

WHAT SCIENCE TOPICS DO
WOMEN AND MEN
CHOOSE TO READ AND
WRITE ABOUT?

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OUTLINE

- The students
- The magazine
- The assignment
- The results

THE STUDENTS

- Introductory physics (algebra-based and calculus-based); two-semester sequence
- Construction, Engineering Technology, Packaging, Applied Science majors
- ~25-50 students per class
- 4 terms (Sp06-F07); 165 men and 17 women

THE MAGAZINE

- Weekly newsmagazine of science (changed May 2008...)
- 10-15 pages per issue
- Summarizes recent science news in lay language
- Physics Department bought students a semester “subscription” with special course funds

SCIENCE NEWS TOPICS



THE ASSIGNMENT

- Students pick up a copy each week of *Science News*, choose an article to read, and write a brief summary
- Three parts: brief summary; why they chose it; implications for society
- Grading is 5 points: summary; why chose; implications; citation; spelling
- Turned in electronically or hard copy

McCullough, L. (2006). Science News in the Science Classroom. *Journal of College Science Teaching* 36(3), 30-33.

FINAL ASSIGNMENT

- Last week is special recap assignment: what students thought of the magazine and the assignment

IN THE STUDENTS' WORDS

- I have found articles relating to my life and things in general. I have found articles related to me as a man, an asthma sufferer, a consumer, fisherman, and a student with A.D.D.
- I learned something new every week that I completed a Science News assignment, so I would say this is a very beneficial assignment in terms of experiencing the different kinds of science.

IN THE STUDENTS' WORDS

- I save all the issue of Science News. My daughter uses them whenever she needs information on a topic for school papers.
- I thought the information I got out of it was cool, I even found myself walking around questioning people if they knew about my newfound knowledge.

EXAMPLE PAPER #1

I chose this article because there happened to be a little picture with a heading about “Stronger than a diamond” and seeing a diamond is a girl’s best friend, I was curious to what it was that was beating out my girlfriend. It happens to be that researchers in Germany and France made this substance with special machinery that simultaneously squeezes and heats a powder of carbon molecules... So, it might be that a girl’s new best friend is now a carbon plug, instead of the weaker diamond!

EXAMPLE PAPER #2

After scientist closely examined dinosaur poop--just kidding--feces, they discovered five different types of grass. This provided them with the first known information on grass dwelling dinosaurs, and the diversified grasses from long ago.

Traces of silica called phytoliths indicate the grasses presence, and each types of grass produces distinct shaped phytoliths, they use the preserve to indicate the mix of grass that once grew back then. The discovery of the fossil wasn't much older than the previous, but they were excited to find such diversity at that time. This grass may open doors and give clues to different species of dinosaurs, and other interesting facts.

This article astounds me, because you can find so much information from such an old piece of feces.

EXAMPLE PAPERS #3&4

The thing that changed in my life came from the article about smoking that I read. I made my girlfriend read it witch lead [sic] to her quitting smoking. That has made me very happy.

I saw [the smoking] article and thought to myself about my bad habit and decided that I should read the article and try to influence myself not to smoke.

MY COMMENTS

- Good way to get students writing
- Need to grade on spelling / grammar!
- Need for strengthening communication skills
- No comments on “This isn’t an English class!”

FUN TYPOS

- The vaccines attack heroin molecules to help fight the problem that they are facing... This could have a huge impact on society because it could become another addition for people. Also it could be an escape goat for people to always fall back on to get rid of their problem.
- In the study they compared people who had sedentary life styles vs. people who exercised and this is where they found the length difference in telomeres.
- The article discussed the most recent study and how breast feed infants are less likely to become overweight than those whom are feed by formula.
- Ehrenberg, Rachel. Traveling Toxin: Botox may bitch a ride on nerve cells, Science News, Vol.173 No. 14, 213-214.

THE STUDY

- Given four semesters of data, are there patterns of topics chosen by students?
- Any gender differences in topics chosen?

THE DATA SET

- 2089 observations
- Term, Student, Gender, Major, Article title, Volume(Issue), Specific Article Science, General Article Science
- Specific Science: e.g., astrophysics, microbiology, nanotechnology, climate, geophysics, safety, mental health, anthropology, genetics

GENERAL SCIENCE

<ul style="list-style-type: none">• Animals	<ul style="list-style-type: none">• Math
<ul style="list-style-type: none">• Astronomy	<ul style="list-style-type: none">• Medicine
<ul style="list-style-type: none">• Biology	<ul style="list-style-type: none">• Other
<ul style="list-style-type: none">• Chemistry	<ul style="list-style-type: none">• Paleontology / Archeology
<ul style="list-style-type: none">• Earth Science	<ul style="list-style-type: none">• Physics
<ul style="list-style-type: none">• Engineering	<ul style="list-style-type: none">• Social Science
<ul style="list-style-type: none">• Health	<ul style="list-style-type: none">• Technology

WHAT'S YOUR FAVORITE?

- Of these categories, which would you have a preference for?

• Animals	• Math
• Astronomy	• Medicine
• Biology	• Other
• Chemistry	• Paleontology / Archeology
• Earth Science	• Physics
• Engineering	• Social Science
• Health	• Technology

TAKE A PEEK!

- Take a copy of *Science News* and choose one article of interest

YOUR HYPOTHESIS

- What topic do you think students are most likely to pick?

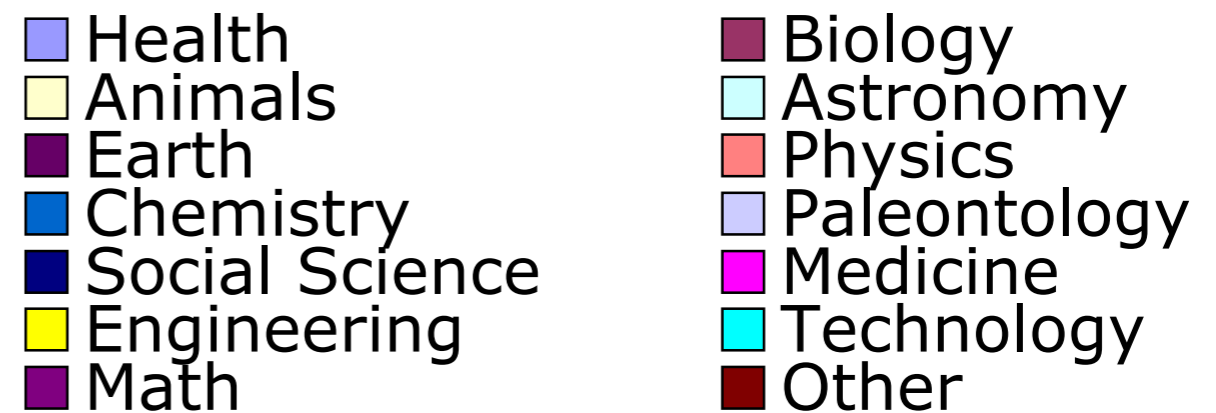
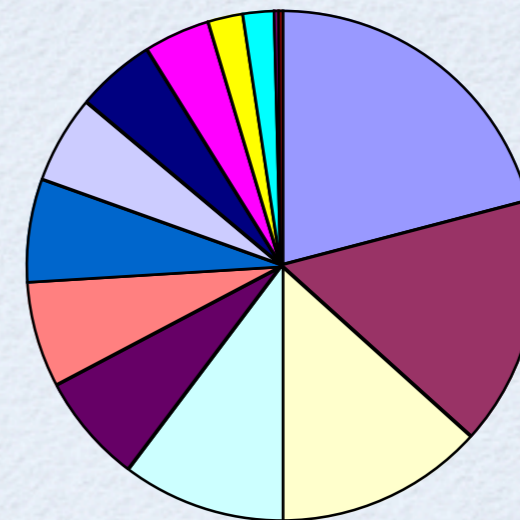
HYPOTHESIS: STUDENT CHOICE

- Students will choose topics connected with their major and / or with their personal lives

WHAT DO STUDENTS CHOOSE?

Health	20.8%
Biology	15.7%
Animals	13.4%
Astronomy	10.3%
Earth	6.8%
Physics	6.7%
Chemistry	6.7%
Paleontology	5.6%
Social Science	4.9%
Medicine	4.2%
Engineering	2.1%
Technology	2.0%
Math	0.5%
Other	0.2%

Choice of article topic



GENDER DIFFERENCES?

- Of the categories, which do you think women are more likely to pick? Which for men?

• Animals	• Math
• Astronomy	• Medicine
• Biology	• Other
• Chemistry	• Paleontology / Archeology
• Earth Science	• Physics
• Engineering	• Social Science
• Health	• Technology

GENDER DIFFERENCES?

- Hypothesis: Women will be more likely to choose animals and biology; men will be more likely to choose technology and physical sciences

GENDER RESULTS

	M	F
Animals	13.7%	10.5%
Astronomy	10.8%	6.6%
Biology	15.1%	20.6%
Chemistry	7.1%	2.6%
Earth Science	7.0%	5.7%
Engineering	2.1%	1.8%
Health	19.9%	28.5%
Math	0.5%	0.4%
Medicine	3.9%	6.6%
Other	0.1%	0.9%
Paleontology	5.9%	3.1%
Physics	7.0%	3.9%
Social Science	4.5%	8.3%
Technology	2.1%	0.4%

GENDER RESULTS

Topic	% Women (of 228)
Health	28.5%
Biology	20.6%
Animals	10.5%
Social Science	8.3%
Astronomy	6.6%
Medicine	6.6%
Earth Science	5.7%
Physics	3.9%
Paleo / Archeo	3.1%
Chemistry	2.6%
Engineering	1.8%
Other	0.9%
Math	0.4%
Technology	0.4%

Topic	% Men (of 1861)
Health	19.9%
Biology	15.1%
Animals	13.7%
Astronomy	10.8%
Chemistry	7.1%
Physics	7.0%
Earth Science	7.0%
Paleo / Archeo	5.9%
Social Science	4.5%
Medicine	3.9%
Technology	2.1%
Engineering	2.1%
Math	0.5%
Other	0.1%

RESULTS BY MAJOR?

- Four main majors in course:
 - Construction (N=63; 62 men, 1 woman)
 - Engineering Technology (N=60; 56 men, 4 women)
 - Packaging (N=26; 24 men, 2 women)
 - Applied Science (N=17; 11 men, 6 women)

PREDICTIONS

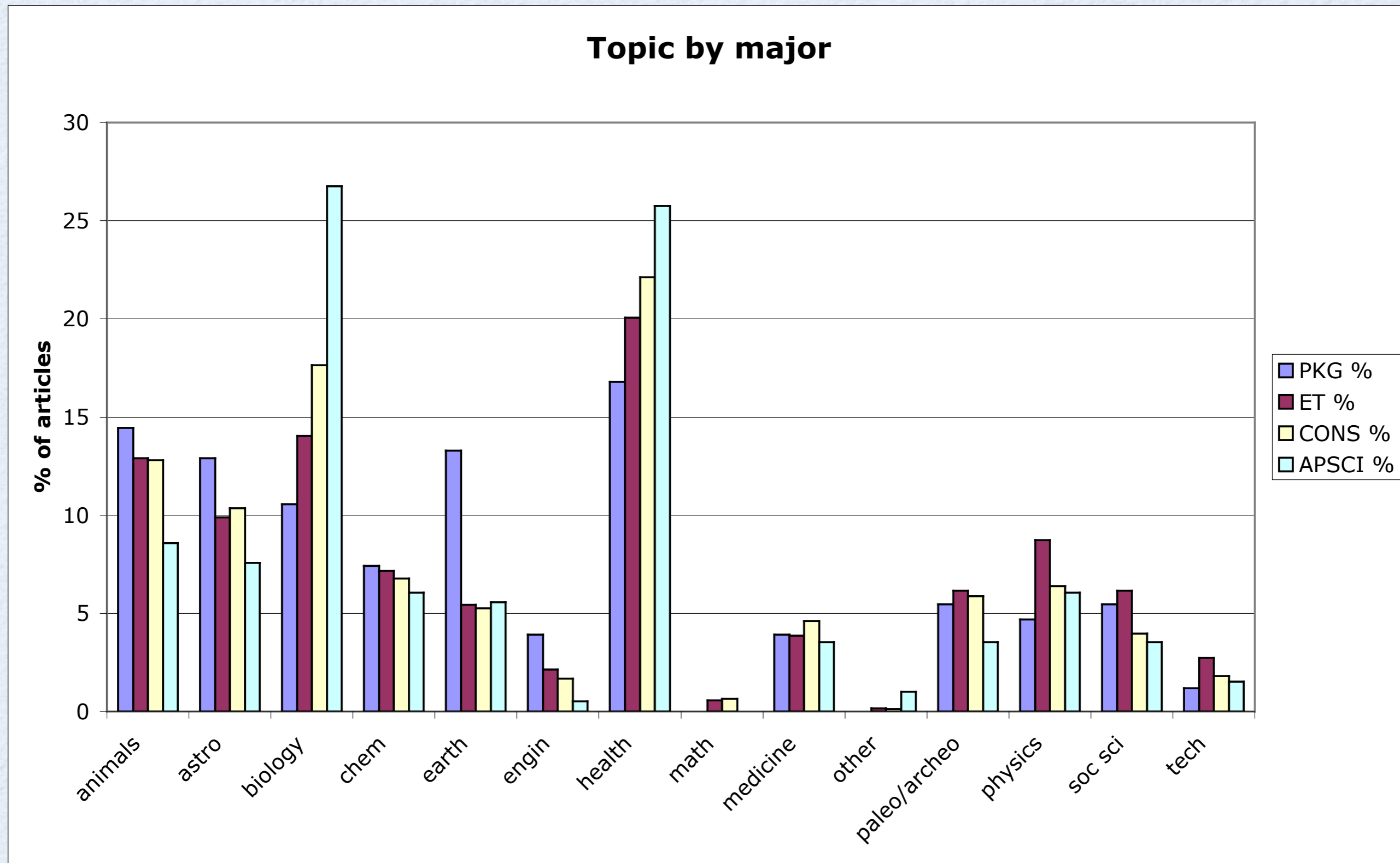
- Which topic might each major be likely to choose? (Construction, Engineering Technology, Packaging, Applied Science)

• Animals	• Math
• Astronomy	• Medicine
• Biology	• Other
• Chemistry	• Paleontology / Archeology
• Earth Science	• Physics
• Engineering	• Social Science
• Health	• Technology

HYPOTHESIS-BY MAJOR

- Construction majors will be likely to choose ???
- Packaging and ET majors: Engineering and Technology
- Applied Science: Bio, Chem, and Phys

RESULTS BY MAJOR



CONCLUSIONS

- Students pick articles connected to their personal lives more than their major
- Women were more likely to pick animals and biology topics, as were men
- Applied Science students were different than the rest of the class (more biology and health)

FURTHER ANALYSIS

- Major by gender? Numbers pretty small
- Compare likelihood of choosing a topic to likelihood of topic appearing in magazine
- Can we use this to help us guide more women into science?

THE NEW SCIENCE NEWS

- Biweekly, not weekly
- Longer issues
- More focus on website
- Daily / weekly emails available



NEW ASSIGNMENT?

- Assignment needs to change somehow
- Go biweekly with assignment?
- Use website one week, paper copy the next?
- Other change?

Thank you!