Sylvia Tiala  
**Critical Thinking Skills Strategies on Students’ Perceptions of the RSD Framework**  
2016 RSD Community of Practice Final Report

During the 2015 - 2016 academic year I participated in the RSD Community of Practice as a co-facilitator of the learning community and also as a participant. This document provides an overview of some of the outcomes. The document begins with an update of my efforts to study the RSD Framework within my EDUC 210, *Impacts of Technology on Education*, course. I revised some of my teaching strategies and implementation of the RSD within this course during the 2014-2015 RSD CoP and continued and updated my methodology during the 2015-2016 academic year. The document ends with some insights regarding the overall community of practice and some insights gained as a co-facilitator.

**Part I: The impact of critical thinking strategies on students’ perceptions of the RSD framework.**

In the spring of 2016 I continued my research project titled *RSD Framework: Implicit versus Explicit Implementation* from the previous year. However, I changed the title of the inquiry to *The Impact of Critical Thinking Strategies on Students’ Perceptions of the RSD Framework*. The revisions were approved by UW-Stout’s IRB committee. The focus of the inquiry was to integrate the RSD framework within class assignments that emphasized critical thinking and inquiry-based learning. Class activities, the final exam, and a research project, were redesigned to focus on processes used for inquiry and moved away from a product-based paradigm. This strategy was heavily influenced by both Willison’s RSD Framework ([http://www.adelaide.edu.au/rsd/framework/](http://www.adelaide.edu.au/rsd/framework/)) and Brookfield’s *Teaching for Critical Thinking* (2012). A switch was made from introducing students to Willison’s detailed RSD framework to the simplified framework. It should be noted that the author was involved in a Critical Thinking Community of Practice sponsored by the Nakatani Teaching and Learning Center that ran concurrently with this project.

UW – Stout students enrolled in two sections of the EDUC 210 *Impacts of Technology on Learning* course were introduced to the framework as part of class activities. Students in both sections of the course took an RSD assessment (see Appendix A), used with permission of John Willison, at the beginning of the semester. The assessment asked students to rate themselves on 22 items using a scale of 0 (does not apply), 1 (strongly disagree) to 7 (strongly agree). The same assessment was given at the end of the semester with students being asked to reflect back on where they saw themselves and their skills at the beginning of the semester. Students were introduced to the simple Research Skill Development Framework and this framework was
referenced during course assignments as well as to final research project (see Appendix B for the final project assignment and rubric).

The EDUC 210 course was targeted because a research component was built into the course and it is part of the general education objectives. This made the course a good fit for the study described above. The research paper requirement has been part of the course since its inception. Appendix C contains an example of a re-written assignment. Traditionally the course opens with a lecture indicating that EDUC 210 is a general education course and providing a rationale. This semester the assignment was changed to tie to current events and regarding the cost of tuition. After students evaluated the rising cost of tuition there was a discussion about the pros and cons of general education what led to a explanation of how EDUC 210 met the general education objectives. The intent of this, and other course assignments was to move toward students’ development of critical thinking and research/inquiry skills.

Data analysis resulting from the course is still being analyzed. Qualtrics output changed the 0/Not Applicable scores to a 1 with the Strongly Disagree scale to Strongly Agree scale being recorded as 2 through 8. Preliminary results are shown in Figures 1 and 2 (below) but refinement of data is indicated before further statistical analysis is completed.

![RSD Questions 1 - 9](image)

**Figure 1:** RSD questions 1 through 8
Students ranked their average research skills on items 1 through 8 higher at the end of the semester than they did at the beginning of the semester. Students rated their beginning level of general research skills, their ability to frame research questions, and their ability to evaluate credibility at a similar level at both the beginning and end of the semester. The average scores for analyzing information, written communication and oral communication were lower as students reflected back on their skills at the beginning of the semester.

Figure 2: RSD questions 9 through 22

Students' average scores on the ease of generating a topic (rarely difficult to generate a topic for a class research project), confidence on using the library and evaluating credibility increased from the beginning to the end of the semester. It should be noted that reflecting back students rated their beginning skill level higher at the end of the semester than what they had originally ranked it at the beginning of the semester for these items. A pattern where students rated their beginning skills high and revised their skill level (in retrospect downward) is seen in their ability to understand impacts of technology, wanting to be involved in research, research influencing the discipline, and research being important to their career. This is an interesting pattern since the average scores at the beginning of the course are similar to the scores at the end of the course. More analysis of this phenomena is indicated.

Further analysis needs to be done on these items to see if statistical significance is reached. Qualitative analysis of reflections on both the final assessment and to weekly reflections will be completed to gain further insights into students thinking from the initial study in the 2014-2015 school year and the 2015-2016 school year. Students reaction to, “What does research look
like? How do you know it when you see it?” elicited a range of comments from the Spring 2016 students such as:

- Investigating and seeking out more knowledge on a topic of some sort. Research happens in many ways and doesn't always mean writing a paper but simply looking into what others know about some topic.
- or
- Using the internet to study a topic.

The second comment, and ones that are similar, are disheartening since a lot of class time and emphasis was spent on the idea that research needed to include multiple sources and looked different for different disciplines.

The project made me aware of students’ reliance on technology and resistance to independent, critical thinking. As one student indicted, “I don’t know why I need general education courses because everything I need to know I can look up on my phone” (phone held up with a smile and confidence). This was reinforced by another student who asked for help completing an assignment with teammates. I was called over to clarify why the answer to a question couldn’t be found on Google (it was structured that way). Student responses helped illuminate the need for:

- Getting students to move beyond the internet, cell phones, Google, and Wikipedia is difficult and takes practice. It is imperative that critical thinking skills be taught particularly to reluctant learners.
- Breaking the paradigm of research “looking” like the high school English paper. Getting students to understand that research products differ according to one’s major is difficult for students.
- Conveying the necessity for inquiry to function as an informed citizen. Some students indicate that they don’t like research and connect it with being “hard, time consuming, detail-oriented”.
- Eliciting excitement for research. Students seem to like the freedom to pursue a research topic of choice. Yet, students’ overall excitement about inquiry and research was not indicated in the RSD pre and post question.

Data will continue to be analyzed with the intent of publishing results of the study. The data will also provide insight into tweaking the course and the way RSD concepts will be integrated into future course work. The switch to critical thinking processes is a plus but some tweaking is necessary.

**Part 2: Insights into an RSD Community of Practice**

Personal insights about the yearlong project relates to my experience as a co-facilitator of the RSD community of practice (CoP). This second year of co-facilitating the RSD Community of
Practice helped me gain more confidence and clarity regarding ways to help others utilize the RSD framework. This year’s activities allowed me to focus on helping others and to turn my attention to its implementation within the university setting. Some insights follow:

- Recruiting participants for this year’s RSD CoP seemed more difficult this year. The best recruiting tool seems to be a personal solicitation by faculty. My personal perception is that participants start a CoP as much for social interaction among peers with similar interests as it is about professional development.

- Past participants have developed a hands-on introduction to the RSD Framework that includes a geo-caching/“treasure hunt” type of activity. It is effective and engaging and seems to work well for introducing new participants to the RSD.

- Participants needed to connect with the RSD at their own level. Some are able to see connections to course work quickly while others struggle to connect a simple assignment to the RSD. It is imperative that participants begin to use the RSD and try it on simple exercises in order for them to see connections.

- The co-facilitators were more prepared to deal with differing levels of familiarity with the IRB process and statistical analysis. We built IRB tutoring and a brief introduction to statistical analysis into the CoP that proved to be both informative and welcome.

- We were able to track the stages of concern, which is how comfortable participants were, while implementing the RSD framework. We obtained permission to use the Stages of Concern Questionnaire to track how attitudes changed over the course of the project. The questions used in the Stages of Concern Questionnaire can be found at http://janspowerbytes.pbworks.com/f/SoCQ-final.pdf. We were able to track stages of concern for individual participants during this year. Figure 1 shows the stages of concern for this co-facilitator at the beginning and end of the year. It should be noted that the data should be augmented by interviews and/or analysis of external factors when interpreting the results. For example, a high score on the Awareness measure indicates that the individual is not particularly engaged with the RSD Framework. In this scenario, the co-facilitator began the year with very little concern about the RSD Framework. This was due to the fact that she had developed the workshop material and felt confident and ready for implementation. Note that the score is lower (more attention paid) because of external factors such as morale, budgets, and other institutional factors that may impede adoption of the RSD at the institutional level. The need for more information about the RSD Framework remained similar throughout the year. Gaining expertise was a concern but it seen as gaining experience and comfort.
with the RSD and not an indication of needing more information about the RSD Framework. Personal concerns, such as how the implementation of the RSD would impact status or be rewarded, were higher at the beginning of the year than at the end of the year. This change was influenced by uncertainty in college reorganization, positive collaborations between Research Services, Nakatani Teaching and Learning Center, and financial rewards for implementing the RSD Community of Practice.

**Figure 1: Facilitator Stages of Concern**

Time management and logistics remained fairly consistent from the beginning to the end of the year. This is due to the fact that the facilitator had some experience with the RSD and the CoP.

Consequences, the impact the RSD would have on students and on the facilitator’s immediate sphere of influence was higher at the end of the year than at the beginning of the year. This concern reflects the acknowledgement that the RSD is connected with university goals and missions but its endorsement and adoption at the campus-wide level is far from certain. There does not seem to be a push or endorsement from the administration for the RSD. Institutionalization is far from certain and other strategies for scaling adoption of the RSD Framework are considered in the university’s Creative Original Research Experiences committee.
The intent and need for collaboration has always been high and this is reflected in the survey results. The desire to alter the RSD Framework is low both at the beginning and end of the year.

This year’s RSD Community of Practice was tied to other initiatives at UW-Stout that directly impact and are informed by the 2016 RSD Community of Practice. Specifically these items are:

- John Willison and Dorothy Missingham helped run the Student Research Skills Symposium [http://www.uwstout.edu/profed/srss/](http://www.uwstout.edu/profed/srss/) with international attendance and former and current RSD CoP members helping lead sessions.

- I have been invited to deliver the keynote address and participate in an international RSD conference in Australia in December of 2017.

- I co-presented *Overcoming the Barriers to a Common Understanding of Undergraduate Research* with John Willison at CUR’s 2016 biennial conference in Tampa, Florida.

- I co-presented Student Self-Efficacy with Research Skills in Implicit & Explicit Learning Environments with Kim Zagorski and Kate Edenborg at OPID’s 2016 annual conference.

- Research Services, the Nakatani Teaching and Learning Center, and CORE are working to bring the RSD Framework/undergraduate research to a larger campus audience through a website that Jessy Polzer (Stout Library) is helping with. The start of a website with RSD materials will be posted that includes video and workshop materials from the December Undergraduate Research Skills conference that John Willison and Dorothy Missingham helped lead for an international audience.

- We were lucky to have an individual from the library join our CoP at an early stage. Ongoing participation from the library will be crucial as they are an invaluable resource that adds a rich dimension to the RSD-related activities moving forward.

- Results from the RSD CoP will help the CORE committee move forward in trying to build RSD capacity by sponsoring activities that inform a larger faculty audience.

- Over 100 students have knowingly and willingly taken part in the investigation of the impact of research skills development within the context of the classroom. Course changes have hopefully had a positive impact on their learning.
• The biggest takeaway for me was the development of a model for professional development that enabled me to join a community of practice which built a support network and connected me with other faculty members with similar interests. See Figure 2. This network helped me overcome real/perceived barriers to my research ideas and endeavors. Multiple viewpoints from peers helped expand the way I implemented SoTL research in my classroom. With ongoing research in my classroom, I have collected data that I am able to publish. This builds an efficiency in addressing research and teaching with the same activities. These classroom activities and the

![Figure 2: Model for faculty professional development](image)

associated connections allow me to present and publish. This helps build my professional network which in turn supports my research interests. The small stipend resulting from my participation in a community of practice allows me to pursue additional research interests and fund conference presentations. With a resulting positive experience, I am likely to join and/or lead another community of practice which starts the cycle anew.
In summary, the 2015—2016 Community of Practice helped build my confidence in using the RSD Framework. I have made changes to my courses that encourage student engagement. I have used the information from the RSD Framework community of practice to improve my teaching while also helping build a research agenda.

It should also be acknowledged that the RSD CoP went as well as it did because of support from the Nakatani Teaching and Learning Center. It should also be noted that the RSD Framework fit in with the University’s mission and vision which was very helpful in making a case for its inherent worth. This alignment will be a part of the posted materials resulting from this RSD CoP.

Thanks to all those participants, Renee Howarton and staff of the NTLC, co-facilitators, supporters, John Willison, Dorothy Missingham, Deans/Provost/Chancellor/administrators and interested parties that helped make the 2015-2016 CoP a success!

References:


Appendix A

1. My general research skills are good.
2. My general research skills used in EDUC 210 are good.
3. I am able to frame research questions in EDUC 210 Impacts of Technology on Learning.
4. I can devise procedures on my own in EDUC 210 Impacts of Technology in Education to find information relevant to my inquiry.
5. I can effectively evaluate the credibility of sources of information in EDUC 210 Impacts of Technology in Education.
6. I organize information from multiple sources effectively in EDUC 210 Impacts of Technology in Education.
7. I am able to analyze information effectively in EDUC 210 Impacts of Technology in Education.
8. I can clearly communicate in writing what I understand from my research in EDUC 210 Impacts of Technology in Education.
9. I can clearly communicate in oral presentations what I understand from my research in EDUC 210 Impacts of Technology in Education.
10. By researching topics within EDUC 210 Impacts of Technology in Education, I am more able to understand it.
11. I would like to be more involved in research.
12. My studies at UW – Stout require me to do research.
13. Impacts of Technology on Education research is an activity that has trustworthy outcomes.
14. Research is an activity which influences practices in my discipline.
15. The ability to research will be important to my career.
16. I rarely have difficult generating a topic for a class research project.
17. I find it difficult to create a main thesis statement that defines my research project.
18. I often rely on Google searches to find the information needed for my research project (this doesn’t include Google Scholar).
19. I often rely on Wikipedia to find the information I need for my research projects.
20. I am confident I can use library resources to find information needed for my research project.
21. It is easy for me to evaluate the credibility of my sources for my research project.
22. I find organizing multiple sources of information challenging.
Appendix B
EDUC 210 Impacts of Technology on Learning
Final Project

Purposes:

1. Think Creatively, analyze critically, and synthesize information through a research project (GE)
2. Develop and apply effective reading, writing, speaking & listening skills (GE)
3. Synthesize current research and literature
4. Compare and contrast diverse viewpoints on issues concerning the use of technology on learning.

Overall Process:

1. Identify and recognize assumptions about research (What does research look like? assignment).
2. Problem Definition: Identify a topic or question to explore. It must:
   a. Include an element of Recent Technology (i.e. 30 years preferably newer — no chalkboards)
   b. Include an element of learning — can be a technology (iPad) or concept (immersion)
   c. Researchable in a small amount of time (short lessons with pre/post test, questionnaire, interviews)
   d. Address a question or item of personal interest — clearly defined target
   e. Must be able to clearly explain why this topic is important beyond your personal interest (how might what you learn apply to others).
   f. Can be a group project
3. Generate and Evaluate: Consider solutions. Determine procedures that will help you overcome assumptions and help you have an unbiased approach.
   a. Develop a plan and timeline for your project
   b. Determine how you will collect data (interviews, observations, analyze historical/existing data, create a survey, take & analyze photographs)
   c. Determine what the end product will look like
   d. Justify your decisions
4. Find & Reflect: Gather Information, data and knowledge. You must:
   a. Use at least 2 different methods of collecting information
   b. One must be a “literature review” that includes appropriate media/print selection
   c. Must collect data that is both pro and con for your topic
   d. Be able to justify why you used the methods and sources that you did
5. Organize & Manage: Determine what information to use and how it will be presented
   a. Reflection posts in folder
   b. Collect and store data
   c. Organize into themes
   d. Create proper citations — all will be in APA format
   e. Justify your decisions
6. Analyze & Synthesize: Analyze ideas and assumptions, create your own meaning.
a. Connect with concepts discussed in class (Educational Psychology, Information Processing, etc.)
b. Collect and utilize peer feedback
c. Justify arguments you are making with facts and support from experts and/or evidence you collected.

7. Communicate & Apply
   a. Final presentation – 5 minutes
   b. Create information – graphs, charts, videos,

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**OPTIMISING PROBLEM SOLVING (OPS)**
when in doubt, return to the centre

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(c) School of Mechanical Engineering - Communications Tutors 2014

Ideas for Final Project:
Note to Self: http://www.wnyc.org/shows/notetoself/ - Infomagical Challenge or posted activity

- Create a lesson to teach with a technology tool and give a pre and post-test to see if learning occurred
- Use an online education tool and complete a self-study of impacts
- Create a game related to an educational topic and pre/post test
- Complete a modest literature review about a topic such as:
  - Robots in Education
  - MOOCs – massive open online courses
  - Web 2.0 tools (Wikis, blogs, digital storytelling, etc.)
  - Course Management Software (D2L, Blackboard, Web CT, Moodle)
  - Digital Field Trips
  - Open Courses/Open Courseware
  - Video
  - Video Games
  - Internet
  - Simulations
  - Interactive Whiteboards
  - Computer assisted language learning
  - ipad
- Other – please confirm with instructor

Timeline: See Semester Outline for tentative dates spread across semester

Identify and recognize assumptions about research – pre activity
Problem Definition: 1 days
Generate and Evaluate: 1 day
Find & Reflect: 1 day
Organize & Manage: 1 day
Analyze & Synthesize: 1 day
Communicate & Apply: 1 day – end of semester & peer grading

Grading:

Product – may be a group assignment: Peer graded

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<th>Points:</th>
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<tr>
<td>0-------1---------------2---------------3---------------4---------------5</td>
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<tr>
<td>Introduction –</td>
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<tr>
<td>Project overview lacks details. No clear objective. Rationale for the project is limited to</td>
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<tr>
<td>Project overview and goals are clearly stated. The introduction makes it clear what the</td>
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<tr>
<td>Project overview and goals are clearly stated. The introduction makes it clear what the</td>
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Comments
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<tr>
<th>Problem Definition</th>
<th>personal interest in the topic. the scope of this assignment.</th>
<th>research project was about. There is a clear justification as to why this topic may be important beyond the scope of this assignment.</th>
<th>research project was about. There is a clear justification as to why this topic may be important beyond the scope of this assignment.</th>
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<td>5 Points</td>
<td>Pts. _____/5</td>
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<tr>
<th>Approach and Sources:</th>
<th>Explains the process used to find answers to a question. The methods used don't align with the objectives of the research. There is a little/no justification as to why the choices made were the best for the project.</th>
<th>Explains the process used to find answers to the research question. The methods used to collect the information worked but may not have been the best match for the question being asked. There is some justification as why choices made were the best for the project.</th>
<th>Clearly and concisely explains the process used to find answers to the research question. The methods used to collect the information match the objectives of the research. There is a clear justification as why choices made were the best for the project.</th>
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<tr>
<td>Generate/Evaluate &amp; Find/Reflect</td>
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<tr>
<th>Presentation:</th>
<th>No presentation of research or presentation put together at the last minute as others are speaking. Lack of preparation is evident. Presentation is text based with little synthesis of information. Time limit is exceeded or minimally used</th>
<th>Presentation method is fairly organized with information presented with large portions of text making information difficult to digest. Some use of graphs, charts, speech, video, etc. make the presentation easy to follow. Time limits (5 minutes) are exceeded or minimally used</th>
<th>Presentation method is organized with information organized into graphs, charts, speech, video, etc. that is easy to follow. Communication of research is easy to understand. Time limits (5 minutes) are adhered to</th>
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<tr>
<td>Organize/Manage &amp; Analyze/Synthesize &amp; Communicate/Apply</td>
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| Peer graded presentation | TOTAL POINTS | _____/15 |
Appendix C: Assignment Example
Exploring Ideology
Web quest and Discussion

Exploring Ideology: Tuition Rates and University Funding

Name(s):

Defining the Issue:

In 1977 a student went to a public university in Minnesota and paid tuition at a cost of $12.80 per credit. In 2015 tuition at that same institution was $227.35 per credit. This web quest is designed to:

- explore the factors contributing to the rising cost of education.
- demonstrate how “ideology” — a person’s beliefs — may impact a larger social system.
- understand the difference between ideology and sociology.
- identify assumptions made by relying on our technology to bring us information.

The rising cost of college and access to education beyond high school is a topic prevalent in today’s news and is something that you, as a university student, can identify with. It is recognized that America needs skilled workers particularly in STEM fields (http://www.usnews.com/news/stem-solutions/articles/2014/10/30/lack-of-skilled-workers-threatens-economic-growth-in-stem-fields). However, some argue that there are too many college graduates http://www.pbs.org/newshour/making-sense/many-college-grads/.

It is a fact that in America each state is recognized as the major funding source for Kindergarten through college education. The ideas are explained at http://www2.ed.gov/about/overview/fed/role.html and at http://www.speedofcreativity.org/2009/01/14/federal-or-state-responsibility-for-education-and-inequitable-education-funding-formulas/.

If we add technology to the mix it may be likely that the future of college degrees lie in a badging system as explained at http://www.usnews.com/education/best-colleges/articles/2012/01/20/digital-badges-threaten-colleges-monopoly-on-credentials and MOOCs discussed at http://www.nytimes.com/2012/03/05/education/beyond-the-college-degree-online-educational-badges.html?_r=0.

Getting started:

Please use assignments and video presented by your instructor to identify the underlying assumptions or beliefs that individuals with liberal views and those with conservative views adhere to. Please keep in mind that we are talking about people in general terms. There are many “shades of gray” in between “liberal” and “conservative” viewpoints.
Please record the general views of each group in the table below. This exercise is designed to get you thinking about two of the predominant ideologies that exist in today’s American society. We will use these ideological frameworks later in the assignment as we talk about tuition rates for higher education.

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<thead>
<tr>
<th>Liberal</th>
<th>Conservative</th>
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**Embark on your journey and clarify the issues – What do we know and what do we need to know?**

Please visit the following websites:

1. If you need clarity on the issues we are discussing please visit the embedded links in the opening paragraphs of this assignment.


**Find and Generate** more information about the reason for tuition increases:

The following websites will give you several perspectives on the cost of higher education and some of the reasons for the rising costs:

3. Visit Understanding the Rising Cost of Higher Education  

4. Visit The Rising Price of Higher Education  
   [http://www.highereducation.org/reports/affordability_supplement/affordability_1.shtml](http://www.highereducation.org/reports/affordability_supplement/affordability_1.shtml)

5. Visit Why College Costs are so High  

6. Visit other sites of your choice. Please list sites visited and provide a url.

7. Use the space below to identify the reasons why tuition is increasing.
8. **Organize** your findings by starting to compare and contrast arguments. Indicate why a tuition hike is warranted as well as why a tuition hike is not warranted. Please move beyond personal circumstances and use your information sources.

<table>
<thead>
<tr>
<th>Reasons to hike tuition</th>
<th>Reasons to stabilize/reduce tuition</th>
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9. **Evaluate the information** you have collected. Pretend that you are in the state senate and you are about to prepare arguments for/against tomorrow’s vote on a tuition hike for all public colleges and universities in your state. Choose one of the following roles and prepare your argument from that point of view: (please argue your case and provide a rationale)

   - Conservative
   - Liberal
   - Student

10. **Identify the ideological assumptions** you are using/following as you prepare your arguments.
11. How might the assumptions you make, from an ideological point of view, impact a larger society?

12. Are the resources you used in this exercise reliable and valid for a rational decision? Why/why not? Did you question any of them?

13. How might the resources you use to inform your inquiry impact your decisions?

14. Do instructor biases play a role in what/how you learn? Please describe how this may/may not impact your thinking and views.

15. How does the technology and media that you use to gather information and complete tasks (such as this assignment or a report at work) impact your learning, daily life and decision making?

Assignment = 15 points  May be group or individual submission.
Please include all names if a group submission
5 – in class participation in web quest and thoughtful and complete answers to items 1-10.
10 points – thoughtful and complete answers (2 points per item) to items 11-15.
Submitted to the Ideology dropbox on time.