# The Construction and Analysis of a Science Story: A Proposed Methodology

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In contrast to our vast knowledge of how science and logical reasoning proceeds, we know precious little in any formal sense about how to make good stories. (Bruner, 1986)

# What Makes a Good Science Story?

- Delimitation
  - ‘Door opener’ (Kubli, 2005; Metz, et.al., 2007)
  - Literary
  - Based on history of science
- Norris, et.al. (2005) basic criteria
  - Eight essential elements of narratives
  - Kubli (2005) two additional elements
- Analyzed using these 10 elements❖

# Science Stories are Unique

- Two critical differences from stories in the humanities
  - Science story
    - Improve teaching and learning of science
  - Story in the humanities
    - To entertain
    - Communicate a message
- Not easy to accomplish explanatory purpose
- Desired response not only affective engagement❖

# Science Stories Raise Questions

- Incentive to raise questions
- Motivated by curiosity
- Satisfied only when explanation is presented and understood (Schwitzgebel, 1999)
- Explanation-seeking curiosity
  - “Why did that happen?”
  - “How is that possible?” (Schwitzgebel, 1999)
- Have students write questions upon hearing the science story❖

# A Case Study: Louis Slotin Story

- Used by author over two years with four laboratory class sections
- A true story …

# The Dragon’s Revenge


LOS ALAMOS
PROJECT
MAIN GATE
PASSES MUST BE
PRESENTED TO
GUARDS
POST
No. 1

# Louis Slotin (1910-1946)

# Funeral Sunday For Dr. L. Slotin

Funeral services will be held Sunday at 4.00 p.m. from the family residence, 125 Scotia st., for Dr. Louis Slotin who died Thursday in Sante Fe, N.M. Dr. Slotin was exposed to radiation May 21 while working at the Los Almos Atomic Research laboratory.

Burial will be in Sharey Zedek cemetery. Rabbi Frank Cantor Lev will officiate.

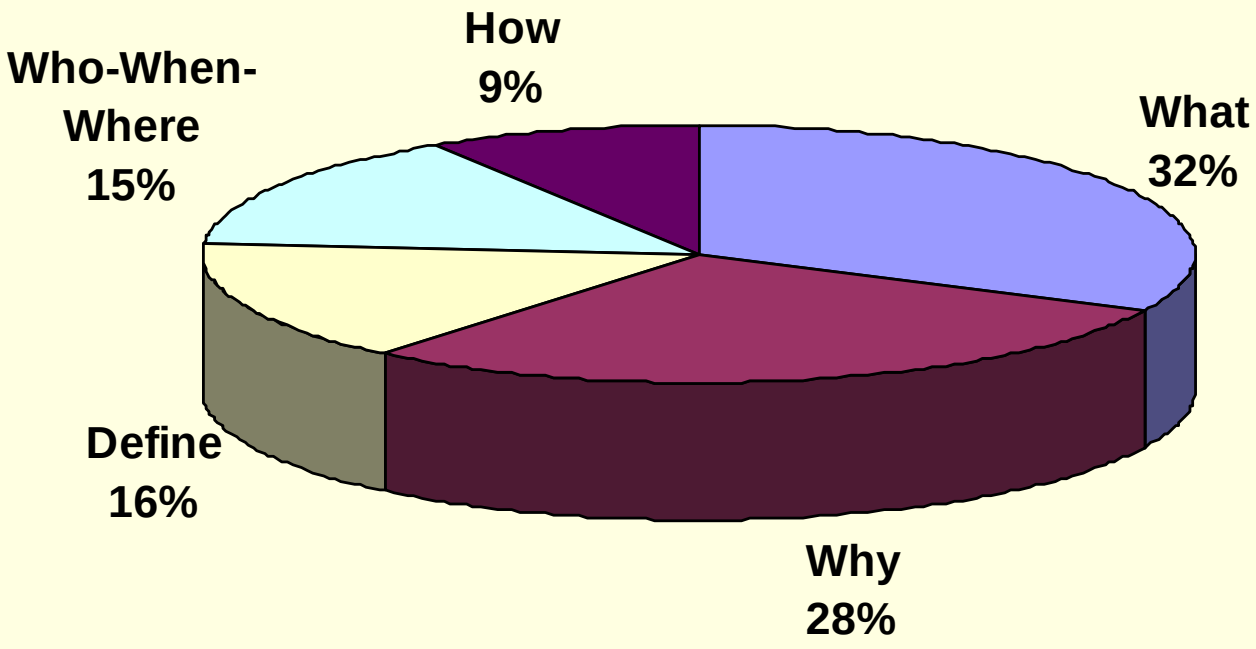
# Analysis of Story

- Historical accuracy
- Ten narrative features
  - Basic requirement for science stories❖

# Analysis of Responses: Type

- 104 responses from 37 students analyzed
- The following question types emerged
  a) Why did something happen (or did not …)
     "Why wasn't a more stable mechanism used…"
  b) How is something possible or how did they know
     "How did they know the radiations were made of neutrons?"
  c) What happened
     "What happened to the other people in the room?"
  d) What is (Define)
     "What are gamma rays?"
  e) When, Who, Where
     "Where did he go to school?"❖

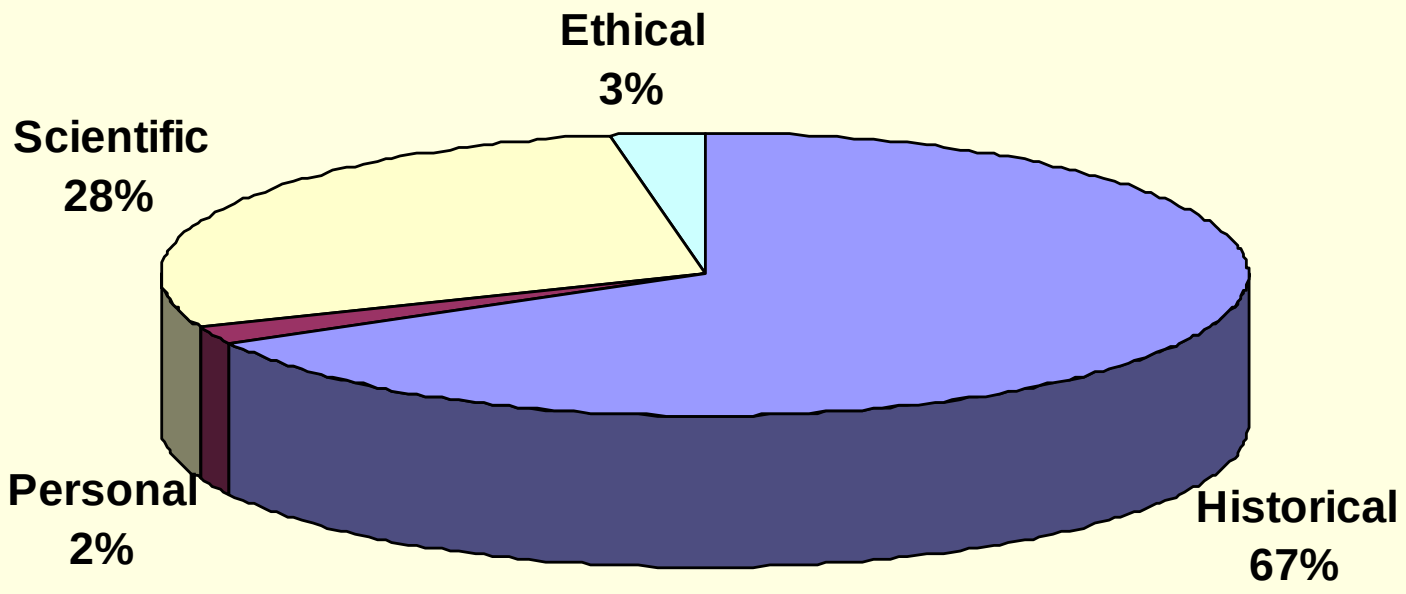
# Question-Type Results



# Analysis of Responses: Domain

- The following question domains emerged
  a) Scientific
  b) Historical
  c) Ethical
  d) Personal (egocentric)❖

# Question-Domain Results



# Discussion

- Explanation-seeking curiosity
  - Possible indicator of motivation to learn
- Scientific-Historical Balance
  - Roughly a 1 : 2 ratio
  - A story characteristic?
- Lack of egocentric and ethical questions
- Answering the questions
  - Historical details
  - Scientific concepts❖

# Conclusion

- Methodology for researching, writing, using, and testing stories
  - Systematic analysis
  - Student responses can be tested in an unobtrusive manner
  - Little time is required
  - Features of the story are revealed
- Should be integrated with systematic instructional approach❖

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