* **Critical Thinking, Reading, and Quantitative Literacy: A Three-Part Assessment**

Presenters:
Robin Anderson, Michael McClure & Joyce Ray
October 30, 2012

---

* **Introductions**

* Robin Anderson, Assistant Professor of Mathematics & member of the Reasoning Skills Committee

* Michael McClure, Assistant Professor of Mathematics & Chair of the Reasoning Skills Committee

* Joyce Ray, Outcomes Assessment Coordinator
**SWIC FACTS**

- Located approximately 19 miles east of downtown St. Louis
- 3 campuses: Belleville, Granite City, and Red Bud
- 26 off-campus sites including Scott Air Force Base and East St. Louis Community College Center
- Annual Unduplicated Headcount: 24,685 students-FY2011
- 10th largest community college in the state of Illinois

---

**Background Information**

- 2001 General Education Committee formed to identify common competencies
- 2006 Watson Glaser Critical Thinking Assessment implemented college-wide
- 2007 Developed 3 categories for college-wide core competencies:
  * Communication Skills
  * Reasoning Skills
  * Citizenship
### Committee Organizational Chart

<table>
<thead>
<tr>
<th>OA Steering Committee</th>
<th>OA Leadership Team</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OA Coordinator</strong></td>
<td></td>
</tr>
<tr>
<td>Disciplines Committee</td>
<td>AA/AS Degree Champions</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Citizenship</td>
</tr>
<tr>
<td></td>
<td>Communication Skills</td>
</tr>
<tr>
<td></td>
<td>Reasoning Skills</td>
</tr>
</tbody>
</table>

**General Education Core Competencies are located in every classroom, lab and studio on all three campuses.**

These colorful posters serve as a reminder to both students and Faculty that the Core Competency Skills are present and practiced as part of a complete College curriculum.

**The Successful Student**

**General Education Core Competencies**

- **Reasoning Skills** - the ability to organize, evaluate, and apply information in order to express ideas in a useful form.
- **Communication Skills** - the ability to convey information verbally, nonverbally, or in written form in a manner that is clear and appropriate to the circumstances, and by increasing understanding in the audience.
- **Citizenship** - the ability to recognize and assess the implications of our behavior to ourselves and the community and to adapt as needed.

**Reasoning Skills** - the ability to organize, evaluate and apply information in order to express ideas in a useful form.
* **Creating the Assessment**

  * Create simple assessment
  * Brainstorming assessment projects
    * Diverse topics
    * Content?
    * Combined best ideas by comparing and contrasting
  * Discussion about “What is critical thinking?”
  * Selected Electoral College as the theme

* **Pilot Stage**

  * Two pilots were implemented
  * First pilot:
    * Created rubric
    * Revised wording of questions
  * Second pilot:
    * Used paper version and Blackboard
    * Sample grading
Reasoning Skills Three Part Assessment: The Electoral College

On Tuesday, November 4, 2008, the United States held a presidential election with Republican candidate, John McCain, and Democratic candidate, Barack Obama. Citizens across the United States voted for their favorite candidate. However, the popular vote does not directly determine the election. The Electoral vote actually determines the winner.

Every state has the same number of Electors as the sum of its senators and representatives in Congress. Each state has two senators. The total number of representatives for all the states is 435. The number of representatives for each state varies from state to state and is proportional to its population. Each state has at least one representative. The 23rd Amendment of the Constitution gave the District of Columbia (Washington D.C.) three electoral voters since they currently have no senators or representatives.

Because of this structure, presidential elections in the United States are indirect elections; the general public elects people to vote for them. Winning a majority of the popular vote does not guarantee a candidate is elected President. The candidate must win a simple majority (more than 50%) of the Electoral College vote to become President of the United States. In all but two of the states, the Electoral vote is based on a “winner takes all” principle—whichever candidate wins a plurality (more votes than anyone else) in the state gets all of that state’s electoral votes. Maine and Nebraska use the Congressional District System where the winner of a state receives the two additional electoral votes corresponding to the two senators.

The following diagram shows the number of Electoral College voters for each state and how that state voted in the 2008 presidential election.

* Presidential election results map.
* Red: won by McCain/Palin
* Blue: won by Obama/Biden
* Numbers indicate the number of electoral votes allotted to a unit.
* Nebraska:
  - Obama won one electoral vote.
  - McCain won four electoral votes.
map source: CNN.com

The Questions

* 1. In your own words, what is the Electoral College? (Answer in complete sentences.)

* 2. How many electoral votes are required for a candidate to be elected U.S. President? (Show/explain your work - write a number.)

* 3. Suppose you were running for president and you only had enough money left to hold a rally in one of two states: Wyoming or Montana. Both have 3 electoral votes, and both states are red above. However, Wyoming has a population of 500,000 people while Montana has a population of 900,000 people. Which state would you choose to campaign in and why? (Answer in complete sentences.)
### Grading Rubric

<table>
<thead>
<tr>
<th></th>
<th>2 Points Each</th>
<th>1 Point Each</th>
<th>0 Points Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Sentences</td>
<td>The student used complete sentences.</td>
<td>The student did not use complete sentences</td>
<td></td>
</tr>
<tr>
<td>Correct Grammar</td>
<td>The student used correct grammar/vocabulary/spelling/punctuation.</td>
<td>The student did not use correct grammar/vocabulary/spelling/punctuation.</td>
<td></td>
</tr>
<tr>
<td>Question #1</td>
<td>The definition is correct.</td>
<td>The definition is mostly correct but has a few incorrect statements or gaps.</td>
<td>The definition is totally incorrect.</td>
</tr>
<tr>
<td>Question #2</td>
<td>The correct number of votes is listed.</td>
<td>The answer is written as a percent or is &quot;close.&quot;</td>
<td>The answer is incorrect.</td>
</tr>
<tr>
<td>Question #3 (Logic)</td>
<td>The conclusion is stated and well supported.</td>
<td>The conclusion is stated, but there are gaps in logic.</td>
<td>The answer is not supported, or logic is invalid.</td>
</tr>
<tr>
<td>Question #3 (Clarity)</td>
<td>Answer is intelligible and well constructed</td>
<td>Thought process can be understood but is not clearly presented</td>
<td>Nearly impossible to understand the thought process behind answer.</td>
</tr>
</tbody>
</table>

### Ties to “Core Competencies”

<table>
<thead>
<tr>
<th>Scoring Category</th>
<th>SWIC - General Education Core Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Sentences</td>
<td>Communication Skills - Writing: Appropriate Conventions</td>
</tr>
<tr>
<td>Correct Mechanics</td>
<td>Communication Skills - Writing: Appropriate Conventions</td>
</tr>
<tr>
<td>Question #1 (In your own words, define Electoral College.)</td>
<td>Reasoning Skills - Reading Comprehension: Interpretation of content</td>
</tr>
<tr>
<td>Questions #2 (How many electoral votes are required for a candidate to be elected U.S. President?)</td>
<td>Reasoning Skills - Quantitative Literacy: Extraction of information from graph and translation into mathematical results</td>
</tr>
<tr>
<td>Question #3 LOGIC</td>
<td>Reasoning Skills - Critical Thinking: Deduction</td>
</tr>
<tr>
<td>Question #3 CLARITY</td>
<td>Reasoning Skills - Critical Thinking: Evaluation</td>
</tr>
</tbody>
</table>
Implementing the Assessment

* Random selection of classes
* Teacher choice: paper version or Blackboard
* Grading team “The LEAGUE”
  * Selected members of committee
  * Full-time faculty & adjunct faculty
* Grader assignments/consistency
* “Core Competency Project” in Title III Grant

Data Spreadsheet Snapshot
Analysis of Results

* Age
* GPA
* Gender
* Compass placement scores
* Math level
* English level
* Credit hours completed
* Class level

Data by Class Level

Data by Class Level

- Developmental
- 100 Level
- 200 Level

Bar chart showing data by class level for various metrics.
It may be wisest to campaign in the state with the smallest population. Each of these states hold an equal number of electoral votes and the same voting tendencies, meaning the focus will be on swaying a majority of the population to cast a vote in the candidate's favor. When dealing with a smaller population, chances are best the candidate's message will reach a majority of the population. With luck, this may translate into a majority vote win. In this case, the state to target would be Wyoming.

I would hold a rally in the Montana because they have a larger population in which they have more representatives in Congress. That state have more representatives in Congress and they can win over the representatives vote of president.
*“Wyoming. I would have fewer people to convince to vote for me to win the 3 electoral votes from that state...unless Montana is more liberal because the more liberal they are the more likely they will vote for an openly gay man for president. Still it’s a long shot.”

*“I would campaign in Wyoming because it borders a state that has more electoral votes and people might come over from that state or people from Wyoming might know people from that state and affect their opinion.”

*“I’d hold it on the border so everyone could come. Duh. Maybe at Yosemite. I’m not running for president any time soon so I’ve got time to think about it. Sorry for thinking outside the box.”
* Observations

* Paper results vs. Blackboard results
* Student effort
* Teacher attitude
* Opinion vs. logic
* Parroting opinions
* Value of knowing or having factoids

* Assessment Report

* Random sample of students college-wide
* Three question test based on electoral college
* Used a faculty developed rubric
* Consistent grading
* Critical thinking skills improve with experience
* More emphasis in the class room on student critical thinking skills
Conclusions/Recommendations

* Keep it simple
* Create rubric with assessment
* Pilot stage is recommended
* Consider time required for grading

Discussion Question

* How can an assessment tool be developed for critical thinking without using outside knowledge?
* Or should it be?
*Contact Information*

Robin Anderson - robin.anderson@swic.edu

Michael McClure - michael.mcclure@swic.edu

Joyce Ray - joyce.ray@swic.edu

*Questions*