

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

Presenters:

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## \* 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

OA Steering Committee		OA Leadership Team
OA Coordinator		
Disciplines Committee	AA/AS Degree Champions	General Education Committee
		Citizenship
		Communication Skills
		Reasoning Skills

## The Successful Student

### General Education Core Competencies

When you graduate from SWIC, you will have practiced these skills in many of your classes:

**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, electronically, or in written form, in a manner that is clear and appropriate to the circumstances, and that increases understanding in the audience.



**Citizenship** – the ability to recognize and assess the implications of our behaviors to ourselves and the community and to adapt as needed.



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.

**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

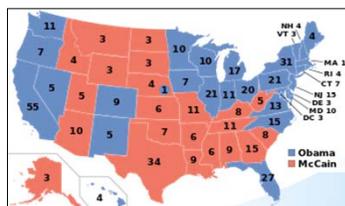
On Tuesday, November 4, 2008, the United States held a presidential election with Republican candidate, John McCain, and Democratic candidate, Barack Obama. Citizens across the United States voted for their favorite candidate. However, the popular vote does not directly determine the election. The Electoral 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 23<sup>rd</sup> 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.



## \* 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

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

## \* Ties to "Core Competencies"

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

# \* 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

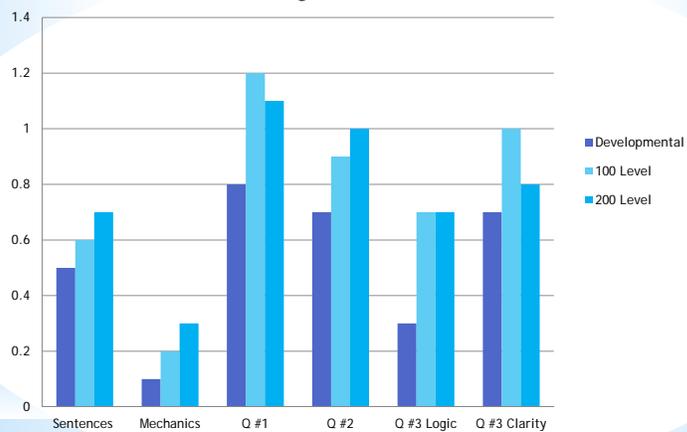
Complete Sent	Grammar, Spelling, Vocabulary	#1 (M)	#2 (B)	Total	Logic			Clarity			Avg Logic	Avg Clarity	Mode Logic	Mode Clarity	Total
					#3 (Q) M	#3 (Q) R	#3 (Q) C	#3 (Q) M	#3 (Q) R	#3 (Q) C					
1	1	0	2	4.0	2	2	2	2	2	2	2.0	2.0	2.0	2.0	8.0
1	1	1	0	3.0	0	0	0	1	0	1	0.0	0.7	0.0	1.0	4.0
1	1	0	1	3.0	1	0	2	1	0	2	1.0	1.0	1.0	1.0	5.0
0	0	0	1	1.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	1.0
0	1	0	0	1.0	1	0	0	1	0	0	0.3	0.3	0.0	0.0	1.0
1	0	1	1	3.0	2	2	2	1	2	2	2.0	1.7	2.0	2.0	7.0
1	1	2	1	5.0	2	0	0	2	0	0	0.7	0.7	0.0	0.0	5.0
1	1	0	1	3.0	0	0	0	0	1	0	0.0	0.3	0.0	0.0	3.0
1	0	0	1	2.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	2.0
1	1	1	1	6.0	2	1	2	2	1	2	1.7	1.7	2.0	2.0	10.0
1	1	1	1	4.0	1	0	0	1	1	1	0.3	1.0	0.0	1.0	5.0
0	0	1	0	1.0	0	0	0	1	0	1	0.0	0.7	0.0	1.0	2.0
0	0	2	2	4.0	2	2	2	2	2	2	2.0	2.0	2.0	2.0	8.0
1	1	0	1	3.0	2	2	2	2	2	1	2.0	1.7	2.0	2.0	7.0
1	1	2	0	4.0	2	2	2	2	2	2	2.0	2.0	2.0	2.0	8.0
1	0	1	2	4.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	4.0
0	0	0	1	1.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	1.0
1	0	2	1	4.0	2	2	2	2	1	1	2.0	1.3	2.0	1.0	7.0
0	0	0	2	2.0	2	1	2	2	1	2	1.7	1.7	2.0	2.0	6.0
1	1	2	0	4.0	2	2	2	2	2	2	2.0	2.0	2.0	2.0	8.0
1	0	0	1	2.0	1	1	2	1	0	1	1.3	0.7	1.0	1.0	4.0
1	0	1	1	3.0	0	0	0	0	2	0	0.0	0.7	0.0	0.0	3.0
0	0	2	2	4.0	1	1	2	1	0	1	1.3	0.7	1.0	1.0	6.0
0	0	1	0	1.0	0	0	0	1	0	1	0.0	0.7	0.0	1.0	2.0

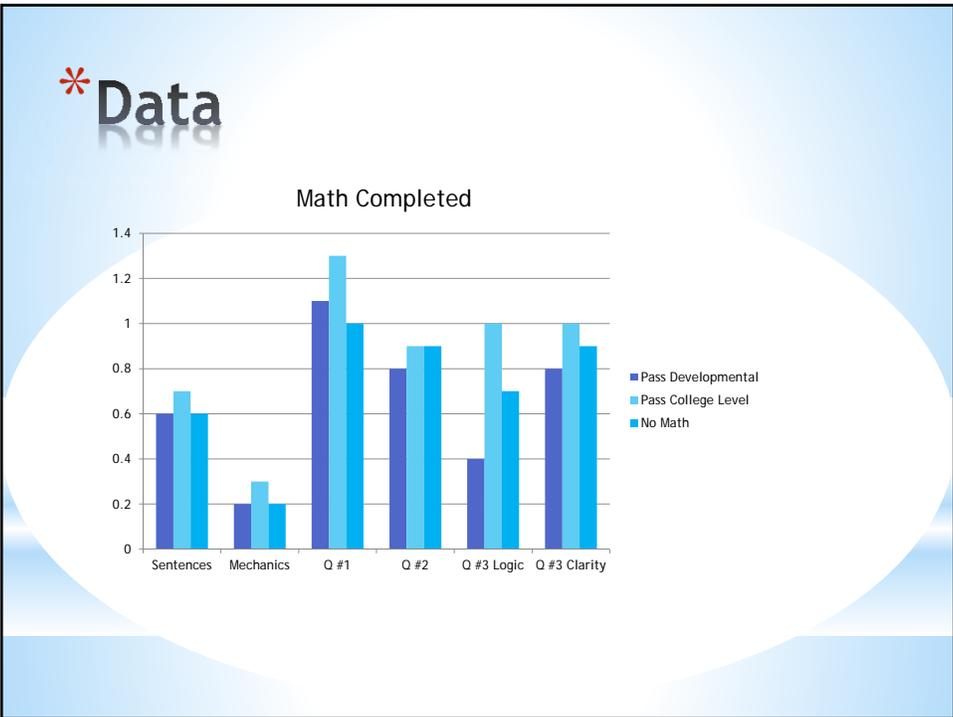
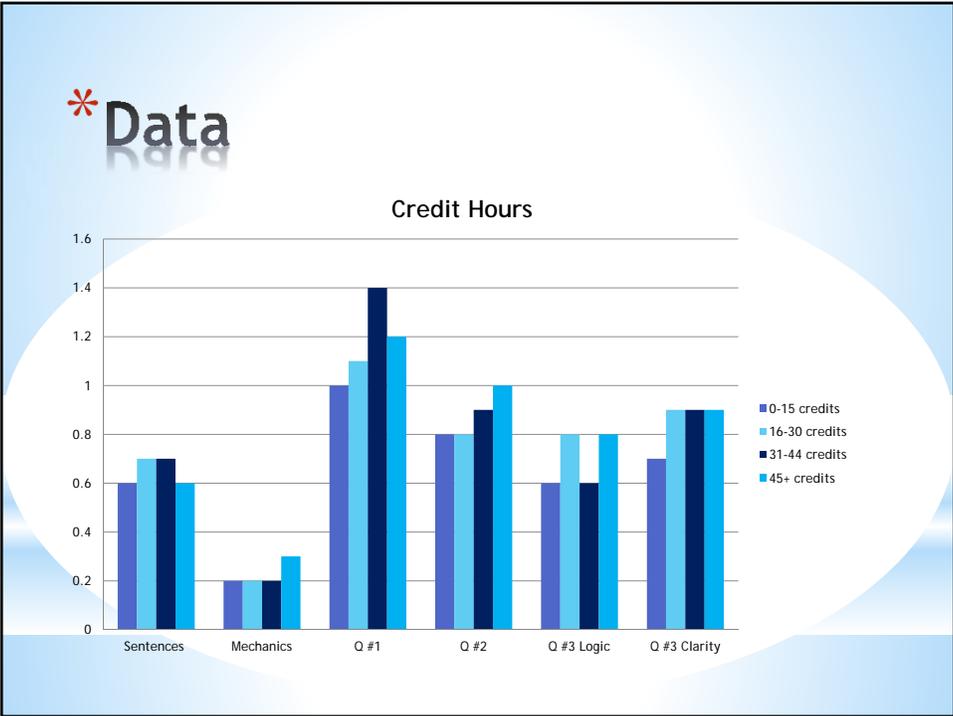
## \* Analysis of Results

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

## \* Data

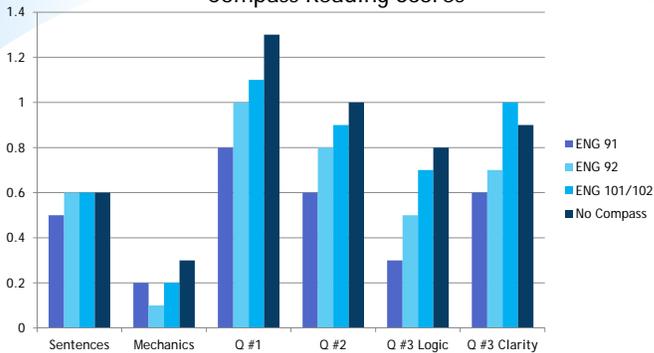
Data by Class Level





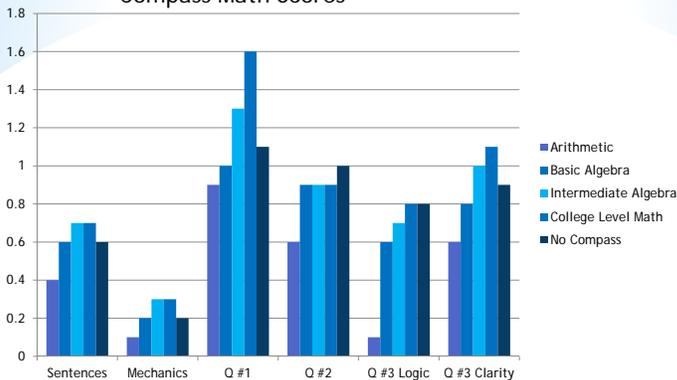
# \*Data

### Compass Reading Scores



# \*Data

### Compass Math Scores



## \* Student Responses



Full Logic Score

- \* "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."

## \* Student Responses



Zero Logic Score

- \* "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."

## \* Student Responses



### Unique Responses

- \* "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."

## \* Student Responses

### Another Unique Response

- \* "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

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## \*Questions

