Beck Grant: *Five Gears for Activating Learning*
Faculty Learning Community

Facilitated by:
Professor Cynthia Desrochers & Professor Matthew d'Alessio
California State University, Northridge

Academic Year 2015-2016

**What is an FLC?** A faculty learning community (FLC) is a cross-disciplinary faculty group (usually 6-12 members) who engage in an active, collaborative, yearlong program with a specific focus on enhancing teaching and learning. The focus for this FLC will be *Five Gears for Activating Student Learning at CSUN.*

**What are the objectives of this FLC?**

1. Organize the vast knowledge base on how people learn into *Five Gears*, focusing on faculty teaching and classroom impact on student learning and success.

2. Understand and apply *Five Gears* in your teaching decision-making. This includes your course and class design elements, learning activities, assessments, student study strategies, and spontaneous responses to emergent classroom challenges and obstacles.

3. Document the effects of applying *Five Gears* in a spring 2016 target course. This assessment should focus on how to harness the power of *Five Gears* in ways that other CSUN faculty can implement.

4. Become a spokesperson for *Five Gears*, sharing methods you have discovered to harness the power of *Five Gears* to improve student learning.

**What specifically will each FLC member be doing throughout the year?**

Beck *Five Gears* FLC members will (1) engage in nine mandatory FLC seminar meetings, (2) apply *Five Gears* to a challenging spring 2016 target course, (3) analyze one’s own *Five Gears* application in teaching, (4) analyze another FLC member’s *Five Gears* application during a classroom coaching session, (5) assess student learning resulting from *Five Gears* application, (6) prepare/present a course mini-portfolio to the FLC, and (7) lead other faculty in applying the *Five Gears* in their teaching as called upon by departments and colleges.

In order for you to determine if this project is of interest to you, please see the following website: [http://www.csun.edu/undergraduate-studies/cielo/five-gears](http://www.csun.edu/undergraduate-studies/cielo/five-gears)
Five Gears: Their Essence and a Few Misconceptions
Cynthia Desrochers

Motivating Learning
Critical attributes:
• Students perceive that your course has either intrinsic value (e.g., I care about learning this material) or extrinsic value (e.g., I want to learn this material to get an A or avoid getting an F)
• Students perceive that success in your class is within their reach.
• Students perceive that you as well as class members will support them in succeeding in your class.
• Students perceive no marginalization or discrimination.
Misconception:
• That to be a motivating professor, you need to bring an elephant to class in order to teach the color gray!

Organizing Knowledge
Critical attributes:
• Students learn the explicit organizational structure of concepts in your course.
• Often this organization structure is best presented in categories.
• These categories are often depicted visually with words and diagrams (e.g., circles, Venn diagram, matrices, charts, etc.).
• The categories typically become larger as students add elements to each category.
• The novice has few categories and few elements within each category, but the novice can make very few connections between categories.
• The expert has many categories and elements within each category, but the expert makes much connection between categories.
Misconception:
• That if the professor has an organized lecture, the students will have achieved the Organizing Knowledge Gear.

Connecting Prior Knowledge
Critical attributes:
• Students see the similarities between something they have already learned and today’s class concepts. This is also called positive transfer.
• This awareness speeds up learning and the retention of today’s class concepts.
• Students may have obtained this prior knowledge from life experiences, previous courses, or your class earlier in the semester.
• Although some students may make this positive transfer on their own, it is best if the professor explicitly points out the similarities between prior knowledge and today’s class concept.
• Negative transfer is when something from prior knowledge seems similar but in reality has nothing to do with today’s class concept and may even interfere with learning it. This should be avoided; however, if students do confused two things on their own (e.g.,
twin girls), the best practice is to bring the two things together and show how they are different (e.g., one twin has a small mole under her left eye).

**Misconception:**
- That whenever students use their prior knowledge to read, write, or do a math problem, they are using the Prior Knowledge Gear.

### Practicing with Feedback
**Critical attributes:**
- Students need frequent practice of those concepts and skills that they have not yet mastered.
- Practice should be in the form of mental **retrieval** in order to build durable neural pathways in the brain.
- Students need to receive feedback on their practice, which should include comments on both what they are doing successfully and where they are making errors.
- The more timely and specific the feedback, the more useful.

**Misconceptions:**
- That giving only a letter grade atop a paper is specific feedback.
- That all feedback needs to be individual; group feedback is useful, too.
- That students will read your feedback. [Consider asking them to paraphrase your feedback on a 3x5 card to insure that they have understood it.]

### Developing Mastery
**Critical attributes:**
- Students need to elaborate on a concept with additional and more complex information, as well as determine the conditional use of information (when to use it and when not to).
- Students need to engage in complex thinking about a topic to achieve mastery – deep versus surface learning.
- Students need to reflect—think about—what they are learning in order to move from surface learning to deeper learning. [Consider assigning One-Minute Papers, Learning Logs, or Learning Diaries for this purpose.]
- Students need to plan learning projects from start to finish—with your guidance—in order to become self-directed learners and gain an understanding of the conditional nature of your discipline.

**Misconceptions:**
- That simply practicing something over and over produces mastery.
- That foundational, General Education, or introductory courses should focus on only rote recall of facts versus thinking critically about the subject matter.
Five Gears for Activating Learning: Strategies
Cynthia Desrochers

1. Cultivate student motivation by highlighting the course's value, teaching for student success, and supporting students.

2. Encourage the organization of knowledge in explicit structures.

3. Build on students' prior knowledge and experiences.

4. Provide opportunities for targeted practice and frequent feedback.

5. Design for mastery by encouraging students’ sustained (deep) engagement, reflection, and self-direction.

To facilitate discussion and application of these Five Gears for Activating Learning, we generated a list of techniques and strategies that instructors can use in designing learning experiences that have the potential of activating each gear with students. These five gears interact as our learning machine—the brain—progresses to mastery.

1. Motivating Learning
   o Design assignments that explicitly demonstrate the value of the course and connect its content to real-life experiences.
   o Provide early success experiences and gradually increase assignment complexity throughout the semester. Temporarily reduce extraneous cognitive load by supporting some aspect of a complex task as students work through the entire task (also called scaffolding).
   o Allot class time for re-teaching and in-class problem solving with instructor and peer feedback and support.

2. Organizing Knowledge
   o Ask students to make a key concept outline of course modules.
   o Ask students to make a key concept graphic organizer of the entire course. [Metaphor: this provides a visual file cabinet with explicit categories—file folders—for students to insert new knowledge throughout the course.]
   o Create an expert’s graphic organizer for students to analyze.

3. Connecting Prior Knowledge
   o Connect course facts, concepts, and principles to similar objects, examples, metaphors, and stories that students are familiar with and ask students to do the same (e.g., How is chemical bonding similar to the bonding between mother and child?).
Use **knowledge surveys** to determine what students believe they know about course concepts and the depth of this knowledge and ask students to review the survey results throughout the course.

Use **concept inventories** to assess prior knowledge in order for you and your students to understand their knowledge entry points as well as their misconceptions.

4. Practicing with Feedback
   - Provide **guided practice** of historically difficult concepts, give **targeted feedback**, and have students revise assignments based on that feedback. Make use of newer feedback technologies, such as Wordle, Socrative student response system, and Moodle quizzes.
   - Use **weighted-criteria charts** and **rubrics** to clarify expectations for components student should consider in completing a student-constructed project. Use **exam (or assignment) wrappers** that ask students to analyze their test preparation, performance, and the instructor's feedback when exams are returned, with the goal of improving future exams.
   - Assign collaborative problem-solving sessions that include individual accountability (e.g., randomly pick one student from each group to solve the problem on the board) and team-based learning assignments.

5. Developing Mastery
   - Design the course to **focus** on significant student-learning objectives and **align** the learning activities and assessments with these objectives.
   - Ask students to engage in the **High-Impact Practices** of intensive writing, researching, and collaborating.
   - Implement deep-learning pedagogies, for example:
     - Case-based learning
     - Team-based learning
     - Problem-based learning
     - Learning portfolios
     - Flipped instruction
     - Undergraduate research
     - Community-service learning
   - Provide opportunities for students to direct their own learning (e.g., self-directed projects), followed by reflection on and self-assessment of their performance.
Roster: Beck Five Gears FLC, 2015-2016

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**REPORT #1**

Prepared by:
Maryam Tabibzadeh, PhD
Assistant Professor

Analyzing the Five Gears Program Strategies in Improving Teaching Effectiveness
Beck Five Gears Faculty Learning Community Final Report

Department of Manufacturing Systems Engineering and Management
College of Engineering and Computer Science

**Acknowledgements**

I have been very fortunate to be part of the Beck Five Gears Faculty Learning Community in the Academic Year 2015-16. I would like to acknowledge the two great mentors of this program, Professor Cynthia Desrochers and Professor Matthew d’Alessio, for their provided teaching-learning experiences to me and thank them for their extraordinary support. Moreover, I would like to thank all other eight colleagues of mine who participated in this program with me for their support and shared opinions and experiences. I was able to learn so much from all of them within the scope of this program.
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Target Course Description
The selected target course for this Five Gears FLC program was MSE-604, Engineering Economy and Financial Analysis, which is offered by the Department of Manufacturing Systems Engineering and Management (MSEM) at the College of Engineering and Computer Science. In this course, the main theories and concepts of engineering economy, most importantly the time-value of money, are discussed. This course is designed to ensure that students gain the main following skills:
• Evaluation of economic feasibility from an engineering perspective
• Application of various methods of comparing alternatives on an economic basis
• Implications of depreciation, inflation, currency exchange rates and taxation on the profitability of engineering projects
• Reviewing the basics of cost estimation and accounting
• Development of income statement, cash flow statement and balance sheet for engineering projects
• Evaluation of risk and uncertainty in decision making

This target course was taught by the instructor, Maryam Tabibzadeh, in fall 2015 in two sessions, which was chosen as the control group. In spring 2016, some improving strategies related to the Five Gears concepts were selected and
implemented in this course and the results were compared with the control group of fall 2015.

In this report, after describing some of the situational factors of this course and the encountered teaching-learning challenges and obstacles, some of the above-mentioned implemented strategies are explained and their impacts on students’ performance are elaborated.

The Course Situational Factors

Specific Context of the Teaching/Learning Situation
MSE-604 is a graduate-level course. It is one of the core courses that is mainly designed for master’s students of the Engineering Management (EM) program at the MSEM Department. This course is offered once per week in an evening session, from 7pm to 9:45pm. MSE-604 is usually delivered in an on campus mode; except during summers that is mainly in an online or a hybrid mode.

In average 30 to 35 students register in each class of this course and depending on the demand, one or two classes are offered per semester.

General Context of the Learning Situation
As stated above, this course is one of the core courses, among four others, of the MS EM program at the MSEM Department. Many students choose this course as one of the subjects for their comprehensive exam, which is a test from four out of five selected core courses that Engineering Management students have taken during their MS studies, in the last semester of their program at CSUN.

In addition, MSE-604 is one of the most useful courses for EM graduates because any engineering manager ought to be able to understand the time-value of money in the domain he/she is working on, whether it is manufacturing, construction, IT-related services, or consulting, and conduct necessary financial analyses in that specific domain.

Nature of the Subject
The Engineering Economy and Financial Analysis course is a combination of theoretical and application-based concepts. The main theories and concepts of engineering economy, such as time-money relationship, cash flow analysis, feasibility analysis of alternatives and their comparison using different methods like present worth analysis, and depreciation and tax analysis, are first explained in lectures. Then, different examples are brought up to students’ attention to illustrate the applications of each of those concepts. Most of the concepts of this course have been taught for a long time and are not recently developed. we however, try to bring more recent and/or relevant to the background of the class applications of the engineering economy theories into our classrooms.
Characteristics of Students
There is a wide range of students in this class. From the educational background standpoint, they mainly have a bachelor’s degree in an engineering field, but in a variety of different engineering disciplines, from electrical engineering to mechanical engineering to civil engineering to computer science to industrial engineering. From this perspective, students who studied industrial engineering in their undergraduate program have a background in engineering economy. Engineering students who received their BS degree from a US university most probably have taken a course in this domain as well.

From the ethnicity point of view, students of this course and the MS EM program are mainly international students, with different cultural backgrounds.

Among the students of this class, there is a varying ratio of them; between 25% and 35%, who work full-time outside the school. In addition, some of the international students work part-time or full-time, with the maximum of 20 hours per week, in on campus jobs. Among these students, some are married and have families. This semester, spring 2016, the number of full-time employees in my class was higher than previous semesters, approximately 45%. In addition, there were more cases of married students in this class comparing to previous semesters.

Characteristics of the Instructor
The instructor of this course has a PhD in industrial and Systems Engineering with a BS and MS in Industrial Engineering (IE). The engineering economy course is one of the foundational courses of IE programs around the globe. She has also taught this course since fall 2014.

She believes that active learning cannot be solely dependent on lectures, but could be reached by engaging students in class discussions and also by providing them with extensive opportunities to practice as well as giving them timely and targeted feedback.

Teaching-Learning Challenges and Obstacles
I personally believe that creating an atmosphere that encourages participation and involvement in classrooms plays a critical role in students’ learning and success. I have tried to implement such a concept in my classes by explaining some of the real-world applications of course materials, bringing up interesting questions, and opening the floor to discussion. I have been successful to motivate some students and involve them in class discussions. However, there have been some other students that I found it challenging to engage them in those discussions. As I have found out so far, some of the main reasons for students not to be active in class discussions are: lack of knowledge, lack of interest even if they are familiar with the subject matter or discussed topic, and cultural barriers on speaking in classes or among others.
Moreover, the issue of procrastination and being reactive is another challenge I have dealt with. Students do not study regularly within the semester. They only try to get ready for exams in the last minute or postpone preparing their class project till the last few weeks. At this point, they just realize their struggles and do not have sufficient time to resolve them. This issue contributes to low grades in their exams as well as other class deliverables.

Another major problem I have encountered in this course is the poor math background of some of the students. Although most of these students graduated from an undergraduate engineering program, they lack sufficient background in math. This is while this course does not need very hardcore math knowledge.

Furthermore, some students cannot comprehend all the concepts and integrate them together. They look at chapters as separate components and only focus on given examples within each chapter. Therefore, when they are provided with a slightly twisted or changed problem in the exam, they cannot solve that problem.

As described in the situational factors section for this course, MSE 604 is offered once per week from 7pm to 9:45pm. This time frame is chosen since there are students who work full-time and could only attend classes in the evenings. This special circumstance has created its own challenges such as dealing with tired students who have worked the whole day. In addition, the long duration of the class causes less efficiency.

Finally, although this is a graduate-level course, some students still cannot connect with provided general instructions to the class on how to prepare and submit project reports. These group of students need personal, step-by-step and very detailed instructions in order to be able to complete their work.

**Five Gears-Related Resolving Strategies**

As stated before, Engineering Economy and Financial Analysis, MSE 604, is my target course for the Beck Five Gears FLC. Based on the described teaching-learning challenges and obstacles in the previous section, I have been able to change some of my teaching strategies and implement some additional ones using the Five Gears. In this section, after stating few general strategies, I will explain some of the specific implemented strategies. It is noteworthy that I will not be able to change the nature of some of the described challenges such as the time frame of the class or its duration or the fact that students who come from daily work are tired and might be less concentrated.

One of the general adopted strategies for me was to use all the Five Gears, as applicable, in each of the sessions of my class. In addition, I have used the Five Gears in different aspects and components of teaching the course; e.g. lecturing, assignments (in-class and take-home), quizzes, exams and class project.
Furthermore, I have discovered that infusing more than one gear in an adopted teaching strategy can increase teaching effectiveness.

One of the implemented changes in the offering of MSE-604 in spring 2016 comparing to fall 2015 was adding few critical class deliverables to this course. These changes have been highlighted in figure 1 comparing the two stated semesters class deliverables with each other. Assigning a portion of the final grade to class participation was one of the implemented changes. This adopted strategy was mainly selected based on the infusion of the gear Motivated Learning in order to encourage students more to participate in class discussions. In addition to in-class discussions, students had the option of posting their questions and thoughts on a created discussion board on Moodle and share their points of view with others.

![Figure 1: Course deliverables for MSE 604 in fall 2015 (left) vs spring 2016 (right)](image)

Giving regular, usually bi-weekly, in-class quizzes was another added component to this course. My analysis showed that students could manage to submit assignments without learning sufficient level of knowledge to be able to solve a problem in an exam. Some hypothetical reasons for that could be: the possibility of discussing problems with their classmates or others who have better knowledge in the subject matter, having plenty of time to solve one problem, and no stress of sitting in an exam-simulated environment. This strategy involved the four main gears of: 1) Practice with Feedback by allowing the students to practice what they studied and also receive feedback from my side, 2) Motivating Learning through assigning parts of the grade to this deliverable, 3) Connecting to Prior Knowledge that they have gained in previous sessions of the course, and 4) Developing Mastery by now reflecting on what they were taught in class and they then studied and practiced some assigned problems for. Moreover, there were few cases of giving group quizzes, rather than individual ones. These group quizzes, using the assigned teams for the class project, created an opportunity for the members of each team to be in more contact with each other and also simulate the condition of submitting a deliverable in a time-sensitive case. It is noteworthy that this type of quizzes was not announced in advance, so all students needed to study and be prepared to take the quiz individually.

The final change in the course deliverables was adding an interim project report. In fall 2015, there was only one final project report for this course. This caused students to procrastinate and do not work on their team project till the very last
weeks of the semester. From this perspective, this was a Motivating Learning-infused strategy. In addition, this allowed me to provide each team with some targeted, customized feedback after delivering its interim report. Then, each team had the opportunity of making necessary improvements and submit its final report at the end of the semester. This perspective covered the Practice with Feedback gear.

In general, incorporating a class project in this course infused all the Five Gears in one big picture to develop mastery as a whole and the center piece. The theme and the subject of this project was selected based on different factors such as its relevance to covered engineering economy concepts in the course, being a combination of several discussed topics, and its connection to students' interests and its applicability in their life.

The selected project topic for this semester was related to analyzing different given mortgages to purchase a house using different engineering economy concepts and choosing the best option that maximizes the retirement account balance of a couple who are going to work for the next 35 years. As described in the course situational factors section, there were more full-time employees and married students in my spring 2016 class. The topic of this project was a manifestation of a real-life application to the students of this class with the described situational factor. Hence, it was an illustration of the Motivating Learning gear.

Moreover, teams needed to present their project in class at the end of the semester. This requirement engaged the three main gears of: 1) Motivating Learning, by holding students responsible and accountable to present in front of the whole class, 2) Organizing Knowledge, by creating a presentation that was organized and had an appropriate flow to convey a story, and 3) Developing Mastery, through their deep engagement and reflection on what they had learned within the course of this class.

Furthermore, peer evaluation of team members was part of the grading of the class project. At the end of each semester, each student needed to evaluate his/her own team participation as well as all of his/her teammates. This activity, through the infusion of Motivating Learning gear, increased team participation and improved teams’ performance in the class project.

Finally, I developed a rubric to grade project interim reports to provide feedback to teams, Practice with Feedback gear, based on the structure and flow that I expected them to prepare their report within that structure, Organizing Knowledge gear. The detail of this rubric has been explained in the section on some implemented gear-infused artifacts. In addition to using this rubric, each team received more detailed, personalized comments on its report file(s) by me.

In addition to the described strategies, several other approaches were implemented in this course. One of these approaches was in-class group exercise. After solving an example or two from the described concepts, I assigned a problem to the class and
asked them to solve it in small groups in a given time. Then, one person was selected randomly to come to the board and solve the problem for the whole class. There were different infused gears in this approach: 1) Motivating learning, since students needed to discuss their opinion on how to solve the problem with the group and also, they needed to make sure that they know how to solve that problem at the end since one person had to explain the solution to the whole class, 2) Practice with Feedback, this created an opportunity for students to help each other solve a problem and at the end, while someone was solving it on the board, I was able to provide feedback to the entire class based on the taken approach by that person to solve the problem, and 3) Developing Mastery, through self-direction and reflection upon what was discussed in class for that specific topic.

Another implemented strategy was developing outside-class group assignments, in pairs of two. The main goal of such assignments was to expose students to more challenging concepts within the scope of few problems and allow them to discuss how to approach those problems in groups of two, rather than individually, by creating a synergy between them. This way, students had the opportunity of being introduced to harder but more realistic problems.

Two other strategies to help students prepare for midterm and final exams were conducting review sessions before each exam as well as posting some sample problems for students to solve after they study for that exam. This way, students were more familiar with the content of exams. They also had more chances to practice specifically selected problems and prepare for exams. In this regard, I developed an exam wrapper after the second midterm for this course and asked students to answer few questions to help me better understand how they prepare for each exam. The details about this exam wrapper are discussed in the gear-infused artifacts section.

**Results of Implementing Five Gears-Related Strategies**
In this section, some of the results of the discussed adopted and implemented strategies in the previous section will be discussed. Some of these results were already discussed in the previous section while describing those strategies, so only some additional points will be stated in this section.

As discussed before, in the spring semester, I assigned a portion of the final grade to class participation. This strategy provided some students with the incentive to be active in class and participate in discussions. In addition, the created discussion board/forum on Moodle became a medium for students to post their questions regarding assigned problems for each homework. There were some students who monitored the discussion board regularly and responded to their fellow classmates’ questions and doubts. I then was able to comment on those posts and encourage the ones who were active on the discussion board. From this perspective, the use of the discussion board was successful to allow students help each other rather than solely depending on their instructor to answer their questions. In addition, the number of
repetitive individual emails to me was reduced. However, the extent of using of the discussion board stopped at this level while the intended usage of this forum was much more. For the future, I plan to encourage students to post interesting articles and readings that are related to the concepts and applications of this course on the discussion board, share their intakes with the class, and ask for others’ opinion on discussed topics. In one step further, I will regularly post general, open-ended discussions related to each week’s concepts on the discussion board and invite students to share their thoughts and/or post relevant summarized reading materials. This will be considered as part of the class participation grade. Moreover, I intend to increase the portion of class participation to be 10% of the grade instead of 5%.

Giving quizzes, individual as well as group ones, helped students to review discussed course materials in a regular basis and get ready for exams. These quizzes simulated the condition of exams as well, through giving limited time to students to solve a problem. There were some students in the class who performed poorly in the first few quizzes. They were able to realize their weakness based on the provided feedback to them. Some of those students met with me each week to discuss their issues. I also assigned extra problems to them for additional practice. Some others worked with tutors to resolve their issues. Among these students, most of them showed improvements as we progressed within the semester, and some performed great in the final exam by securing above 90 (out of 100) grades.

The main advantages of incorporating a class project into this course by considering two deliverables/reports, one interim and one final, for it were described in the previous section. This class project by requiring a submission of an interim report from each team in the middle of the semester helped prevent procrastination. More importantly, incorporating a class project in this course infused all the Five Gears in one big picture and helped students to gain a level of mastery, as the center piece, at the end. One improving strategy in this area will be including a middle-semester peer evaluation, as a wakeup call to some students who are not active in their team’s transaction. This improves team participation and also prevents those inactive students from losing participation marks at the end of the semester.

Furthermore, other implemented strategies such as in-class group exercises, outside-class group assignments (in pairs of two), exam review sessions as well as posting sample problems for exams, through engaging gears such as Motivating Learning, Practice with Feedback, Connecting Prior Knowledge, and Developing Mastery, provided students with more opportunities to perform better in this course.

Finally, developing specific gear-infused artifacts such as a rubric to grade project interim reports was useful to not only provide teams with targeted feedback on their report, but also to depict how the structure and the content of each section of their report should look like. Moreover, the exam wrapper strategy helped me to understand how students prepare for exams, e.g. by knowing how frequent and in
what length of intervals they study for the exam, what their strategies for exam preparation are, and how I can direct them to make this preparation more efficient and effective.

Based on the implementation of all the aforementioned strategies, there was noticeable amount of improvement in the average grade of the midterm exam#1, midterm exam#2, and the final exam in spring 2016 comparing to fall 2015. The following shows the detail of this comparison. (Note, in fall 2015, I taught two sessions of the same course.) It is however, needed to state that there is a need for more number of observations; more number of analyzed semesters, before we can conclude that the improvement in exam average grades was solely influenced by the implementation of the discussed strategies.

1) Midterm exam#1
   Fall 2015:
     Class 1: 68.14
     Class 2: 68.66
     Spring 2016: 88.5

2) Midterm exam#2
   Fall 2015:
     Class 1: 61.61
     Class 2: 79.56
     Spring 2016: 87.5

3) Final exam
   Fall 2015:
     Class 1: 78.52
     Class 2: 63.44
     Spring 2016: 89.58

It is noteworthy that this is only the end of a beginning for me. I have been very fortunate to be part of the Beck Five Gears FLC program to learn from the mentors of this program as well as my colleagues. The journey on improving teaching effectiveness using Five Gears-infused strategies does not stop at this stage and it will continue in future semesters to come, not only within the scope of the MSE 604 course, but also in other courses I will be teaching. Some other future improving strategies with the infusion of the Five Gears are as follows:

- The use of concept maps to connect different discussed course materials with each other and provide a more comprehensive perspective on the course. This allows students to integrate separate concepts of each chapter into one big picture.
- Conducting a knowledge survey to assess students’ background in needed foundational concepts such as mathematics; e.g. minimizing and maximizing functions, and first and second derivatives of functions.
• Developing and conducting knowledge surveys, on critical learning objectives of a course, in the beginning and at the end of the semester in order to evaluate the effectiveness of the delivered course with regards to those learning objectives.

Some Implemented Gear-Infused Artifacts

Rubric to Provide Targeted Feedback for Project Interim Report
As explained before, I was able to develop a rubric (figure 2) to grade teams’ project interim report and provide them with targeted feedback; Practice with Feedback gear, in an organized fashion; Organizing Knowledge gear. This rubric, which was shared with teams in advance, indicates the main criteria and related sub-criteria, as well as their associated weight/score in grading the project interim report. In addition to the project description document, which was shared with teams, the provided detail in this rubric allowed teams to know what they have to include in their report and what elements and with what weight will impact their grade for this report.

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<th>Sub-criteria</th>
<th>Weight</th>
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</table>
| Project report structure, content and thorough analysis of the problem | • There is an overview of the case.  
• The problem is stated clearly.  
• The solution methodology is explained in detail.  
• The selected methodology is appropriate for case objectives.  
• Calculations are explained in detail.  
• The back-up excel file with all detailed calculations is included.  
• Some level of sensitivity analysis is conducted.  
• Recommendations and conclusion are stated clearly. | 60     |
| Assumptions section and the quality of the assumptions | • All assumptions are listed clearly in a separate section.  
• There is a logic behind listed assumptions. | 10     |
| Questions section and the quality of questions | • There is a separate section for questions.  
• The quality of questions is high and there are not only listed questions for the sake of having a list.  
• Team has analyzed viable alternatives making some assumptions and asked how proper those assumptions are rather than not doing any analysis and waiting for all these questions to be answered. | 10     |
| Quality of report in the matter of presentation, professional writing, grammar, spelling, etc. | • The report is prepared professionally  
• The language of the report reflects the group-work; e.g. the use of words like “we” rather than “I”.  
• The report is typed.  
• There is no spelling error or typo.  
• There is no grammatical error.  
• Fonts; their type and size, and formatting are consistent. | 20     |

Total 100

Figure 2: Rubric to provide targeted feedback to teams for their project interim report
Exam Wrapper
This exam wrapper was provided to students after returning their graded midterm exam#2 papers and asked them to answer few questions regarding their method of study for the exam as well as their perceived areas of weakness and their strategies to improve those. This was offered as an extra credit assignment to the class. There were two main purposes for designing and implementing this exam wrapper. First of all, this provided the students with the opportunity to review how they prepared for the exam, self-evaluate their performance, realize their weaknesses, and think about improving strategies for the final exam. In addition, this allowed me to understand how students prepare for exams, e.g. by knowing how frequent and in what length of intervals they study for the exam, what their strategies for exam preparation are, and how I can direct them to make this preparation more efficient and effective. The detailed content of this exam wrapper has been illustrated in fig.

![Exam Wrapper for Midterm Exam#2
MSE-604, Spring 2016
Instructor: Maryam Tabiszadeh
Please answer the following questions as thoroughly as possible:
1. How many hours did you study for this midterm exam (midterm exam#2)?

2. Did you study long hours on one day or you split your studying in shorter periods per day for more number of days? Please provide some numbers, e.g. studied 3 hours one day and completed my preparation in 3 days or studied 3 hours per day for the total of 5 days.

3. How did you prepare for this exam? Which of the following strategies did you use for such preparation? Please state your answers in percentages. (Note: the total percentage on applied strategies should sum up to 100%.)
   3.1. Reading notes or textbook
   3.2. Re-reading notes
   3.3. Highlighting (in notes or book)
   3.4. Memorizing
   3.5. Summarizing notes and important points
   3.6. Redoing assignment problems
   3.7. Practice more problems from end of chapters
   3.8. Practice sample midterm problems while looking at solutions
   3.9. Practice sample midterm problems before reviewing the uploaded solutions (Self-testing)

4. What were the main areas or concepts that you think you had the most challenge with after getting your graded midterm back?

5. What are your strategies in order to improve your performance in the final exam?

Figure 3: Exam wrapper for the midterm exam#2 of MSE 604 in spring 2016
REPORT #2

KARI HAYTER
INDIVIDUAL BECK REPORT for FIVE GEARS FLC
THEATRE DEPARTMENT
MIKE CURB COLLEGE OF ARTS, MEDIA & COMMUNICATION

THEATRE 208A: ACTING II CHARACTER & TEXT

COURSE DESCRIPTION: Dramatic structure; methods of text analysis for the actor; and application through lab experience to specific texts and scenes. Students learn play/text analysis skills as well as critical analysis skills in response to live theatre productions.

COURSE INFORMATION: This is a course taken by theatre majors. The prerequisites are TH108 and TH143V and 143M. These prerequisites are beginning performance classes in Acting, Voice and Movement, which familiarizes students with the responsibilities of the performing actor. Theatre 208A is a class for Theatre Majors that further examines play analysis and close reading skills beyond the introductory level. Students read five plays as a class from different historical and theatrical genres. It is expected that students will have a formal analysis process when analyzing a text. This course broadens the students’ vocabulary in theatre performance and play analysis. Students read five plays over the course of a semester from five different genres of theatrical realism and are expected to discuss and analyze each in and outside of class through discussions, exercises and homework. This semester was the first time I have taught this course. Therefore, it was helpful to have the Five Gears initiative as a supporting tool to creating a successful course in that I wasn’t completely married to the way in which I was teaching the course.

The ideas presented in the Five Gears Initiative are very interesting to me as I continue to focus on my progress and development as an educator. I am very interested in how to increase the student centered learning in my classes and find the Five Gears focus areas to align with an active, positive classroom environment. As a theatre instructor, I get very excited about finding ways to make learning more active and more engaging without sacrificing the large amount of content that needs to be learned throughout the semester. I believe much of this process relies a great deal on motivating learning in students, which is one area of the Five Gears Initiative that would strengthen my teaching and communication with students, as well as help me refine clear expectations for success. Also, much of my work involves subjective responses and feedback due to the freedom in an arts course that is contingent on a variety of artistic perspectives. The Practicing with Feedback area of the program is a great methodology to learn and practice across all of my courses.
and creative work with students. *Developing Mastery* and the notion of self-reflection and self-assessment are techniques that I have not formally learned as a pedagogical tool, however I think that it could really increase the accountability and positive energy throughout the learning process in all of my courses. Most importantly, I would like my students to feel as if coming to class is an inspiring, open and innovative experience. Personally, I would like to feel confident that I am not getting stuck using older, traditional methodologies that might not be exciting or effective. I view the Five Gears Initiative as an experience that will help me become more successful at immersing students in a more current, powerful learning process that *motivates learning.*

**TEACHING-LEARNING CHALLENGES/OBSTACLES**

The biggest challenge I face in my classroom is in creating a deeper and more sustained engaging learning process. I teach an introductory theatre course and an upper division theatre history course which both cover a large span of history. Finding ways to help students connect to other genres and time periods without any frame of reference or context is difficult for students. As a result, students take a more passive role and look to me to guide them and give them everything they need, rather than participating in their own learning process. I also teach a play analysis course in which the assessment and feedback process is very subjective. Connecting feedback to clear learning goals would be very helpful for this course.

It was my goal to use the Five Gears pedagogical tools to enhance the student learning process as well as increase my teaching techniques and instruction. It was surprising how many of the Gears I have been using naturally. However, because I now have an awareness of the Gears, specifically, it is more effective when I document the Gears being used. This also enables me to see when a Gear should or could be used and isn’t. By looking at the Gears used over the course of the semester, I am able to see loopholes where some Gears are being neglected and/or where Gears should be used for more efficiency and student success.

The largest challenge for me in this process was to understand how specific I needed to be while teaching on a day-to-day basis. The more I learned about the Gears, the more I believed effective teaching would naturally implement the Gears. The request to implement it into a specific course was very helpful in that it helped me structure the assignments in a way in which I could achieve all of the Gears. *Practicing with Feedback* is always challenging for me because I find it is difficult sometimes for me to articulate to students and therefore I become more accepting and harbor my own frustrations onto myself. Students aren’t used to looking for feedback and are so concerned with grades so it was important for me to communicate the significance of *practicing feedback.* I also tried to incorporate student feedback as part of the curriculum with the Critical Response Process and that motivated learning for the students because they were able to share their
thoughts, opinions and ideas. Another challenge was for me to see if students were actually benefitting from the Gears on a daily basis. I made a lot of assumptions that they were actually benefitting and wasn't quite sure how to assess the progress throughout the semester without just asking them. Of course, the students want to be supportive and may not have been as honest since they are appreciative of the experience.

Motivating Learning is also a challenge because what motivates me, might not necessarily motivate students. I learned a great deal about motivating students this semester because of the learning logs and the constant communication about their progress throughout the semester. By giving students more of a platform in which they could express themselves made a huge difference not only for their learning process but for my teaching as well. Without the Gears, I most likely would have been reticent to try new ways of motivating learning and found with the Gears, it is automatically built in with implementation of all of the Gears simultaneously.

**COURSE REDESIGN**

There are several ways in which I was able to incorporate the FIVE GEARS techniques into my teaching. Here is a list of the projects and/or activities that were conducted using the Gears.

- **PLAY RESPONSE PAPERS**
  Students will write a 1 page personal response to each play read in class. The paper must be typed (single spaced) and respond to play's dramatic structure, themes, characters, and metaphors. These serve as "Learning Logs" for the students and it was a way for them to organize their knowledge and express their own personal options and connections to the plays, which motivated learning. These response papers help the students develop mastery in that they have to take their prior knowledge of previously learned vocabulary and then make their own observations, connections and evaluations of the material read and discussed in class. Requiring students to include a visual image that inspires them from the play encourages motivated learning in that students are able to express their connections to the play in a personal, thoughtful way.

- **DRAMATURGY PROJECT**
  Students will work in groups to present on a playwright, play or influential person from a particular theatrical and historical genre. Each student must create a colorful handout organized with assigned dramaturgical information. Presentations must be no longer than 20 minutes. The students are given the opportunity to select particular subtopics within a given topic. This is motivates learning for the student as they are able to choose a topic that interests them. They are also all "experts" in their selected and through a "Jigsaw" process are able to instruct their group members and the class on their particular topic. This enables them to develop mastery and in their research and presentation process they are constantly organizing knowledge.
• CRITICAL RESPONSE PROCESS
  Students must attend the THREE live theatre productions. Using the CRP (Critical Response Process) students must develop and TYPE a full analysis including THREE of the following to share in a small/large group discussion on the play: 1) Statements of Meaning 2) Neutral Questions 3) Permissioned Opinions and be prepared for 4) Artist as Questioner. Students are having to formulate ideas, responses and opinion of what they see and articulate it in writing and verbally in discussion. This experience helps them to develop mastery, in that they are collectively connecting prior knowledge, skills discussed and utilized in class as well as their own personal options. The Critical Responses Process is an organized way of articulating thoughts and ideas so they are also organizing knowledge. The key purpose of this assignment is for students to be learning the skills of giving and receiving feedback during this Critical Response Process.

• QUIZZES
  There will be two quizzes, which may cover any aspect of production, in class discussion, group presentations and/or reading assignments in order to reinforce theatrical definitions and student understanding. By taking quizzes, students are able to practice with feedback as well as organize knowledge in order to eliminate incorrect answers and locate correct ones, which is developing mastery.

RESULTS OF THE COURSE REDESIGN

Throughout the semester I was very focused on the progress of student learning in this course. I have never taught this course before so I won't be able to compare the student learning from a previous experience. However, I provided several opportunities for the students to verbalize their thoughts on our progress throughout the semester. Over the course of the sixteen weeks, we read five plays as a class. By the third play, I looked at the comments in their response papers in order to evaluate their progress and their ability to incorporate and utilize key vocabulary as well as their ability to connect vocabulary to their own personal analyses. Halfway through the semester, a student contacted me about the possibility of reading plays from playwrights that have a more diverse background and preferably plays that are newer and more current. I was able to utilize this exchange as a teaching and learning opportunity not only for me, but for the students as well. I was able to involve the class in a vote in which the students could select from a list of plays for our final play. This was a key component for motivating learning because the students could pick a play that they were excited about reading. I was able to modify the syllabus based on this change and the learning process was by far the best process out of all five plays. Students were motivated and excited about the play they selected and they were able to further develop mastery because the play was contemporary and relatable to their prior knowledge and personal life experiences.
Another assignment that was successful with respect to the Gears was the Critical Response Process assignment. Students were required to see three live productions and were required to complete an analysis paper that satisfied three different categories of responses to the theatrical work. The three categories helped the students organize their knowledge as well as develop mastery in that they had to articulate their findings clearly while satisfying particular categories. This organized feedback was motivating for the students in that they were not overwhelmed by their thoughts and opinions and were able to articulate them more clearly as a result of the organized process.

It was very effective to have assignments built into the curriculum, which encouraged student feedback. All five of the response papers encouraged student and teacher feedback, which reflected not only the content and activities we did in class, but simultaneously reflected the Five Gear implementation. Students were able to respond to their personal experiences reading the five plays throughout the semester and share what was helpful, effective or ineffective for them.

The final quiz of the semester I decided to make more of a comprehensive “survey” of their experience in the course and that was invaluable feedback for me as the teacher of this new course. In the past I would have been tentative to change the syllabus based on student feedback for fear that it might appear that I wasn’t organized or smart enough to know what was best for the students. However, because of the Five Gears, I felt more comfortable and more inspired to communicate with the students and as a result, I felt more connected to the students and they felt supported. I could also see a huge growth in their learning as a result of being motivated. The activities used: think/pair/share, jigsaw, group discussions, learning logs, etc. were all successful activities inspired by the Five Gears that most definitely encourages student feedback which informs my teaching much more than it has when I wasn’t using the Gears. I also discovered students connected prior knowledge than any other class I have taught. They were constantly referring to previously learned material and personal experiences and connections than any group of students I have had in the past.

**ONE GEAR-INFUSED ARTIFACT**

At the start of the semester, we read a text called *Backwards and Forwards*, by David Ball: A Technical Manual for Reading Plays. This text is vital to the learning process by creating a foundation in which students could begin the play analysis process. Key vocabulary is introduced and explained in this text and it this vocabulary that students are expected to use in their five play response papers throughout the semester. I created a “study guide” handout for the students and with every play that we read in class they could complete the handout as they saw examples from the text and as we made specific connections to the vocabulary and the text in our discussions. The first play we read I didn’t use this handout. I made an easy
assumption that students would be able to make the connections of the terms and concepts on their own. It wasn't until I created the study guide, that students completely excelled during the reading and discussion process. Not only were students organizing knowledge, but they were developing mastery as they had to make high level connections to the vocabulary from their thoughts and analysis of the play, characters, action and key concepts. Because of this handout, students were more actively involved in the learning process and were much more motivated than the time we read the play without the study guide. Having a visual reference for them encouraged them to engage in the learning process and they were able to take notes and write down quotes from the play under select terms/concepts. After the students completed these study guides, I took the class a step further and put them into groups and had them use their study guides to create a concept map for the play. With their study guides completed, they were able to engage in a group and create a concept map, which greatly organized knowledge and developed mastery. This study guide/concept map experience was very motivating for everyone involved in that ALL students were engaged and able to access and articulate their organized analyses.

(Handout Below)

TH 208A Hayter

PLAY TITLE:

Study Sheet

  INTRUSION:
  ACTION:
  TRIGGER:
  HEAP:
  STASIS:
  INTRUSION:
  CONFLICT:
  OBSTACLE:
  EXPOSITION:
CLIMAX/CATHARSIS:

FORWARD:

IMAGE:

THEME:

MOOD:

ATMOSPHERE:

METAPHOR:

Student Concept maps (images below):
REPORT #3

Respectfully prepared by Meiqin Wang

1. Your name, department, college, and course description [Give the full name of your Beck 5 Gears target course and a brief description of what topics are learned in it.]

Meiqin Wang
Art department
Mike Curb College of Arts, Media, and Communication

Art 114-World Art: Asia is a general education art history survey course that I usually teach two sessions every semester. Students in this class learn visual arts of India, China, Japan, Korea and Southeast Asia through specific historical, religious and socio-cultural contexts and are expected to develop skills on discussing, researching, and writing about various art forms such as painting, sculpture, architecture, ritual objects, ceramics, installation, and photography produced in the Asian world.

2. Describe your course’s situational factors

In most cases, I have a predominantly freshman student body made up of 96% non-art major students taking this survey class. Most of them do not have any background in Asian art and culture. Many have poor literacy skills, undermining their ability to read and develop a foundational knowledge, which is imperative for developing critical thinking skills, speaking effectively and writing convincingly about Asian art.
3. Teaching-learning challenges/obstacles.

The biggest challenge for this course has always been how to motivate students into learning disciplinary specific concepts and analytical skills related with Asian art history with an understanding that these concepts and skills will be useful for their education in general. Last semester I taught this course as a hybrid class for the first time and this semester I taught it fully online also for the first time, both presented unique challenges besides the existing difficulty of motivation.

4. Summarize how you applied the Five Gears to address these challenges and other issues.

This semester, I designed 15 weekly quiz banks and encouraged students to take the weekly quiz as many times as they wish to learn the course content, practice their comprehension of the reading materials, and familiarize with the way questions are asked and answers are formulated in art history. Weekly quizzes also helped them to prepare for exams. This learning activity incorporates following gears: motivating learning, practice with feedback, organizing knowledge, and developing mastery. Most importantly, it utilizes the gear of motivating learning because it contains course value, provides a high expectancy for success if students are willing to try, and shows that the instructor wants to help them succeed.

I also created Moodle Student questions and answers forum and group forums to encourage communication and learning among students and allow them to bring in sources they see relevant to the class, through which I hope they may be motivated to learn and also to demonstrate the outcome of their learning. I monitor the forum closely and regularly give my feedbacks in order to promote positive attitudes, thoughtful comments, and desirable focuses that are related with learning outcomes.

Furthermore, I offered different options, including writing papers, creating posters, making artworks, producing videos, for a major semester-long research project in order to encourage students to choose one from the list. This structure allows students to connect with their prior knowledge and motivates them since they are given a number of options to choose from. They may incorporate their personal interest when deciding on a specific research project. The details of the project were given out at the beginning of the semester and I have checked their progress three times, with some students reporting on their current stage of completion, before they turned in their completed works at the end of week 13. This could help to inspire other students who may learn from their peers and to discourage procrastination. To complete the research project is an important process to learn and to develop mastery since students need to apply what they have learned into creating new forms of knowledge about Asian art and new ways of interpreting it.
Related with the optional research project, I require every student to write a critique on two other students’ work at their own selection. All students’ complete research projects are made available on Moodle so everyone has access to them. This exercise further develops mastery since they are reviewing peers’ works, learning to identify merits and areas of improvement in them.

In addition, I have been applying the five gears to my upper division art history classes. For example, in my Art 412 History of Korean Art and Art 415 History of Indian Art, I have introduced a weekly learning activity in which at least two students present their summary of the reading assignment to the class and everyone else in the class gives a feedback to those who present. The activity involves motivation, feedback, and developing mastery. I also have five students sign up to be discussants weekly and these students are responsible for leading discussions on a number of topics I designed for every week. They will also receive feedbacks from their peers and from the instructor. All these activities are targeting motivation, practicing with feedback, and developing mastery.

5. Summarize the results of using the Five Gears to reduce these challenges and other issues.

Most students score better on weekly quizzes. In average, students attempt at least twice the weekly quizzes, which means they are exposed to the course content through reading questions and answer choices more often than before. Some students have made over five attempts on weekly quizzes. Since the grade for every weekly quiz comes from an average of all their attempts, they are expected to try their best on every single attempt.

Multiple attempts and the resulting better performance in weekly quizzes have in turn helped students to score better on exams. They also help students to accumulate a more solid foundation knowledge for the research project, which includes several analytical essays and/or making artworks. Students have shown great confidence in working on the research project that they chose and I have seen many high quality works from them. Overall, I have found that

- Students are able to find better examples to analyze and write better essays for the research project.
- Their knowledge level has a significant improvement, based on a comparison of the knowledge surveys.
- They respond positively with the survey asking about their feedbacks on new learning activities that I designed with skills I learned at the eLearning Institute.

In my upper art history classes, I have seen a much higher level of student participation and engagement with course materials and have been enjoying a much more lively class discussion with certain intellectual substance initiated by students every week.
6. Include at least ONE Gear-infused artifact that you are proud of.
I am very happy that I designed the 15 weekly quiz banks and encouraged students to take every weekly quiz as many times as they wish with each time a different set of questions being presented. This setting really motivates students and helps them learn the course content, practice their comprehension of the reading materials, and understand the way questions are asked and answers are formulated in art history. Essentially, it helps developing their mastery of course materials.

REPORT #4

Piljoo Kang, Ph.D.
Child and Adolescent Development
Health & Human Development

Target Course: CADV460 Race, Ethnicity, Gender and Culture in Development

This upper division course explores the development of ethnic minority children and adolescents in multicultural settings. This course examines major psychological theories and practices from a multicultural perspective, with an emphasis on the cultural sources of diversity in cognition, emotion, development, communication, identity, interpersonal relations, and psychopathology. Topics include family socialization practices, ethnic identity development, and the role of language in the construction of identity. A historical overview of different minority groups in the United States and how these people groups have adjusted and adapted to new cultures is presented. Particular focus is placed on students’ exploration of their own understandings and awareness of culture, ethnicity, and gender, based on the premise that effective professionals must clearly understand their own personal biases and level of privilege before looking at traits and characteristics of other groups. Specific attention is given to exploring the practical application of these concepts and theories in community settings.

Situational Factors:

Given the rich diversity present in our CSUN student body, I am particularly committed to facilitate the process of making connections between the students’ own personal experiences and the subject matter of multiculturalism in human development.

Teaching-Learning Challenges and Obstacles:

As a developmental scientist, I believe the most important aspect of teaching and learning is the transformational growth of a person, in the context of his/her
surroundings. Hence, my goal as a teacher is to facilitate individual students to become active participants in their own growth and to enable the students to make connections from the content materials that they learn in classroom to the actual world that they live in.

Specifically, I have encountered challenges of encouraging students who were overly concerned with grades for each assignment rather than the overall improvements over the course of the semester. I wanted to learn how to make the progress itself as a reward.

Another challenge is facilitating discussions on diversity issues by engaging both the students who are currently ‘indifferent’ and the students who are already ‘interested’ in the issue.

**Course Redesign:** I applied the **Five Gears (in bold italics)** to address above-mentioned challenges.

<table>
<thead>
<tr>
<th>Week/Module 8</th>
<th>Literature Search Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives:</strong></td>
<td><strong>Out-Class Activities</strong></td>
</tr>
<tr>
<td>6. <strong>Learning HOW to Learn:</strong> b. <strong>Identify</strong> a gap in the literature</td>
<td>-Participate in a cross-cultural event/function</td>
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<tr>
<th>Week/Module 9</th>
<th>Language &amp; Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives:</strong></td>
<td><strong>Out-Class Activities</strong></td>
</tr>
<tr>
<td>1. <strong>Foundational Knowledge:</strong> b. <strong>Identify</strong>...cultural sources of diversity in communication</td>
<td>-Reading</td>
</tr>
<tr>
<td>3. <strong>Integration:</strong> a. <strong>Articulate</strong>...theoretical framework for ImmEx. Report</td>
<td>-Print out SV lecture notes &amp; survey</td>
</tr>
<tr>
<td>4. <strong>Human Dimensions:</strong> a.</td>
<td></td>
</tr>
<tr>
<td>Demonstrate...own diversity</td>
<td>Learning Log (online)</td>
</tr>
<tr>
<td>-----------------------------</td>
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</tbody>
</table>

**Week/Module 10**  
**Mental Health**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Out-Class Activities</th>
<th>In-Class Activities</th>
<th>Assessment</th>
<th>Gears Used</th>
</tr>
</thead>
</table>
| 1. Foundational Knowledge:  
  a. Identify ...multicultural psychology  
  4. Human Dimensions: a. Demonstrate...own diversity  
  5. Caring: b. Discuss...culturally competent counselors/teachers | -Reading  
  -Print out SV lecture notes & survey | -Listen/write lecture notes | -Pop quiz on reading | -Motivating Learning [Personal Support] |
| | | | | -Practicing with Feedback [goal-directed practice] |

**Week/Module 11**  
**Identities**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Out-Class Activities</th>
<th>In-Class Activities</th>
<th>Assessment</th>
<th>Gears Used</th>
</tr>
</thead>
</table>
| 1. Foundational Knowledge:  
  a. Identify...identity development  
  4. Human Dimensions: b. Demonstrate...own diversity | -Reading  
  -Print out SV lecture notes & survey | -Listen/write lecture notes  
  -Racial Identity Development Survey  
  -Group Discussions on Perry article & reflective statement  
  -Learning Log (online) | -Pop quiz on reading | -Developing Mastery [Reflection] [self-direction] |
| | | | | -Practicing with Feedback [goal-directed practice] |

**Week/Module 12**  
**Interpersonal/Intercultural Relations**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Out-Class Activities</th>
<th>In-Class Activities</th>
<th>Assessment</th>
<th>Gears Used</th>
</tr>
</thead>
</table>
| 1. Foundational Knowledge:  
  a. Identify...intercultural interactions  
  5. Caring: a. Develop/Share...competent professional  
  3. Integration: a. | -Reading  
  -Print out SV lecture notes & survey | -Listen/write lecture notes | -Pop quiz on reading | -Motivating Learning [value] |
Articulate...theories to application
4. Human Dimensions: a. Discuss...cultural beliefs/values

Results of Course Redesign: Qualitative Student Reflective Statements regarding their own progress towards understanding multiculturalism within individuals and among social groups.

Step One: Autobiography:
Student #24
...getting to know “Americanos” as my parents would say. “The Americans”. I still struggle with this because my mom still refers to White Anglo people as Americans, and I ask, “What are we?”

Student #16
I never could understand why my grandmother was prejudice towards a entire group for the actions of a few men. As a result I have struggled to discuss diversity, politics, and social issues with my grandmother, who continues to generalize and entire population for the mistakes of individuals. Seeing her prejudice has compelled me to always be respectful of diversity, and to educate myself about diversity, such as this course.

Step Two: Cultural Immersion Experience:

Student #31
I understood my culture more because I got to take a step back to see what another culture was like.

Student #09
It makes me realize how different my culture is to the American culture but it also makes me appreciate it more. Taking this course has allowed me to see that my culture is Interdependent and it is not a bad thing. I have also seen how it affects the younger generation and how they continue to uphold the same values of respect and interdependence. ...that it is important to be open and to experience different cultures.

Student #11
Just because somebody does not do something the way you think is correct or is your norm, it does not mean that there way is wrong. Just because my Mexican American culture is very loud and loves to dance at a party does not mean that I cannot part
take in a Danish event or be respectful towards it. Although the Danish culture is very explicit and direct, that does not mean that they are wrong.

Step Three: Final Reflections on Prejudice, Stereotypes, & Racism

Student #24
“The idea that the White race is superior is something I believed in when I was younger. But as I was growing up I realized it was something that I had picked up because of the mass group of people I was surrounded by. They all had the same belief so I as an individual believed it despite having no background information.” Is this enculturation?

Student #16
The lack of knowledge and awareness of people from other cultural backgrounds reinforces the idea of superiority. It is unfortunate that I am unable to think of characteristics of White culture and aspects. This is important because perhaps it tells me that I may need to make an effort to learn more about White culture.

Student #31
I completely disagree with the statement, 'Individuals cannot stop the cycle of racism', because without the individuals there would not be racism. Racism is created through the voice and actions of individuals. ... I am not perfect and I too sometimes can be racist even if it is unconsciously but I can become aware and be careful with my words and actions.

Five-Gears-Infused Artifacts: Rubric & Checklist

Rubric for Group Project w/ space for feedback

Topic: _____________________________________________________________

Title page/Abstract: _______________________________________________

Introduction:

**WHY** it is important to study this topic: _____________________________

**WHAT** will be covered in what **order**: _____________________________

Theoretical Framework:

**Relevant** theories: _______________________________________________

Well **integrated & organized**: ______________________________________

Findings from the literature: **Logical Flow**: ___________________________

Subtopic one: ______________________________________________________

Subtopic two: _____________________________________________________

Subtopic three: ___________________________________________________
Conclusion:
Summary: ____________________________________________________
Reflections: __________________________________________________
Gap in the literature: ___________________________________________
Future research: ________________________________________________

APA Style:
Format: __________________________________________________________________
Headings: __________________________________________________________________
Mechanics of Style: __________________________________________________________________
Citation in Text: __________________________________________________________________
Reference Page: __________________________________________________________________

Power Point Presentation:
Content: organization & logical flow:
____________________________________________________________________________

Preparation:
____________________________________________________________________________

Group Coordination:
____________________________________________________________________________

Delivery:
____________________________________________________________________________

Creativity:
____________________________________________________________________________

APA Style Checklist

Submit a (printed) hardcopy of this checklist with all the relevant items checked off and the group members signed.

I/we have reviewed the checklist to make sure my/our paper meets the guidelines for writing an APA paper. The paper I/we have presented is my/our own work with citations made to give credit to the sources I/we have used. I understand that all APA rules are not used on this page and that plagiarism will result in a failing grade.

Paper Topic: __________________________________________________________________

Student Signature: ___________________________ Date: ___________________
Student Signature: ___________________________ Date: ___________________________

Student Signature: ___________________________ Date: ___________________________

Format (APA, p. 228)
- Typeface: 12 pt. Times New Roman throughout (APA, p. 228)
- Space: Only one space after punctuation.
- Margins: 1 inch all around. (APA, p. 229)
- Alignment: Flush-left, ragged right margin, no word division at the end of a line.
- Indentation: Indent .5 inch the first line of every paragraph, except the abstract & block quotations.
- Page numbers: In the far right hand corner of the header, on all pages starting from the Title Page.
- Header: Set at .5” and uses the same font as the body of the paper. Header includes the page number in the upper right corner on all pages, including the Title Page (APA, p. 41, Figure 2.1, p. 229).
- Running Head: In upper left-hand corner of the page header, insert the Running head in the header. The words “Running head:” (without quotes) are in upper and lower case letters followed by the abbreviated title (no more than 50 characters counting spaces) in all capital letters. Ex. Running head: ART EDUCATION (APA, p. 229; p. 41, Figure 2.3). Note: The words “Running head:” are NOT included on the following pages, but the actual running head in all capital letters should be included on all following pages.

Title Page (APA, p. 41, Figure 2.3)
- Type the entire title, centered, positioned in the upper half of the page, capitalizing the first letters of each word. The recommended length of the title is no more than 12 words.
- Double-spaced. Centered, enter the author’s name. Omit all titles.
- Double-spaced. Centered, enter the institutional affiliation. (APA, p. 23, 2.01)

Abstract (APA, p. 27)
- Begin Abstract on new page. (APA, p. 27)
- Abstract is a double spaced overview of the content of the paper consisting of no more than 250 words. No paragraph indent. All numbers in the abstract for reporting data (unless beginning a sentence) are typed as digits rather than words.

Body of Paper (Text) (APA, p. 27)
- Put the title of the paper, centered, at the top of the page, capitalizing the first letters of each word. It is not bolded. (APA, p. 23; p. 41, Figure 2.1)
- Double-spaced. There is no extra space between the title and the beginning of the paper. The introduction is not labeled. (The first part of a manuscript is assumed to be the introduction.)
- Indent. Begin paper.
There are no extra spaces between paragraphs or sections of the paper.

**General Mechanics of Style (APA, p.61, p. 87)**

- Do NOT use bold, quotation marks, capitalization, underlines, or italics to emphasize words/phrases.
- Acronyms, on first appearance, must be written completely and followed by parentheses. Use acronym after that (e.g. Azusa Pacific University (APU)) (APA, p. 107, 4.23). Do not use periods (e.g. use APU, not A.P.U.) (APA, p.88, 4.02).
- Whole numbers less than 10 are written as words. Numbers 10 or above are written as numbers unless starting a sentence (APA, p. 111, 4.31). An exception to this rule is numbers that represent time, dates, ages, and numbers in specific parts of manuscript (e.g., M = 3.12 in the results section or tables, page numbers).
- To form plurals of numbers, add s or es without an apostrophe. For decades, simply add an s.
- Ex: 1850s, fours and sixes, 10s and 20s.
- Hyphens have no spaces before or after.
- Bullets are not used within the narrative. Lists are included in paragraph text.
- Limit direct quotes to one quote total in paper. Avoid long (more than 40 words) quotes.
- Avoid language use designed to introduce bias or affect (e.g. very, always, unfortunately).
- Use clear, concise, direct Standard English. Avoid informal language/slang. Avoid language use designed to introduce bias or affect (e.g. avoid using the words very, always, unfortunately) (APA, p. 70-77).
- Sentences have one topic.
- Paragraphs have one theme. Each paragraph should be no longer than one page (APA, p. 87-88).
- Proofread. Spell (S) and Grammar Check (GC) do not catch all errors.
- The writing is clearly one’s own but other’s ideas are cited. Plagiarism (APA, p. 15-16, 1.10; p. 270, 6.01).

**Citations in Text (APA, p. 174)**

- All works referenced or paraphrased are cited in manuscript.
- All material that is not the author’s own and is not common knowledge is cited. Quoted content does not cite or quote other sources. I have only cited work that I have read. My citations are scholarly sources. (Many websites are NOT scholarly sources!)
- Citations for paraphrased content list author(s)’ last name and the year of publication, separated by comma and single space, in parentheses. Ex: (Kang & Romo, 2011).
- Citations for quoted content list author(s)’ last name, date, and page number(s). Ex: (Tsai & Cole, 2012, p. 333). Page number is abbreviated “p.” Electronic sources include a paragraph number and are abbreviated “para.” Ex: (Yu, 2012, para.3).
- All citations in the text are references in the References. All items in the References are included in the text. (APA, p. 174, 6.11)
- The first time an article with two to five authors is cited, all the authors’ last names are included. First names and initials are not used. After that, use et al. The term et al. is not italicized and with a period after al.
- For a work with six or more authors, list only the first author’s last name followed by et al. (APA, p. 175, 6.12)
  - Ex. for two authors: (Smith & Elliott, 1993)
  - Ex. for three-five authors (first usage only): (Abiden, Jones, Smith, & Elliott, 1993)
Ex. for three-five authors (second or more usage): (Abiden et al., 1993)
Ex. for six autors: (Wasserstein et al., 2005) (APA, p. 177, 6.1)

- When referencing a work with two or more authors, the word “and” is used in the text, while the symbol “&” is used in parentheses and on the references page. (APA, p. 176, 6.14)

- When a work's author is designated as "Anonymous" cite it in the text as (Anonymous, 1998). For web sources the domain name or responsible organization should be listed as the author. Ex. (National Institute of Health, 2014). (APA, p. 177, 6.15)
- When no author listed, cite the first few words of the title (surrounded by quotation marks) followed by the date in. (APA, p. 176, 6.15) Ex. (“Study Finds,” 2007)
- Personal communications are not cited in References (they are non-retrievable); cite these only in body of paper. (APA, p. 179, 6.20) Ex. A long discussion followed (T. Cho, personal communication, April 18, 2008).
- Italicize titles of works artwork, movies, TV shows and reports. Capitalize words four letters long or great. (APA, pp. 104-106) Ex: A Nation at Risk has changed the face of education.

**Reference Page (APA, p. 198)**

- References are on a new page with the word “References” (without quotes) centered at the top of the page in upper and lower case letters, not italicized, not bolded. (APA, p. 37, 2.11)
- References in text match references at the end of paper and all references are included in the reference list. (APA, p. 37, 2.11; p. 174)
- References follow APA format (Double-spaced, alphabetical order with hanging indent on second line). (APA, pp. 174-179)

**Periodicals (journal articles):** Author(s)' last names, First initial. Second initial if provided. (Publication date). Article title with only the first word capitalized. First word after colon also capitalized. *Name of Journal Italicized and First Letters Capitalized, volume italicized (issue number if provided, not italicized), pages as 123-234.*

- **Book reference:** Author(s)' last name, First initial. Second initial if provided. (Publication date). *Title italicized with only first word capitalized: First word after colon also capitalized.* City, State published: Publisher.

- **Electronic source:** Author(s)' last name, First initial. Second initial if provided. (Publication date). *Title italicized.* Retrieved from URL (APA, p. 205, 29 and 30). Do NOT add date of retrieval. (New APA).

- Include the digital object identifier (DOI) if it is assigned.

- If there is no DOI assigned and the reference was retrieved online, give the URL of the journal homepage. (Not the database) Use this format: Retrieved from [http://www.xxxxxxxxx](http://www.xxxxxxxxx) Do NOT put period at the end. Do NOT add date of retrieval.
REPORT #5

Implementing the Five Gears for Activating Learning into Information Literacy Sessions for Child & Adolescent Development (CADV)

Joy M. Doan, M.A., M.L.I.S.
Research, Instruction & Outreach Services (RIOS), Oviatt Library

Target Course Description

During the Five Gears FLC, I targeted the information literacy sessions for Child and Adolescent Development (CADV). These 60 to 120 minute sessions (dependent on course for which instruction is requested) include the following four (4) student-learning outcomes (SLOs):

- Create a safe environment for research inquiry.
- Understand the various types of resources (e.g., periodicals, monographs) available through Oviatt Library.
- Conduct effective database/catalog/internet searches for research resources.
- Provide a higher level of comfort with academic citations (e.g., APA).

In 2015 – 2016, thirteen (13) information literacy (IL) sessions were requested from the CADV department, including sessions for:

- CADV 150—Foundations of Child & Adolescent Development
- CADV 250—Professional Pathways and Careers in Child & Adolescent Development
- CADV 352—Applied Social Development
- CADV 380—Child & Adolescent Development Study (Methodologies)
- CADV 381—Child & Adolescent Development Study (Advanced Methodologies)
- CADV 450—Helping Children with Medical Environments
- CADV 460—Race, Ethnicity, Gender and Culture in Development
- CADV 496—Experimental Topics

Situational Factors
Nature of Teacher
I am new tenure-track faculty at CSUN (2015 – 2016) that believes in the dynamism of innovative, active and student-centered teaching methodologies that contribute to students’ Mastery of course materials.

Nature of Students
It is evidenced by CSUN’s annual reports that our campus serves a broadly diverse student body (e.g., racial identity, gender expression, differently able-bodied). This has also manifested in my IL sessions with CADV students. These students’ Prior Knowledge greatly lends itself to the Motivation of Learning and development of Mastery of IL skills.

Departmental Expectations
As the liaison RIOS Librarian to the department of CADV, it is expected that I, 1) collaboratively foster the relationship between our two colleges, and that 2) I adequately support Oviatt’s (and by extension the University’s) Information Competence Program (ICP) via IL specific instruction.

Nature of Subject
IL—the library, its resources and/or research—at first appears foreign or mysterious to many students, and they often iterate or express an aversion to it. The primary task of RIOS librarians is to unpack this stratified subject in a way that aids in the Mastery of IL principles.

Specific Content
The aforementioned SLOs in my Target Course Description directly correlate to Oviatt’s ICP. Each SLO is broken into the following digestible points for students:

• Create a safe environment for research inquiry.
  ▪ Develop a sense of community with the students that invites inquiry and Motivates Learning.
  ▪ Activate Prior Knowledge by showing students how many IL skills they already possess.
• Understand the various types of resources (e.g., periodicals, monographs) available through Oviatt Library.
  ▪ Organize Knowledge, in order to differentiate various databases.
• Conduct effective database/catalog/internet searches for research resources.
  ▪ Showcase effective search strategies and allow students to actively Practice with Feedback.
• Provide a higher level of comfort with academic citations (e.g., APA).
  ▪ Utilize Practice with Feedback to build students’ confidence with citations for their research papers/projects.
Teaching-Learning Challenges & Obstacles

In fall 2015, I identified three (3) challenges for IL sessions for CADV:

Challenge One: Incorporating the ACRL Framework into IL Sessions to **Develop Mastery**
In spring 2015, the parent professional organization for Academic Library and Information Science — the Association for College and Research Libraries (ACRL)—developed a set of threshold (learning) concepts, known as the Framework for Information Literacy⁴, to assist in the development of SLOs that activates student learning of IL principles. However, because of the Framework’s recent adoption, a full litany of practical application of the threshold concepts has yet to be developed. The challenge of how to practically and routinely incorporate the threshold concepts into IL sessions that activate student learning exists.

Challenge Two: **Motivating Learning & Mastery** through the Establishment of Rapport
Oftentimes, students meet, or hear about me for the first time during an IL session. Establishing adequate rapport and creating a safe space for inquiry is essential to motivating discovery and engagement with the material. However, this is challenging given the 90-minute (approximately) face-time with a class.

Challenge Three: **Using Prior Knowledge to Speak to the Trajectory of the Class’ Material**
I am not instructionally embedded, or involved in the CADV courses’ instructional design. However, I am sometimes asked to provide an IL session that will involve deep engagement, qualitative feedback and result in almost masterful self-directed research skills for the course assignment at hand, as well as in the future (throughout the trajectory of a student’s degree program).

Course Redesign

In spring 2016, I primarily focused on redesigning my CADV IL sessions with innovative teaching practices that incorporated **Motivating Learning, Organizing Knowledge**, and **Practicing with Feedback**, in order to facilitate the development of **Mastery**.

**Motivating Learning with the use of Knowledge Assessment**

I identified a challenge with motivating students given the minimal face-time that I have with them per term. This was especially true in my IL session for CADV 250—a

100 seat course. During our November 2015 FLC meetings, our group discussed integrated course design. One of the teaching tools highlighted during these discussions was a knowledge survey—an online (typically Moodle) survey given at both the beginning and end of a semester that assesses students’ prior knowledge of SLOs for the course. The challenge was to tweak the knowledge survey module for use in a one-shot class session. For CADV 250, I used eSURV.org—an online survey tool—to develop a flipped-classroom knowledge assessment of IL skills. The purpose of the assessment was for students to consider what IL skills they were, or were not familiar with, and to provide me with a sense of where the class’ skills were, so that I could efficiently use valuable class time. The knowledge assessment consisted of ten (10) multiple-choice questions; the knowledge assessment took approximately ten (10) minutes to complete. Students had ten (10) days to complete the assessment.

**Organizing Knowledge via the Umbrella of Sports**

*See section entitled, “Five Gears Artifact.”*

**Think, Pair & Share to Practice with Feedback**

In fall 2015, I noticed that many of the class assignments that I was teaching required group research, and that students had not begun working on their projects prior to the IL session. This presented a challenge during my sessions; students wanted to get started with group research during the IL session, but often didn’t have clear direction on research strategies, or the needed research for their assignment. While this was not a challenge that I initially indicated in my Five Gears application, I decided to address it in my syllabi for spring 2016, particularly CADV 460.

During the November FLC meetings another teaching tool that we discussed was the, ‘think, pair, share’ module—students are given time to briefly work in groups and then brought back together as a class to share their experiences, answers, etc. I decided to utilize this as part of, “Conduct effective database/catalog/internet searches for research resources” SLO. As students arrived in class, they were instructed to sit with their groups. During out discussion of effective database searching, I first utilized one of the databases that we had discussed as a class to mock search an example research topic (e.g., child abandonment), then I instructed students to work within their groups for the next five to seven minutes to find applicable sources (e.g., articles, websites) on their research topics. As the students were working, I walked around to listen to their research methodologies and assist with the process where needed. If one group asked a question that benefitted the whole class’ knowledge, I paused their group work and provided a helpful hint. After the five to seven minutes I would ask a few groups to volunteer to tell the class about their search process and what they found.
Result of Course Redesign

Motivating Learning with the use of Knowledge Assessment
Multiple positive results came out of this effort.

- The course’s professor worked with me to ensure students completed the knowledge assessment. She made the assessment a participation requirement and hosted the link on Moodle; students had a grade-point value as added motivation to actively participate in the IL learning experience.
- The ability to review students’ collective Prior Knowledge allowed me to better target SLOs that would be useful and motivate learning than regurgitate prior knowledge.
- During the IL session, the students and I reviewed their collective results of the knowledge assessment. As a class, they scored 85-percent; when I shared this news, there were many looks of shock, and students voiced their amazement that they already had some prior knowledge about IL.
- By encouraging students to engage their Prior Knowledge, I was better able to evoke group participation in a large-class setting. Students were motivated to learn additional information that build on their learned knowledge base.

Organizing Knowledge via the Umbrella of Sports

*Also see section entitled, “Five Gears Artifact.”

While I do not have collective data from students on this visual analogy, every time I use the ‘Umbrella of Sports’ I see students give confirming head nods and exclaims of realization. I have also found that this use of Organizing Knowledge has raised my in-class participation; students are always intrigued by the parlay from research to sports.

Think, Pair & Share to Practice with Feedback

This activity truly builds the students’ confidence with IL and develops their Mastery of the subject. Students valued the time to get started on their research in the classroom with the benefit of having the librarian on-hand to answer tough questions. ‘Think, Pair, Share,’ provides me with a tangible activity that I can utilize for Practice and Feedback in IL.

Though I cannot provide correlations of grades from fall 2015 to those of spring 2016, in order to show students’ development of Mastery, I can provide examples of comments from my IL session student reviews (official departmental reviews for tenure file) that indicate the students’ comprehension of IL concepts.

“She...found new ways to me new things.”
“I have used the CSUN library OneSearch but Joy showed helpful tips that was more effective for searching.”
“She broadened my research capabilities.”
“Joy was very enthusiastic and taught new ways to research information.”
“Very energetic and encouraged students’ interaction that woke [sic] us up.”

Based on student feedback from this semester, I ascertain that the Five Gears for activating learning have made a positive impact on my previously outline teaching challenges.

**Five Gears Artifact**

The following is one Gear-infused artifact that I developed and utilized spring 2016. I have permanently added this artifact to my teaching rubrics.

**Organizing Knowledge via the Umbrella of Sports**

Countless times, students are confused by the concept of individual databases. When asked, ‘What database were you using for research?’; a student will often reply, ‘Ebsco’, or ‘The CSUN databases.’ For spring 2016, I developed a visual way of Organizing Knowledge that helped to better illustrate the difference between a single database, a database host and a database platform. During our discussion of various Oviatt resources, I ask a student to volunteer a sport he/she likes or watches. Then, I ask the class to name professional teams for that sport. Finally, I ask the class to name the governing body for those teams.

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sport</strong></td>
</tr>
<tr>
<td><strong>Teams</strong></td>
</tr>
<tr>
<td><strong>Governing Body</strong></td>
</tr>
</tbody>
</table>

As the students are answering my prompts, I’m drawing the following on the whiteboard:
After this visual organization is on the board, I ask if any students can name a particular database or databases. Then, I ask if any students know what company hosts said databases. Finally, I ask the students what server hosts the databases.

Example

<table>
<thead>
<tr>
<th>Database(s)</th>
<th>Academic Search Premier, PsychINFO, ERIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Host</td>
<td>EBSCO</td>
</tr>
<tr>
<td>Server Host</td>
<td>CSUN Oviatt Library</td>
</tr>
</tbody>
</table>

As students are answering my second set of prompts, I’m drawing the following on the whiteboard:

I then present an analogy between the visuals to show that the same way the Nationals are a baseball team governed by the NBL, ERIC is database on EBSCO hosted by the Oviatt Library’s database server.

**REPORT #6**

**Name:** Jack Ou  
**Department:** Electrical and Computer Engineering  
**Course name:** Electronics I (ECE 340)  
**Course description:** This course introduces students to linear, piecewise-linear, and nonlinear models for active devices and their interaction with passive circuit elements. Characteristics and behavior of operational amplifiers, diodes, and transistors are used to analyze and design the circuits comprised of these devices and components. Small signal amplifiers and their analysis at low, midband, and high frequencies are characterized and categorized.

**Situational factors:**  
Specific context: ECE 340 is a 3-unit, twice a week, junior-level lecture class. This course is required for all major students. All students enrolled in the lecture are
required to enroll concurrently in a one unit laboratory class that meets once a week. Students are expected to have mastered introductory materials covered in Electrical Engineering Fundaments (ECE 240), which is a prerequisite for this course.

Expectations by people outside the course: Given that the lectures and the laboratory sessions are taught by different instructors, lecture instructors are expected to cover the materials so that they are synchronized with the labs.

Nature of the subject: This is a circuit theory class. The basic circuit building blocks are covered in the first two months of the class. It is hoped that by becoming familiar with the basic building blocks, students are able to analyze and design more complex circuits.

Nature of students: Only students who have previously passed the prerequisite for this course are permitted to enroll in this class. Even though some students struggle with the materials covered in this course, most students are eager to learn.

Nature of teacher: This course was taught by the same instructor in the fall of 2016 and again by the same instructor in the spring of 2016 after the target course was redesigned.

Learning challenges and obstacles:

Limited time in class is the number one challenge in teaching this course. Since the lectures are synchronized with the labs and are taught by different instructors, new lecture materials must be introduced constantly to keep pace with the labs.

Summary of course redesign

Overview:
The target course was redesigned in Spring of 2016. The course objectives were revised in order to provide a clearer picture for the outcomes of this course. Effort were made to propagate course objectives to lesson objectives and homework assignments so that learning continues outside of class. Students were encouraged to use knowledge survey as a tool to reflect on their progress in the course.

Details of the course redesign:

Course objectives: course objectives were revised using Bloom’s taxonomy so that the objectives incorporate different levels of cognitive demand.

Lesson objectives: lessons objectives were developed from the course objectives. Bloom’s taxonomy is again used to ensure that the course objectives are propagated to the lesson objectives in a way that promotes learning at different levels of Bloom’s taxonomy.

Homework: Homework assignment are designed to comply with the lesson objectives. Some questions are designed to give students opportunities to practice what they have learned in a previous lesson. Some questions are designed to prepare students for an upcoming class using only knowledge that has been taught in a previous class.
**Knowledge survey:** Students are asked to complete a knowledge survey one week before each exam. The questions in the knowledge survey come from the lesson objectives. Students are asked to reflect on the result of the knowledge survey and adjust their exam preparation accordingly.

**Results of course redesign**

*Brief summary:* students were given an opportunity at the end of the semester to complete a survey on their experience using the knowledge survey. Most students appear to think that the use of knowledge surveys in this course was effective in helping them reflect on their own learning. The survey question and the results are provided below as follows.

*Survey question:* Knowledge surveys were used extensively in this course to help students reflect on their learning in this course. How effective were these assignments in improving your learning? 1=not effective at all, 5=moderately effective, 10=highly effective.

*Survey results:* 35 students participated in this survey. The average score was 7.85. Approximately 62.5 percent of students reported a score equal to or higher than an 8.

<table>
<thead>
<tr>
<th>Score</th>
<th>Effectiveness of Knowledge Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
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<td>4</td>
<td>2</td>
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<td>5</td>
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<td>6</td>
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<td>9</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>13</td>
</tr>
</tbody>
</table>

Figure 1: Results of knowledge survey. 1=not effective, 5=moderately effective, 10=highly effective.

**Sample course objectives, learning objectives, and knowledge survey.**

1. **Course objectives (CO):**
   After completing this course, students should be able to:
   1. *Explain* the physics of diode, bipolar junction transistor, and metal oxide field effect transistor.
   2. *Differentiate* DC analysis, large signal analysis and small signal analysis.
   3. *Analyze* single and multi-stage amplifiers using small signal model
   4. *Analyze* single and multi-stage amplifier by inspection
   5. *Evaluate* trade-offs in single and multistage circuit design
6. **Design** circuits using diodes, bipolar junction transistor, and metal oxide field effect transistor

7. **Interpret** and **apply** the principles of frequency response to the analysis and design of MOSFET and BJT amplifiers.

2. **Lesson objectives/homework assignments derived from course objectives:**

   **Lesson 1:** The least you should know about bipolar junction transistors (*course objective 1*)
   1. Students can **differentiate** a PNP from an NPN.
   2. Students can **compute** DC nodal voltages of a BJT (NPN/PNP) circuit
   3. Students can **distinguish** different regions of operations
   Corresponding assignment: HW#3

   **Lesson 2:** Bias of Bipolar junction transistor (*course objective 2*)
   1. Students can **compute** DC currents of BJT circuits.
   2. Students can **distinguish** large signal analysis from small signal analysis.

   **Lesson 3:** Small signal model (*course objective 2,3*)
   1. Students can **draw** the small signal model for NPN and PNP transistor
   2. Students can **draw** small signal model for a circuit
   3. Students can **compute** parameters in the small signal model using collector current
   4. Students can **find** the small signal gain using the small signal model
   Corresponding assignment: HW#4a

   **Lesson 4:** terminal resistance/gain calculation (*course objective 4,5*)
   1. Students can **determine** terminal resistance and small signal gain by inspection
   2. Students can **evaluate** design trade-offs by computing the terminal resistance and gain of each circuit
   Corresponding assignment: HW#4b, #5a, #5b, and 7.

   **Lesson 5:** How does it work? Physics of BJT (*course objective 1*)
   1. Students can **explain** physics of BJT (both NPN and PNP) in active mode
   2. Students can **explain** why the emitter of a BJT is heavily doped
   3. Students can **explain** why the base is made intentionally thin
   4. Students can **explain** early effect
   5. Students can **explain** physics of BJT in saturation mode
   Corresponding assignment: HW#6

3. **Sample Knowledge Survey:**

   ECE 340
   **Knowledge Survey**
   **Topic:** bipolar junction transistor
   **Due date:**
   **Name:**

   **Criteria**
   For each statement below, rate your confidence in the following topics using the 3 point scale.
   1. I do not understand the statement, I am not familiar with the terminology, or I am not confident that I can answer a question in this category at this time.
2. I understand the question and a) I am confident that I could answer at least some of questions in this category, or b) I know precisely where to find the information and could provide an answer for questions in this category.
3. I am confident that I can answer questions in this category sufficiently well under test question.

**At this point of the semester, I am able to**

1. ____ Differentiate a PNP from an NPN
2. ____ Compute DC nodal voltages of a BJT (NPN/PNP) circuit
3. ____ Distinguish different regions of operations
4. ____ Compute DC currents of BJT circuits.
5. ____ Distinguish large signal analysis from small signal analysis.
6. ____ Draw the small signal model for NPN and PNP transistor
7. ____ Draw small signal model for a circuit
8. ____ Compute parameters in the small signal model using collector current
9. ____ Find the small signal gain using the small signal model
10. ____ Determine terminal resistance by inspection
11. ____ Determine small signal gain by inspection
12. ____ Explain physics of BJT (both NPN and PNP) in active mode
13. ____ Explain why the emitter of a BJT is heavily doped
14. ____ Explain why the base is made intentionally thin
15. ____ Explain early effect
16. ____ Explain physics of BJT in saturation mode

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**REPORT #7**

**Beck Report: Sheba Lo**  
Department of Africana Studies, College of Social and Behavioral Sciences

**Description of Course and Teaching-Learning Challenges**

The course I chose to redesign is Approaches to University Writing (113B). It is the spring section of the one-year Stretch Composition course. It is also the lowest level of the Stretch program. Furthermore, the English Placement Test scores have been lowered twice since I started teaching this course; thus, students at this level are increasingly challenged in college-level writing. If students do not pass Stretch Composition or Developmental Math, they are stopped out of the University. The course itself requires 5 essays, 3 of which require students to collaborate on research-based projects. The B section of the course emphasizes more than a simple response to literature; students must analyze larger concepts within the African world, such as the ways in which the media, the police, the courts, and the prison industrial complex function in relation to Black people in the United States. Students at this level require much more explicit direction and scaffolding. They tend to need
assistance with time management and more functional aspects of planning their work. The course is so pivotal to student success that the Five Gears of Activated Learning application was imperative.

The course is divided into three sections – one for each of the three projects as required by the Stretch curriculum: Project Space, Project Web, and Project Text. Project Space asks that students investigate a space – a physical or psychological space and analyze its impact on people of African descent. For Project Web, students create a blog or even a music video that focuses on a topic within the theme of that section of the course. Students engage in a thematic analysis of their assigned text for Project Text.

**Five Gears Tools Applied to Alleviate Obstacles for Teaching-Learning**

The first thing that I did was to create a [graphic syllabus](#). I realized that the linear structure of the course outline was not necessarily as vivid in its layout of the course as it could be. This was to help students to mentally organize the structure of the course as it begins. I also continually refer back to the graphic syllabus as we move from section to section of the course. It assists students in seeing what has already been accomplished and what work remains in the semester.

I also created a [course outline](#) that explicitly states the learning objectives for each section of the course, the learning activities to be completed before the class, the learning activities during class for that day, the assessments that would be used, and the Gears that were applicable to that day. For each day, the focus and the expectations before class and in class, even after class are concrete. The revelations of the Gears being applied were also a strategy I used to share what I am learning and trying to do with my students. I wanted them to know why I am choosing the activities for class. The planning of this outline allowed me to find more ways to allow for the development of mastery through workshops and small group discussions.

I also created graphic course assignments for [Project Space](#), [Project Web](#), and [Project Text](#). This allowed me to give a visual overview of the assignment, hyperlinks to University resources, and hyperlinks to the self-assessment form, and for the collaboration assessment for each group. It gives a point of reference that is less linear and I continually open them in class and refer back to them.

One of the most significant changes that I have implemented is in the delivery of this course. I connect the activities to prior student experiences and to previously learned course materials much more explicitly. I consciously and directly relate the materials back to the theme in the course and to the section of the course. I refer back to the graphic syllabus and remind students why we are engaging in particular activities. This adds value to the activities beyond just the points for the course. It allows them to see the methods that I am using.
My Distinguished Speakers grant was funded by the Office of Research and Sponsored Projects to bring the author of the text that my students are reading for Project Text. Since they are charged with a thematic analysis of the text, I wanted them to make connections beyond the text. The book is about an event that happened in Northern California, so the guest speaker, Thandisizwe Chimurenga, was scheduled be on campus to discuss the event and her book on April 11, but was unfortunately hospitalized, and I had to cancel the event. My goal was for students to connect their experience meeting her and asking questions about the book to their final project essay. My goal is to make the text much more meaningful to students.

Use of Five Gears of Activated Learning: Successes and Challenges

One of the greatest victories in utilizing the Five Gears in this course is the explicit nature of my new course outline. I witnessed students being able to understand to a greater degree what was required of them and how they would be assessed. It provided a step-by-step guide for them throughout the semester. They knew what to turn in, what to have completed before class, and if they were interested, they knew exactly why they were doing a particular activity. They could even see what my goals were for them. I will be doing such an outline for every single course that I create. It is helpful as a guide in teaching, and it keeps me connected to my objectives. Moreover, students have been much more successful in managing their time as I have scheduled in time for a course “check in” to see where groups were in the process of research and writing.

Adding in more activities to allow for the development of mastery seems to have help improve areas of student writing. For example, I created a writing workshop on topic sentences that provided a pathway for students to evaluate topic sentence efficiency in small groups. They had an opportunity, with group feedback, to recreate topic sentences that supported the thesis provided. The topic sentences that students evaluated were taken directly from anonymous student writing. It helped them to improve their overall essay structure. Evaluating and recreating topic sentences of other students allowed for reflection and deep engagement without the pressure of working with their own essays.

The explicit delivery of instruction I used this semester, connecting the course content to the theme of the course section, the project assignment, and the learning objectives appeared to have made the biggest difference to students. One hundred percent of the student surveyed mentioned the importance of this in relation to the teaching of the fall portion of the course (113A). They felt valued as I made a point to tell them why I was choosing particular texts, activities, and assessments. They were also able to make the connections between the texts and activities and the larger concepts for each section of the course. I think the detailed course outline also assisted me in continuously being explicit in teaching.
The challenges I experienced while implementing the Five Gears of Activated Learning were the same sorts of challenges I continue to experience, particularly with first year college students. More explicit assessment sometimes motivates students to read, and sometimes it still is not enough motivation. Students often struggle with an underdeveloped work ethic that was established over many years of their K-12 education. Also, students often have family crises related to economic challenges of their families. Some of my students must work to help their families survive. They often have challenges that extend beyond any aspect of academic life. The biggest challenge that I experienced was student procrastination. Despite much more frequent check-ins for progress, emails, and class discussions, students still waited much longer than they should have to work on their projects. Conducting research and synthesizing sources into an academic essay that requires many drafts necessitates careful planning. Students continue to struggle with this. My challenge is to help students create timelines for their projects.

**Gear Infused Artifacts**

I have hyperlinked materials that I used throughout this report, but I am also including materials I used for my writing workshop.

**Writing Workshop Lesson Plan**

**March 14, 2015**
Sheba Lo
AFRS 113B Approaches to University Writing
Second semester Stretch Composition

**SLOs for lesson**
Students will be able to:
1. Identify topic sentences that support a thesis
2. Create topic sentences to support paragraph ideas

**Activities:**

1. Poll Everywhere question about structural challenges in essays
2. Watch [Topic Sentences Review](#) (from last semester)
3. Students will examine and discuss skeletal structures of an outline (thesis and topic sentences) to identify topic sentences that will support the thesis using a checklist
4. Students will create alternate topic sentences where necessary
5. Students will examine essays to decide if the topic sentences function as a guide for the rest of the paragraph.
Topic Sentence Workshop Checklist  

- Does the thesis give a clear direction for the essay?
- Does it follow the assignment?
- Do the topic sentences support the thesis?
- Do the topic sentences have a logical order?
- Do the topic sentences have transition signals?
- Does each topic sentence provide a clear guide for where the paragraph will take you?

What will this paragraph be about?

**Example: Ted Watkins Park**

Thesis: Ted Walkins park impacts the African American community because they offer many opportunities for youths that can make a change in their future.

1. Ted Walkins is one of the biggest parks located in South Los Angeles that offer many opportunities for youths
2. Another great opportunity the Ted Walkins offer is academic programs for the youth.
3. Last but not least, Ted Walkins celebrates many events where family and friends come together as one.

**REPORT #8**

Francisca Castillo

Department of Recreation and Tourism Management (RTM)
College of Health and Human Development

**Target Course Description:**
RTM 202/202L- Planning Programs and Events for Recreation Experiences and Lab.

In this course, students are given an overview of the program and event-planning processes as they relate to the provision of human and leisure services through play, recreation and leisure experiences for a variety of service recipients and settings. Topics include marketing, program design, program evaluation, needs assessments, and data analysis.

**Situational Factors**

A few situational factors play a huge role in the success of the course. Students are required to organize and implement a special event for the RTM
department. They are required to fundraise for the event as well. The RTM staff and faculty expect a good turnout for these events. The departmental events are free and are open to CSUN faculty, staff, family and friends. However, the attendance for these events has declined drastically. Some students in the course are motivated and excited to organize and implement a special event for the department. Others are not so enthusiastic. Considering my professional background and experience in the recreation industry, I am able to motivate and assist students on how to effectively organize an event. The Five Gears allowed me to take a look at how I can assist my students more effectively. It helped me to meet my course objectives and facilitate the event planning process simultaneously.

**Teaching-Learning Challenges and Obstacles**

As the facilitator for this course, there are a few challenges and obstacles I encounter. One of these challenges is communication. The majority of communication takes place inside the classroom. When the class meets once a week, it is difficult to follow through with students. Versus, if the class meets twice a week, there is an additional day during the week to meet with students. If a student does not show up for two weeks in a class that meets once a week, it can be frustrating for other students that rely on his or her input.

During the event planning phase, students are required to follow up with me weekly. Often times, I am given unreasonable excuses as to why portion of their task was not completed. After reiterating to students multiple times of my open door policy, students still continue to procrastinate.

Another obstacle I face is with student fundraising. Students are required to fundraise for their event. The amount funded by a student does not in any way have an impact on their grade. Therefore, students that put forth a stronger effort in fundraising may be frustrated at students that may not appear to put forth the same effort. This can cause issues amongst classmates. Also, when students are placed in work committees, it can be easy for a student to hide and not put forth any effort, while other committee members step up and complete the tasks. The departmental events take place off campus in Castaic Lake. Both events are scheduled during the semester, either on a Saturday afternoon or Saturday evening. Although it is highly encouraged for all of the students in the class to attend the event, not all students do. Some students may have a scheduling conflict with another RTM course, work, or a family event. Other popular excuses I have been given are “I have a weekend trip planned with friends”, “I work late and normally sleep all day on Saturdays” and “Most likely I will be there but I might arrive late”. Despite what the excuse may be, I tend to have fewer students from the event planning class attend their event. This can be seen as an issue depending on what the event requires. For example, in the Fall semester, students are required to organize a picnic. At the picnic, students create activities and games for their guests. If students are not able to work the event, we may not have enough people to facilitate the activities.

**Course Redesign**

This semester, I infused the Five Gears in my classroom and made a few changes. Participation is worth 25% of their grades. The event planning project is
also worth 25%. I created various task and assignments with smaller point values that equated to their participation and event planning points. I developed a chart to record their point values. The smaller assignments are fun, quick and interactive. Looking at the event planning time frame, students have two months to organize and implement their event. This semester, each student was responsible for creating a Gantt chart or a PERT chart. The Gantt and PERT charts are the most popular planning charts in the recreation and leisure service sector. It organizes each task by days and months. Before the Five Gears, the students and I created a Gantt or PERT chart together. During the post evaluation, students refer back to their Gantt or PERT charts and make revisions. This allows students reflect and organize their task as they see fit. Once they refer back to their chart, they can better understand what went wrong and why. The students and I developed a Gantt chart together to assist in facilitating a class discussion; however, each student was able to organize their own.

Another task I created was a student pop quiz. Each student was required to develop a pop quiz. The pop quiz was based on the concept of quality, as it relates to the delivery of programs and services. After the student created the pop quiz, it was forwarded to another student to complete. Once the student completes the pop quiz, it then goes back to the student who originally created it for grading. This assignment was valued at 5 points.

Students are required to fundraise and request donations for their event. This semester, each student was required to submit to me a report of 10 individuals and/or organizations they contacted. Students are able to provide personal support and work together in their fundraising efforts. Students are able to understand and realize that if they want a successful event, generating revenue is important. I added point value to this assignment as well. This was a great way to motivate learning inside and outside of the classroom.

Another major assignment aside from the event is the program plan. Towards the end of each semester, students are allocated one day in class to work on their program plan. The program plan is worth 17% of their grades. The students should work on this assignment throughout the semester and not procrastinate. This semester, students were able to make an appointment with me to work on their program plan. Each appointment lasted 10 minutes. I was able to review their previous work and make corrections. Meeting with the students individually was a great way to develop their mastery and motivate their learning. The students are able to choose their program based on their career interest. The program plan connects their prior knowledge of their life experiences and what they have learned in the classroom. This assignment is due one week before the end of the semester.

**Result of Course Redesign**

As a result of incorporating the Five Gears, I was able to meet my course objectives more effectively and easily. The Five Gears principles; developing mastery, motivating learning, practicing with feedback, organizing knowledge and connecting prior knowledge has helped me to reduce time consuming methods and focus on more effective methods. The Five Gears is an ongoing process. I tend to incorporate these principles and share the knowledge I have learned with other colleagues.
Five Gears-Infused Artifact
Sample Gantt Chat for an event.

REPORT #9

Dorothy Nguyen-Graff
Department of Chemistry and Biochemistry
College of Science and Mathematics
Chemistry 110 (Chemistry in Action) and Chemistry 100 (Introductory Chemistry)

Target Course Description
Chemistry 110 is a general education course that introduces students to chemistry and how it relates to technological advances and their impact on society and the environment.

Chemistry 100 is a preparatory course that focuses on developing problem-solving skills based on an introduction to the field of chemistry. Application of the scientific method, modern ideas concerning atomic and molecular structure, principles of compound formation, and chemical nomenclature and calculations involving scientific units are emphasized.

Situational Factors and Teaching-Learning Challenges and Obstacles
I designed Chemistry 110 with an emphasis on the appreciation and understanding that chemistry is all around them. Everything they do, feel, eat, or encounter involves science (chemistry) in one form or another. I started teaching this course Spring 2013 and I wanted it to be different from any previous chemistry class students may have taken. I am involved with Computer Supported
Collaborative Science (CSCS), which we provide professional development to teachers on the use of cloud-computing tools like Google to support data sharing and collaboration in the science classroom. I decided to use web-enhanced technology and CSCS tools to engage the students.

My department’s expectation of Chemistry 110 is that they have a greater appreciation of science since all of them are non-majors. The most common major in this course is Family Consumer Science – Apparel Merchandising. Other majors include management, marketing, interior design, and accounting. Due to the non-scientific nature of the students’ field of study, they are not always very motivated in this course. They don’t always see the connection of the scientific principles to their lives nor do they appreciate the technological advances around them.

During the summer of 2014, I was invited to participate in the Course Redesign Institute through the Faculty Technology Center. I learned a number of ideas, skills, pedagogy, and technology devices/tools in this 2-week intensive workshop. I incorporated many of the tools and ideas into my Chemistry 110 course that I learned during the institute.

Another course I teach, Chemistry 100, is designed to get students ready for Chemistry 101, General Chemistry. There are usually 14 sections of 78 students per semester. I usually teach one or two of the sections each semester. Here, the majority of the students are biology majors with the intent of going to medical school or a similar professional school. Engineers and all science majors are also required to pass this course.

There is a great concern in my department about this course. There is consistently a 40-50% attrition rate across the board in all the Chemistry 100 sections. Students come into the classroom with not enough math skills to solve problems and critical thinking skills to think through how to solve the problem even though students must pass basic algebra Math 91 and 93. Unfortunately, many students stop trying and give up.

**Course Redesign**

I did not completely redesign my courses this semester. The Five Gears gave me the confidence to continue to do what I am doing, modify some activities I have incorporated in my classroom, and gave me the terms to describe what I have been doing in my class already. I heavily restructured my Chemistry 110 course after the summer institute workshop in 2014. I am pleased that there was a significant difference from one semester to the next. Chemistry 100 does not allow me to restructure my course significantly because there are a number of core topics that must be taught in a particular order so that all the 14 sections can take a common chemistry final, but even here I was able to incorporate some Five Gears concepts.

Seeing the bigger picture of how chemistry is related to the students is an issue for Chemistry 110. One group project I do at the beginning of the semester is discovering the significance of chemistry. In the past, I placed the students in small groups and gave them a broad topic to find information to report to the class. They made a Google presentation and share it with me and I gave them feedback before they presented it in front of the class. This semester, I gave them very specific topics
to research including the shutdown of the Santa Susana Nuclear Power Plant, the Aliso Canyon Gas Well leak, the Flint Michigan water crisis, potentially hazardous ingredients in cosmetics and laundry detergents, the quality of bottled water versus tap water, and bio-plastics versus oil plastics. To make sure that the students actually pay attention and read the posted presentations I used the StudyMate activity on Moodle to enter potential exam questions in multiple-choice format for extra credit. I believe this activity incorporated motivated learning (recognizing chemistry all around them), connecting prior knowledge (topics they can relate to), and practicing with feedback (giving feedback on the Google presentation before presenting to the class and writing exam questions).

I incorporated “End of Class” write-ups, which are the same as Learning Logs. I have my students answer a question from the day’s discussion through Questionnaire activity on Moodle. I can look them over that night and give timely feedback the next class period. I was able to quickly gauge whether the students understood the topic or if they required a review the next day. More than once I realized that I had to review what I thought was clearly presented during class previously. I believe this activity focuses on practicing with feedback.

My students loved the exam review I did with Socrative. I finally decided to try it out and my students correctly answered most of questions I asked on the exam. Unfortunately, this website is not always possible for me to use because it limits the number of students that can log on at one time and I consistently teach classes of more than 70 students.

In each of my classes I incorporated exam wrappers. I had students fill out a Google form to answer their questions. I asked questions like, “Did you feel you studied enough for the exam?” “How did you study for the exam? (check all that apply)” “How do you feel now? (check all that apply)” and “What do you plan to do to study for the final?”. The answers were very enlightening but I do feel some students stretched the truth or didn’t follow through. I believe this is developing mastery.

I generated a knowledge survey for all the topics I was to cover in Chemistry 100. My students took it at the beginning of the semester with the intent of having them take it again at the end of the semester and comparing them. Unfortunately, in my eagerness to get things posted on Moodle and clean up my site, I accidently deleted my beginning of the semester knowledge survey with all of the student responses. But my end of the semester responses looked very positive as though they understood the material.

These are some of the new activity I incorporated this semester, but I have a number of activities which I have already implemented in my class including flipped classroom videos, peer learning facilitators, and quizzes.

I found visiting a colleague’s course and having a debriefing meeting was very helpful for my own departmental evaluation. I felt more confident talking to my departmental colleague and have the terms to convey what I was trying to get across in my teaching.
**Results of Course Redesign**

I believe that my students have benefited from the changes I have incorporated this semester. Not all activities worked exactly as I had hoped it would, but I believe there is room for improvement for the next semesters. There are additional activities that I hope to implement in the future. Through this process, I have learned a great deal about my teaching strategies and how to organize my course outline.

My Chemistry 110 students really enjoyed the discovering the significance of chemistry group project this semester. I hope that I opened their eyes to some of the problems and issues that directly affect them today and that they can make informed decisions in their lives. They felt a personal connection to many of the topics felt concern for themselves and the environment. I believe that this is a first step to an informed and engaged student.

I would like to incorporate the End of Class Write-ups in all my courses because I think it would be enlightening to know if my students “got it” when they leave my class. I would like to give them timely feedback about their misconceptions or misunderstandings in class. What holds me back is the large amount of students (about 300) I have each semester.

Not all my students appreciated the exam wrappers as I hoped they would. Some students wrote about what they could have done better or what can be done next time, but I am not sure if they internalized it. Since they all did it on a Google form, I was not able to return it to them before their final to reflect on their study skills.

In conclusion, I cannot say definitely that my small improvements have drastically made a huge difference in my students’ classwork. But I can state that my students are more engaged and responsive to the activities I present to them in class. They constantly ask questions and usually score higher on the departmental final than any other professor.

**Five-Gear Infused Artifact**

I am very proud of my sentence organization activity I developed this semester for my Chemistry 100 course. I want my students to conceptually understand a scientific topic and be able to clearly explain it to another classmate. I had demonstrations about a scientific principle and explained it step by step. I asked the students and they all nodded their heads in unison in understanding. But when I tested them on that topic by asking them to explain in complete sentences the process and scientific phenomenon, they do not always have a clear understanding of the material. This aspect of teaching really bothered me because I want the students to do more than regurgitate the information to me and usually the information is completely wrong with a lot of misconceptions.

I came up with a group activity in which my students put in order a series of statements explaining the phenomenon I had gone over in class that day or the day before. For example, one question to my students was “Why do you sweat from a thermochemical perspective?” I went over it step-by-step and had the students get
together in groups and try to arrange my series of statements in order. Each statement is its own strip of paper.
My statements in order are:

You are hot.
Sweat comes out of your pores.
The sweat evaporates.
This is an endothermic process.
Your body is giving off heat.
This is an exothermic process.
Your body cools down.

I was very surprised by the number of groups who couldn't put it in the correct order even after I had just explained it to them and pleasantly surprised by alternative orders the groups came up with which were just as correct.

Figure 1. Alternative thinking that incorporates the endothermic and exothermic processes occurring at the same time.
Figure 2. This shows that students did not understand the process of exothermic and endothermic processes and how it relates to one another.

I had a few groups read-out their statements in order and was able to make constructive comments on their thinking process. I was able to immediately address any misconceptions or misunderstandings students may have. They were able to take pictures of their corrected order to study for the exam. This activity took about 20 minutes of class time, but they came away with a greater understanding of the scientific phenomenon.

I want to improve on this activity next semester by having the students write down their understanding step-by-step. Then I would have them work in groups to sort my order as before and compare it to the pre-activity order they created. Another extension to this activity can be the groups write their own series of statements and pass it to another group for them to order.

I believe that the gears used for this activity includes organizing knowledge, practicing with feedback, and developing mastery.

In conclusion, the Five-Gears Faculty Learning Community has given me so many new ideas and pedagogy to work on for my upcoming semesters. The colleagues whom I have met and share the same passion for teaching inspires me to become a better professor.