

# Assessing Argument, Critical Thinking and Information Literacy Learning Outcomes

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# Research questions

- How effective is the Toulmin method in the evaluation of sources for their accuracy, credibility, reliability, and bias?
- How effective are the critical thinking and argument analysis elements in the experimental information literacy session in developing students argument and critical thinking skills?
- Can they be adopted in different information literacy instructional settings?

# Evaluation of sources using critical thinking and argument analysis

- Alfino, M., Pajer, M., Pierce, L., Jenks, K.O. (2008). Advancing Critical thinking and information literacy skills in first year college students. *College & Undergraduate Libraries*, 15, 81-97.
- Nussbaum, E. M, & Schraw, G. (2007). Promoting argument-counterargument integration in students' writing. *The Journal of Experimental Education*, 76, 59-92.
- Song, Y. & Ferretti, R. (2012). Teaching critical questions about argumentation through the revising process: effects of strategy instruction on college students' argumentative essays. *Reading and Writing Quarterly*, 26, 67-90.
- Wolfe, C., Britt, M.A, Butler, J. A. (2009). Argumentation schema and the myside bias in written argumentation. *Written Communication*, 26, 183-209.

# Project background

Originated as 2013-2014 ACRL Assessment in Action project  
at Saint Mary's College of California

## Saint Mary's College of California

- Library instruction in “Argument and Research” course (3 sections)
- Project SAILS
- Experimental instruction with “Flipped” teaching
- Pre-session materials, in-class exercise, assignment, and research paper

## California State Univ., East Bay

- Hybrid two-unit Information literacy course
- Instruction in “Argument and research using Toulmin and images
- Pre/Post tests
- “Flipped” teaching
- Pre-session materials, in-class exercise, assignment, and research paper

# Student population comparison

## Saint Mary's College of California

- Female: 59%; Male: 41%
- White: 43%, Latino: 25%, Asian: 14%, African-American/Black: 2%
- 87% freshmen from California
- 99% of freshmen living on campus
- Tuition and fees: \$39,890
- % of full-time undergraduate receiving financial aid: 86%

## CSU, East Bay (undergrads)

- Female: 61%; Male: 39%
- African American: 11%; American Indian/Alaskan Native: .2%; Asian/Pacific Islander: 25.6%; Hispanic: 25.6%; White: 20.3%; Multiple/other/unknown: 10.5%; International: 6.8%
- full time: 10,505/part-time: 1,555/
- most students live off campus
- Tuition: \$6,549
- Receiving financial aid: 74%

# Saint Mary's College of California Composition program

IERP  
1

- Develop search strategies and use library catalogs and databases to find relevant materials for research

IERP  
2

- Practice evaluating sources critically

CT  
2a

- Seek and identify confirming and opposing evidence relevant to own hypothesis

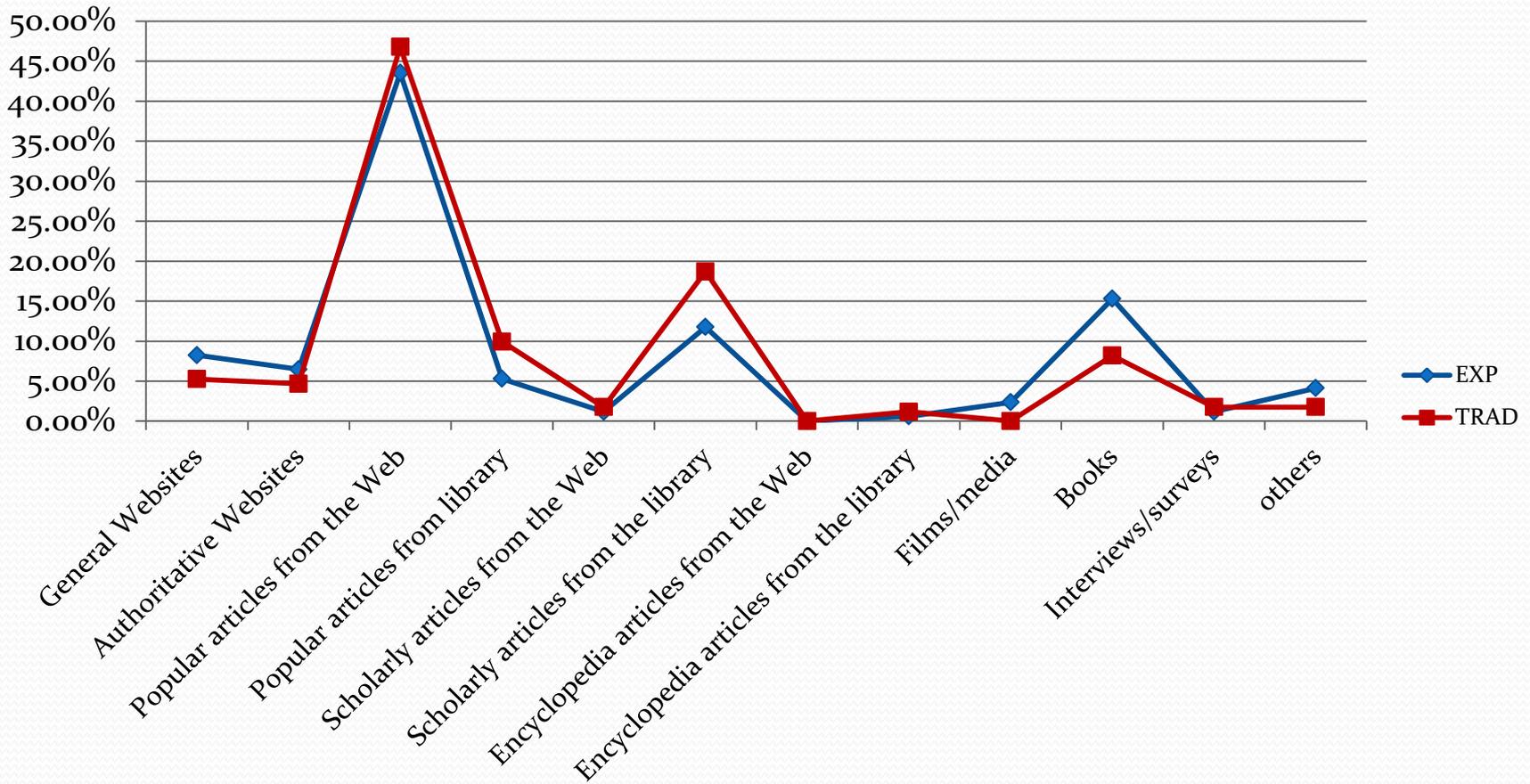
IERP  
3

- Evaluate and synthesize evidence for the purpose of drawing valid conclusions

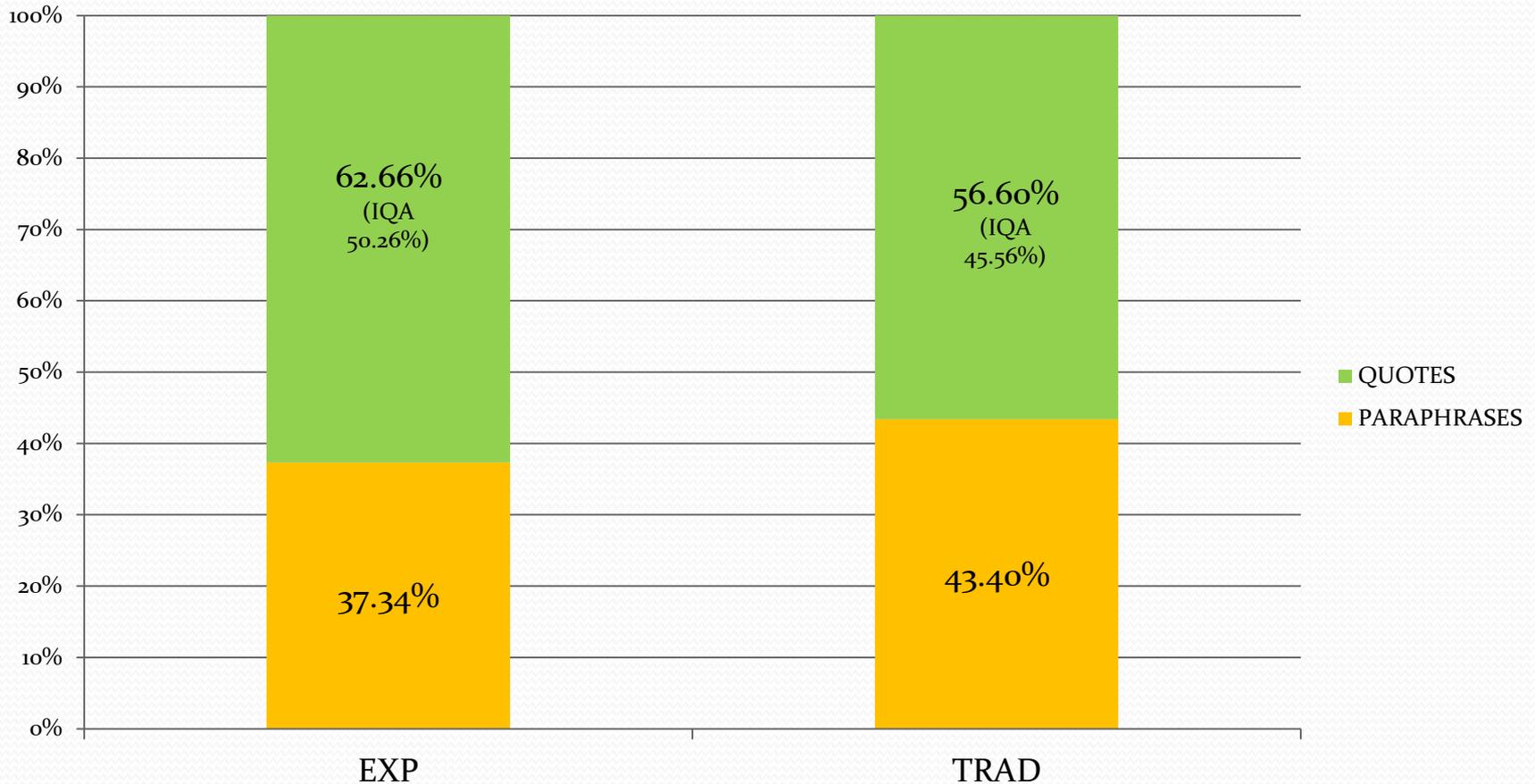
IERP  
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- Demonstrate academic honesty and safeguard the intellectual property of others by properly integrating and citing sources

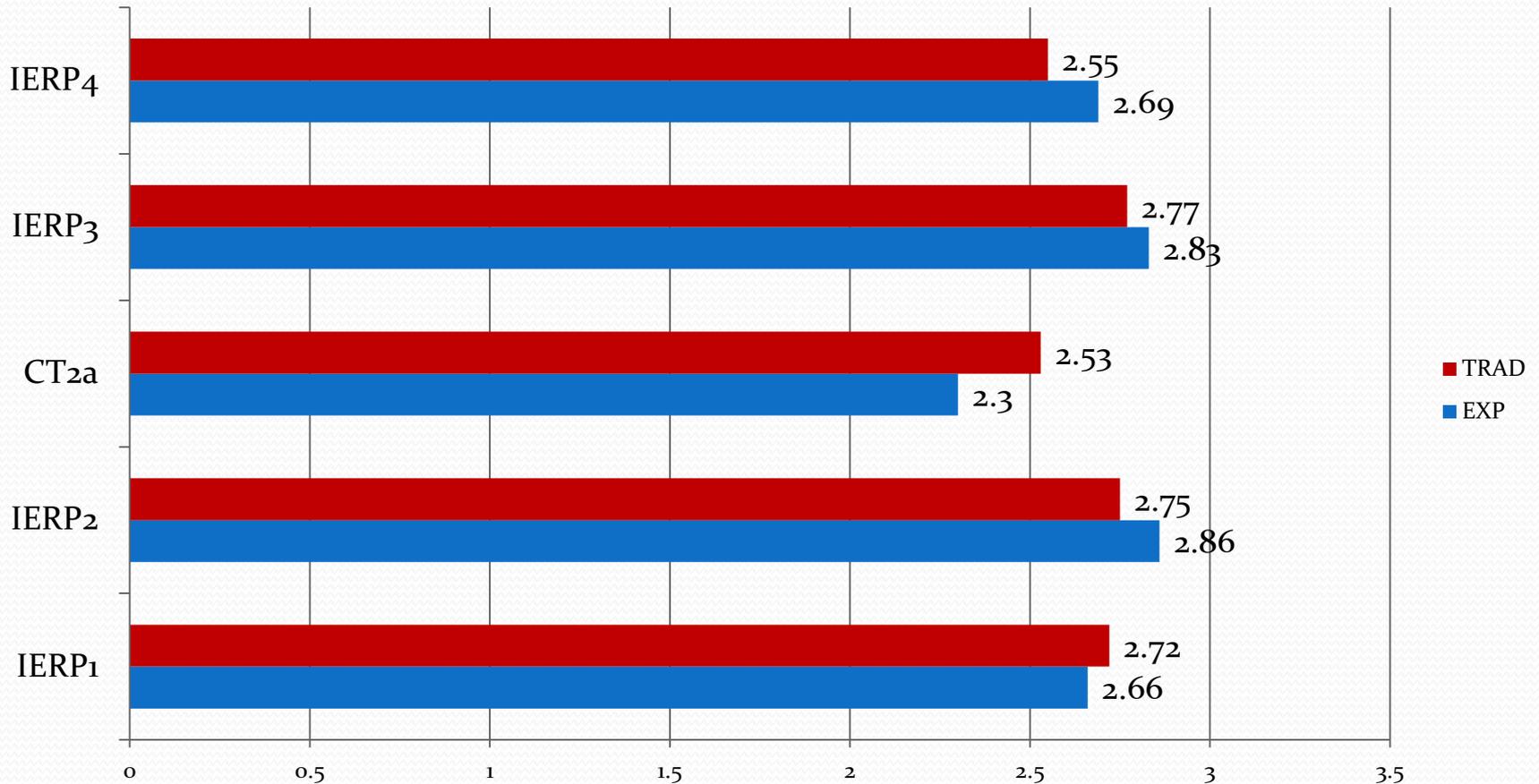
# Sources used in research papers



# Paraphrasing vs. Quoting



# Learning outcomes



# Student reflection on research process

- “The research portion is the hardest part & once that aspect is out of the way the paper comes easy.”
- “I learned that you can't just type in every little word into every database, like you can with Google.”
- “Using library databases was more useful than Google if I want to find credible sources.”
- “I searched for the information the same way I learned last semester (in the library).”
- “Nothing new, I used the same techniques as I've always done.”



# The CSU East Bay Experiment:

- At CSU East Bay: Toulmin flipped classroom used with images in of the 2-unit quarter length (10 week) information literacy course required of Freshman, LIBY 1210.
- **Learning outcomes:**
  - Determine the Extent of Information Needed
  - Access the Needed Information
  - Evaluate Information and Its Sources Critically
  - Use Information Effectively to Accomplish a Specific Purpose
  - Access and Use Information Ethically and Legally and Understands that there are Ethical, Legal, and Socio-Economic Issues surrounding Information and Information Technology.

# Project Design & Timeline

- The pilot study began in one section of LIBY 1210 in Winter Quarter of 2013; of 30 students over half signed consent to use their work in the study; then continued with two sections of LIBY 1210 in the spring of 2014, of 60 students, 50 students signed the consent form.
- Research questions and experimental instruction started out the same as Saint Mary's College; additional elements were added to the experimental instruction by Spring of 2014 and additional research questions asked.

# Rationale for including images:

- Hattwig, D. , Bussert, K. Medaille, A., Burgesss, J. (2013). Visual Literacy Standards in Higher Education: New opportunities for libraries and student learning. *Portal: Libraries and the Academy*. 13 (1) 61-89.
- Fleming, D. (1996) Can pictures be arguments? *Argumentation & Advocacy* 33(1), 11-18
- Ravas, T. & Stark, M. (2012) Pulitzer-prize-winning photographs and visual literacy at the University of Montana: A case study. *Journal of Art Libraries Society of North America* 31 (Spring). 34-44.
- Birdswell D. S., Groarke, L. (2007). Outlines a Theory of Visual Argument. *Argumentation & Advocacy*. 43(3-4). 103-108
- Duggan, M. (2013) Photo and video sharing grow online: additional analysis. Pew Research Center.  
<http://www.pewinternet.org/2013/10/28/additional-analysis/>

# Use of Images in Social Media

## The Landscape of Social Media Users

	% of internet users who....	The service is especially appealing to ...
Use Any Social Networking Site	67%	Adults ages 18-29, women
Use Facebook	67	Women, adults ages 18-29
Use Twitter	16	Adults ages 18-29, African-Americans, urban residents
Use Pinterest	15	Women, adults under 50, whites, those with some college education
Use Instagram	13	Adults ages 18-29, African-Americans, Latinos, women, urban residents
Use Tumblr	6	Adults ages 18-29

Source: Pew Research Center's Internet & American Life Project Post-Election Survey, November 14 – December 09, 2012. N=1,802 internet users. Interviews were conducted in English and Spanish and on landline and cell phones. Margin of error is +/- 2.6 percentage points for results based on internet users. Facebook figures are based on Pew Research Center's Internet & American Life Project Omnibus Survey, December 13-16, 2012. Margin of error for Facebook data is +/- 2.9 percentage points for results based on internet users (n=860).

# Instructional Materials

- The following materials were used:
- (same as SMC's)
  - Topic development worksheet
  - PowerPoint on Toulmin method of analyzing arguments with applications to evaluation of sources.
  - In class group work on analyzing an argument article using Toulmin
  - Homework assignment: finding two articles with different perspectives on student's topic.

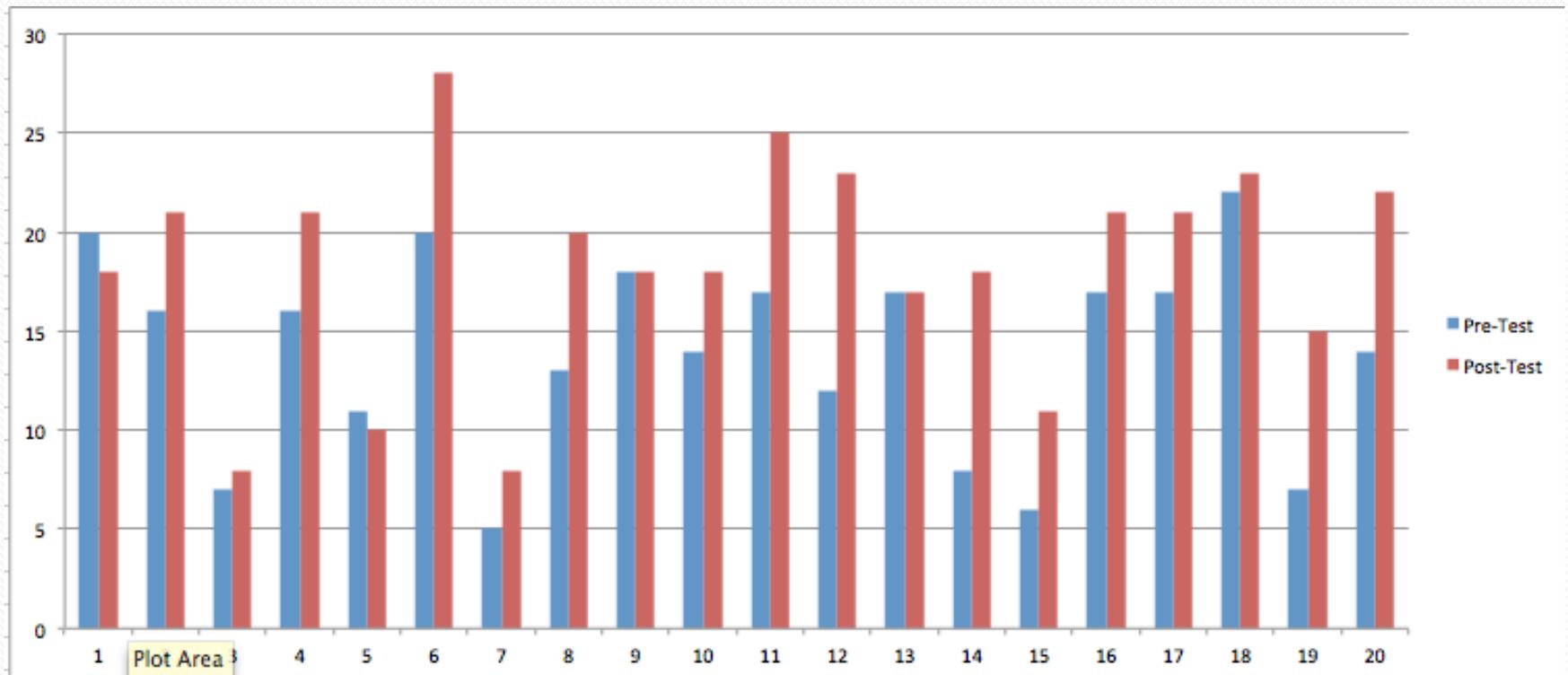
# Design of Image-Based Instruction

- In addition to the Toulmin-based instruction already described, the following four image-based instruction units were added on:
  - Photojournalism
  - Advertising
  - Infographics
  - Political Cartoons
- For more info go to:  
<http://imagininginformationliteracy.wordpress.com/>
- These included group work and homework (research log) relating to the students research paper topic

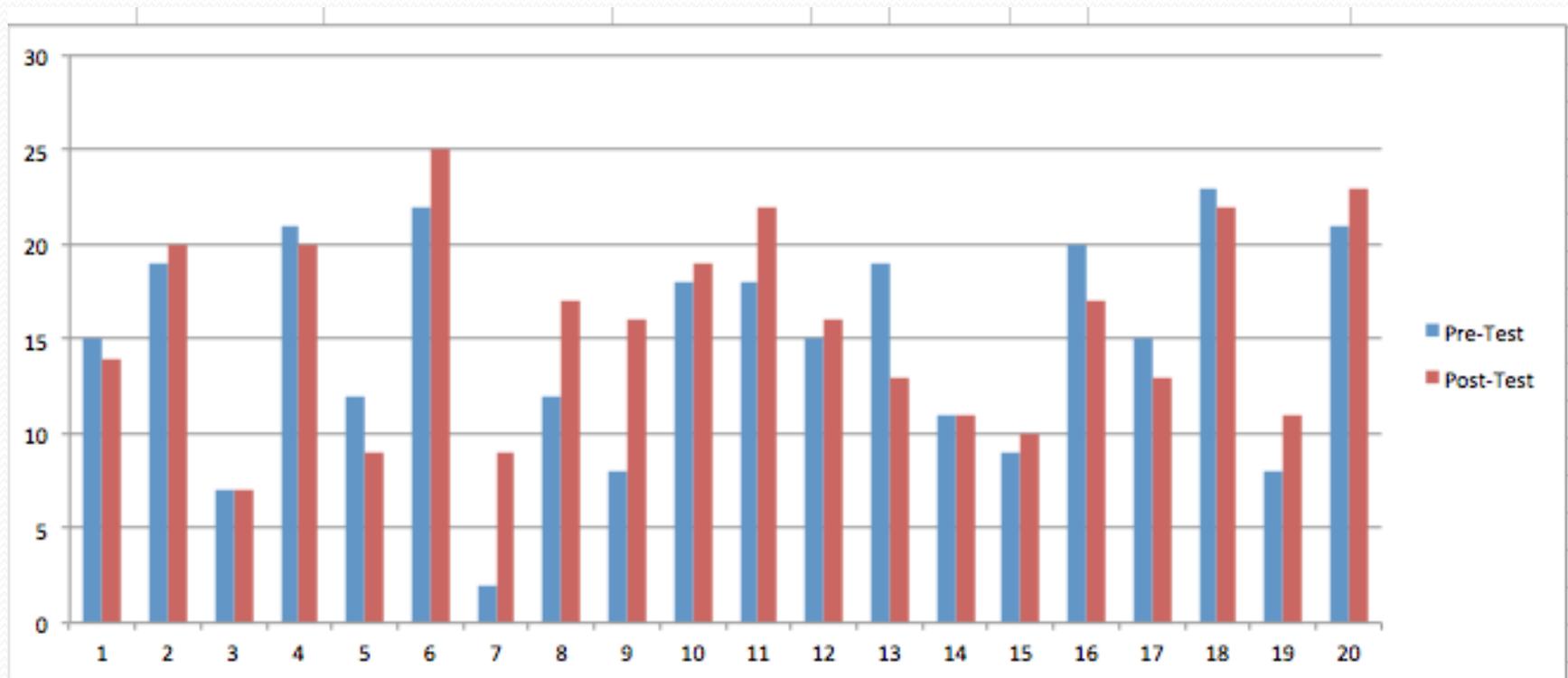
# Analysis

- To understand the effect of this instruction on students knowledge and skills in information literacy, building a strong argument and avoiding “Myside” bias, the following were collected and will be analyzed:
  - Pre/post test scores on a multiple choice information literacy test (used by the department)
  - All worksheets associated with the experimental instruction (homework and in class group work)
  - Argument/Research essays with annotated bibliographies
  - Reflective question responses

# Section 1 Pre/Post test Scores



# Section 2 Pre/Post Test Scores



# Future Research Questions

- Comparison study between using Toulmin with and without the image component
- Comparing the instruction design using Toulmin to the newer Walton method which emphasizes teaching argument as dialogue
- Discovering if the use of images has an effect on motivation or level of engagement
- Exploring potential correlations between preference for visual learning and/or spatial ability and performance using image-based instruction