in a quantitative online distance course is challenging but can be encouraged through incentives.
HOW (KEY IMPLEMENTATION STEPS)
Encourage students to post any course related question in the discussion board instead of directly emailing the instructor or TA. Use small incentives to encourage students to respond to posted questions to provide for opportunities of peer learning.
RECOMMENDED RESOURCES/LINKS
Peer Learning in Higher Education: Learning from and with Each Other – Boud, Cohen, Sampson Understanding by Design – Wiggins, McTighe
CONTACT INFORMATION
David Mabie – david.mabie@unl.edu 201 L.W. Chase Hall, 402-472-3066

8 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
CLASS WARM-UP AND COOL-DOWN: PROVIDING A FRAMEWORK AND PRACTICE FOR RETRIEVING
WHAT (DESCRIPTION OF STRATEGY)
Students practice retrieving of learned concepts during the first and last 5 minutes of the class. The majority of students prefers having a structured framework that will guide them through the retrieval process.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Several times a semester I talk to frustrated students. They claim that they take good notes and spend sufficient time studying, but during exams they are at a loss. Many students also have issues activating the correct concepts when working on applied assignments. It often turns out that those students are good memorizers but their knowledge is insular. They do not know what knowledge to activate when answering exam questions or completing an applied task during an assignment. The 5 minute warm-up and cool-down practices retrieval, understanding, and application of concepts: <ul style="list-style-type: none">- Memorization: Recalling helps with both sides of memorization. It generates networks in the brain that allow students to attach new ideas to it and practices activating memorized content.- Organizing Knowledge: Students tend to memorize insular information. Allowing students to see the framework behind learned concepts will help retrieving and applying concepts.- Self-Testing: Reading, highlighting, and memorizing definitions leads to familiarity with the material. Recalling, phrasing in their own words, rethinking stimulates mastery.
HOW (KEY IMPLEMENTATION STEPS)
<ol style="list-style-type: none">1. Students prepare for the class by completing an audio lecture and readings.2. First 5 minutes of class: Students recall concepts prepared for class by answering a set of questions or completing a table or mind map in their own words. I either write the questions on the whiteboard or have students use the printed template I provide.3. During class: I review the concepts and students complete activities in small groups applying the studied concepts.4. Last 5 minutes of class: Students correct or add to their question sheet.5. I post a completed question sheet on Google Drive.
RECOMMENDED RESOURCES/LINKS
Small Teaching by James Lang <ul style="list-style-type: none">- Chapter 1: Retrieving- Chapter 4: Connecting
CONTACT INFORMATION
szempleni2@unl.edu Phone: 2-6879

TITLE
Scaffolding Content, Discussion, and Feedback – the “Talking Points” Document
WHAT (DESCRIPTION OF STRATEGY)
A classroom handout strategy that helps to organize the flow of the lecture for medium-sized classrooms (15-60 students).
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Many of the Classroom Assessment Techniques (CATs) generate loose papers that are troublesome to manage. If you want to embrace something like Muddiest Point, or Minute Paper, why not provide that paper to the class ahead of time, and organize the rest of the discussion questions while we’re at it?
HOW (KEY IMPLEMENTATION STEPS)
A few days before the lecture, review your slides/notes and determine some key points of interaction between you and your class, one every five to ten minutes. It might be an in-class example problem, or simply a discussion of the implications presented by a given equation.
The first question is always a reminder of what was discussed in the previous class, and an inquiry of students to share what they’ve been thinking about most since then.
The last question is always an equivalent of a Muddiest Point question.
Questions in between are numbered to correspond to slide numbers (if you’re using slides) and either provide a place for students to fill in answers to in-class example problems, or they ask questions with answers that are not readily available from the slides, sparking a discussion topic.
Knowing what slide each question will occur on gives students advance warning that an interaction will be coming up. Being able to write down an answer to a question allows students the opportunity to be prepared in case they are called upon to engage in conversation.
It's also a good back-check during the last minutes of the class to ask if students need any clarification on any of the questions from that day’s Talking Points.
A key follow-up is that one of the discussion questions from each sheet (on average) appears as a two-point question on the midterm and final exam. In this way, discussion questions end up being 20-30% of the exam, and justify the time spent actively engaging in class; if a student happened to miss a class, they can follow up before the exam or they can suffer a minor point loss for missing a question from that day.
RECOMMENDED RESOURCES/LINKS
<u>Classroom Assessment Techniques</u> by Angelo and Cross
CONTACT INFORMATION
John Sangster, PE, Ph.D. Assistant Professor, Department of Civil Engineering John.Sangster@unl.edu

Talking Points – A Scaffolding Tool created by John Sangster, Department of Civil Engineering, UNL

CIVE 462 Talking Points Vertical Curve Calculations September 27 2017

Name: _____

0. Last class we talked about spiral curves and infrastructure spending. What did you think about the most since then? Is there more to discuss?
Project 2

7. Example: What's the station and elevation of the PVI and PVT?
 PVI Station: 170+00 PVI Elevation: 989.5
 PVT Station: 170+00 PVT Elevation: 991
 $1000ft - (3.5\%)(2000ft) = 989.5$
 $(300)(0.5\%) + 989.5 = 991$
 L=1000ft

8. How are the two equations related?
derivative

9. Example: What's the station and elevation of the low point?
 Low Point Station: 170+00 Low Point Elevation: 990.8
 $x_{min} = -3.5 \frac{600}{(0.5\%)} = -4200$
 $e_{PVX} = e_{PVI} + (-3.5\%)(1500) + \frac{1}{2L}(0.5\%)(1500)^2 = 990.81$

12. What are the implications of the equation on slide 12?
doesn't limit low speed roadways. Need a curve that's not too long + flat.

16. What simplification is implicit in the given values for SSD?
nothing, it was good.

18. If there is a drainage maximum value, why include the rest of the chart?
max only applies when you have curved cross section

20. Choose the correct answer based on the problem provided.
 A. 168 ft B. 167.4 ft C. 0 ft D. Cannot be determined
 using chart using eq. * C. 0 ft * * C. 0 ft *
 $v = 50 \text{ mph}$ $SD = 425A$ $A = -1.5 - 0.51$ $A = 2.1$
 $L = \frac{AS^2}{2158}$ $L = 167.4$ $L = 2158$ $L = 2158$

24. Why do sag curves not have calculations for passing sight distance?
you can see oncoming traffic if headlights are on.

28. Today we discussed vertical curve calculations. What part of today's discussion should we have spent more time on? Why?
nothing, it was good.

obstructions → event sight distance requires 7ft structure. you need to design it for all vehicles (trucks, etc.)

CIVE 462 Talking Points Horizontal Alignment – Part 2 Sept. 18, 2017

Name: _____

0. Do you wish the class were more or less challenging; in what way?
This is hard to answer because it feels like we haven't got into the "meat" portions yet.

0. Last class we talked about horizontal curves. What did you think about the most since then?
How the stationing works on HCs → PI & PC.

5. Which of these remediation options are we likely to have control over as a design engineer?
increase the amount of obstruction, reduce sign speed (maybe) ← if you can't move it

6. What is the most common mistake on this problem?
using the wrong M → M is to the centerline

9-10. On slide 9, circle the ones you think we should consider, then on slide 10, cross off the ones the textbook says we should consider.
A B C D E F G H

14. When might the "level section" become a potential safety hazard?
A sharper turn if the top isn't super-elevated yet.

16. When might we choose to use the different rotation methods?
site specific, such as a road with a median.

19. Since trucks become unsafe on ramps with high levels of superelevation, how can we design safe high-speed interchanges?
you have to balance the needed superelevation for high speed with being too superelevated to turn for the truck

21. What is the implicit assumption being made about rural areas?
max super elevation = 8% → traffic will not stop.

30. Today we began our discussion of vertical components of horizontal curves. What part of today's discussion should we have spent more time on? Why?
A bit more about superelevation & relative gradient. haven't seen much about them before

large radius

CIVE 462 Talking Points Roadway Users and Impacts Aug. 30, 2017

Name: _____

0. Last class we discussed roadway classification, what have you thought about most since then? Is there more to discuss?
The idea of road dieting and observing it on Vine St.

1. How can we make ethical decisions about safe roadway design?
What citizens want and perhaps if area is growing, you can plan ahead to a more safe approach to larger volumes

4. What impact could weight, dimensions, and operating characteristics of vehicles have on our roadway design?
Pavement design and thickness for weight. Curve radius and lane width for largest turning vehicle. Overhangs and acceleration/deceleration of vehicles

12. As smart vehicles take over many of these tasks, what impact could there be to safety?
I feel safety is at risk with these smart vehicles. We become reliant on technology. Cars are starting to detect others and stopping may be difficult if traffic stops suddenly or a person merges all at once.

18. What are your thoughts on proactive safety policies for road design?
Safety policies for safety of people are always good. Implementing many low cost diff. colls.

20. How much responsibility do roadway designers have for teenage drivers, older drivers, and impaired drivers?
You have to design for all drivers so making the roadway safe for everyone

26. What other factors impact the quality of the street when you are a pedestrian?
Car speed and distance, noise level, weather protection

30. Should we provide bike lanes if no bikes are present today?
I say no. there aren't as many bikers here than in larger cities and if they aren't used, what is the purpose of putting them in?

31. Today we talked about roadway users. What part of today's discussion did you wish we had spent more time on, and why?
Roadway Design with the roadway curves etc. but I'm sure that will be a topic of conversation later.

wide shoulder work → 4 wheels → Passenger car more than 4 → Recreational vehicle

CIVE 462 Talking Points Roadway Characteristics and Access Control Aug. 28, 2017

Name: _____

0. What have you been thinking about most since last week's classes?
Horizontal and vertical curves

1. How might this conversation continue?
The developer going back to building a retirement community, or giving up.

What options for compromise are there between the developer/town?
Work out a way for the developer and city to pay for it over time.

What role might a consulting engineer play in this conversation?
Finding the least expensive solution to the problems.

6. How might thinking about classification and category of a road impact our design decisions?
It would influence where you build around it and influence surrounding infrastructure like your example on number 1.

11. Traffic calming... what are your thoughts?
It's a good idea but might not work everywhere, such as places with very stubborn drivers.

16. Road diets... what are your thoughts?
Again, good idea but probably depends a lot on driver behavior in the area.

19. What room is there for interpretation/disagreements on access management?
Road diets, or roundabouts vs traffic signal vs stop sign

20. Complete streets... what are your thoughts?
Sounds like a good way to ensure public transit, bikes and pedestrians are not disadvantaged

21. What part of today's class did you wish we had spent more time on, and why?
Complete streets because they sound like a good idea but I'm curious to see how they actually turn out, and be down the road they will still work.

3 Simple Strategies to Design Peer Learning

What (Description of Strategy)

Development of learning community by engaging students in co-creation, discovery, and development by enabling peer learning.

Why (Purpose or Objective of Strategy)

Peer learning has been proven to be very influential when it comes to improving student academics and social cognitive skills.

How (Key Implementation Steps)

1. Student Discovery
2. Peer Partnership and Team Activities
3. Reflective Activities
4. Authentic Activities

Recommended Resources/Links

<http://bit.ly/PeerLearningStrategies>

Contact Information

Sushma Jolly, Ph.D
Instructional Design Technology Specialist
sjolly3@unl.edu
402-472-5205

12 Five-Minute Presentation, Spring 2018 Teaching and Learning Symposium

TITLE
Bringing the Shark Tank into a Large Marketing Survey Class
WHAT (DESCRIPTION OF STRATEGY)
An assignment or exercise to add a presentation to a large 200+ student class, as well as engage the students in a different type of activity for a large class. This is a one day trade show where students in groups of five develop a marketing plan for a made up product or service or a product/service combination. Each group makes a five minute presentation to a business professional or a graduate student with business background. They are using their marketing plan to pitch the professional or graduate student on why they should invest in their product or service. The reviewer gives the student group immediate feedback and they are graded on their presentation. Each group is allowed one visual and cannot use PowerPoint or other presentation software.
WHY (PURPOSE OR OBJECTIVE OF STRATEGY)
Objectives or learning outcomes <ol style="list-style-type: none">1. Integrate class material from a survey class (marketing plan)2. Learn how to present a sales pitch and edit a presentation3. Get immediate feedback on a presentation4. Create a sales type experience, where they have to convince a judge why they are the best investment.5. Increase engagement and change up the class by using a different type of exercise in a large class
HOW (KEY IMPLEMENTATION STEPS)
Key steps include: <ol style="list-style-type: none">1. Group choosing a product/service that does not currently exist (2 month prior to the presentation).2. Project choice is submitted and approved by instructor (approval is based on if this is new or just an existing product) Goal is a new product so the students cannot just copy an existing marketing plan (7 weeks prior to presentation)3. Students work on developing marketing plan including presentation and 5 to 6 page write up (6 weeks prior to presentation, paper is due on the date of the presentation)4. Instructor lines up an adequate number of judges for the presentations (4 weeks prior to the presentation). This can be the most difficult implementation step.5. Outside speaker on sales and sales presentations (1 week prior to the presentation)6. Presentation and feedback7. Winning group announced based on class vote (class following the trade show)8. Papers graded and returned (1 week after the presentations).
CONTACT INFORMATION
Rob Simon, rsimon2@unl.edu , 402 417-5576