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### Research Methods & Applications

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# Research Methods & Applications

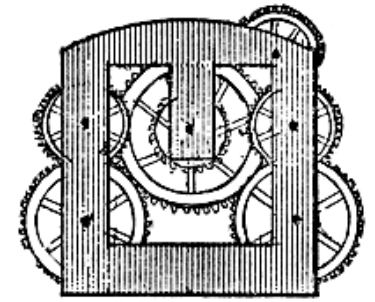
## Nancy J. Busch & Joan R. Giesecke

McMaster University Library

June 9, 2009



# Agenda



- 8:30 – 9:00 registration and networking
- 9:00 – 9:15 introductions, expectations and outcomes
- 9:15 – 10:15 overview of research process
- 10:15 – 10:30 break
- 10:30 – 12:00 small group work and discussion
- 12:00 – 1:00 lunch
- 1:00 – 2:30 methods and options
- 2:30 – 2:45 break
- 2:45 – 3:15 small group work and discussion
- 3:15 – 4:00 reporting results and ethical issues
- 4:00 – 4:30 wrap-up and evaluation

# Expectations and outcomes

- ➔ Purpose: This workshop is an introductory / intermediate look at research methods, practices and strategies. Participants will learn tools and techniques for turning interesting questions into researchable topics.
- ➔ Learning Objectives: 1) To build knowledge and skills in identifying a good research project. 2) To conceptualize a realistic research project that is likely to be completed and published.

To help us focus  
and evaluate



On the index card write 3 things you want to  
learn today

1

2

3

# Topics we will explore today include

- what you know about research
- what you need to know about research
- research trade-offs
- collaboration
- psychology of writing research & publishing
- keeping your momentum
- how and when to let go
- researching moving targets
- evaluation verses research

# Overview of the research process



*Nothing is interesting if you're not interested. - Anonymous*

“Research is formalized curiosity. It is poking and prying with a purpose.”

- Zora Neale Hurston



“If we knew what it was we were doing, it would not be called research, would it?”

“We can't solve problems by using the same kind of thinking we used when we created them.”

- Albert Einstein



“ ... a properly framed question contains the answer.”

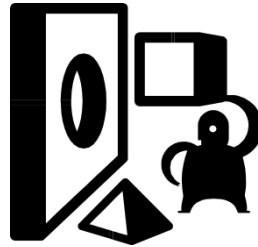
- Earl Babbie, The Practice of Social Research

What sets good research apart is usually not one's cleverness in finding the answer but one's skill in asking the question and phrasing it carefully and well.

- paraphrase attributed to E.O. Wilson

# Purposes of research

- exploratory
- descriptive
- analytical
- predictive



# Units of analysis

- individuals
- groups
- organizations
- social artifacts



# Time dimension

- cross-sectional studies
- longitudinal studies
  - trend studies
  - cohort studies
  - panel studies

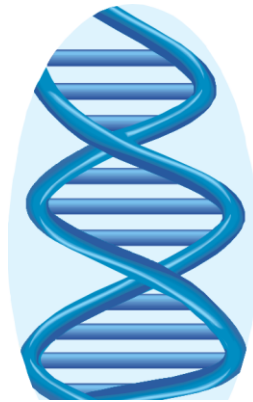


# Research

- originates with a question or problem
- requires a clear articulation of a goal
- follows a specific plan or procedure
- usually divides the principal problem into more manageable sub problems
- is guided by a specific research problem, question, or hypothesis

# Research ...

- accepts certain critical assumptions
- requires the collection and interpretation of data in attempting to resolve the problem that initiated the research
- is, by nature, cyclical; or more exactly, helical

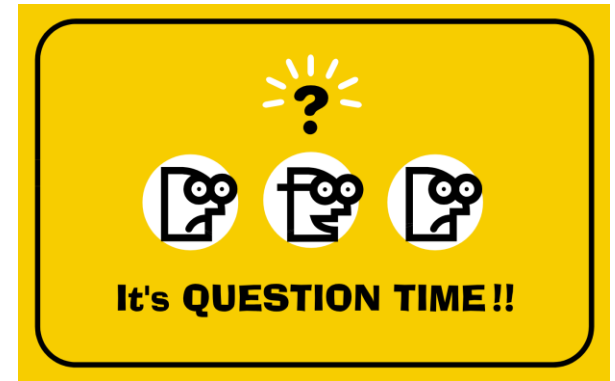


Leedy, P.D. & Ormrod, J.E. (2005). Practical research: Planning and design (8<sup>th</sup> ed.). New Jersey: Merrill, p.2-6.

# Foundations for good research

- clear purpose
- relevant
- manageable
- original
- accurate
- credible
- applicable
- objective
- ethical
- cautious

# Research elements



- problem or objective: what are you studying and why?
- review of past studies: what, if anything, has been done on this topic before?
- subject of study: from whom or what will you collect data?
- measurement: what are the key variables and how will you define and measure them?



# Research elements ...

- data-collection: how will you actually collect the data for your study?
- analysis: how will you make sense of and report your findings?
- schedule: what is the timeline for your study?
- budget: what are the estimated direct and indirect costs of your study?

# Research productivity among librarians – factors leading to publications

- motivation
- mandate
- mentoring
- research agenda
- education
- skills
- support
- time
- culture



From Fennewald's Penn State Library Study

# Scholarship of Canadian Research Library Librarians

- more than 50% required or encouraged to participate in scholarly activities
- formal publications most important means for obtaining tenure and promotion
- librarians pursue a rich array of scholarly interests
- support for scholarship is extremely variable
- most scholarly activity generated with benefit of leave
- article includes additional areas/topics for research

# Break



*The most difficult thing in science, as in other fields, is to shake off accepted views. - George Sarton*

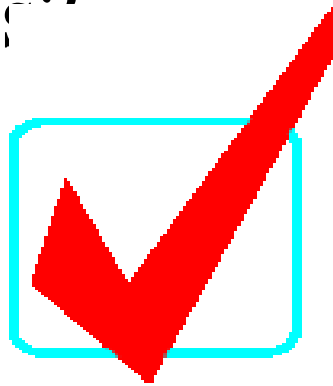
# Small group work – Research proposal brainstorm



- form small groups of 7 or 8
- select a facilitator and a recorder
- work through questions 1-5 (handout)
- ask clarifying questions
- everyone participates

# Touch base

- issues and questions relating to content?
- small group work observations?
- other questions?



# Lunch



The whole of science is nothing more than a refinement of  
everyday thinking.

-- Albert Einstein

# Methods and Options

- planning the research study
- literature review
- concept and literature mapping
- research dilemmas
- quantitative, qualitative and mixed methods
- mixed method example
- reporting results
- ethical issues





# Research Methods by Discipline

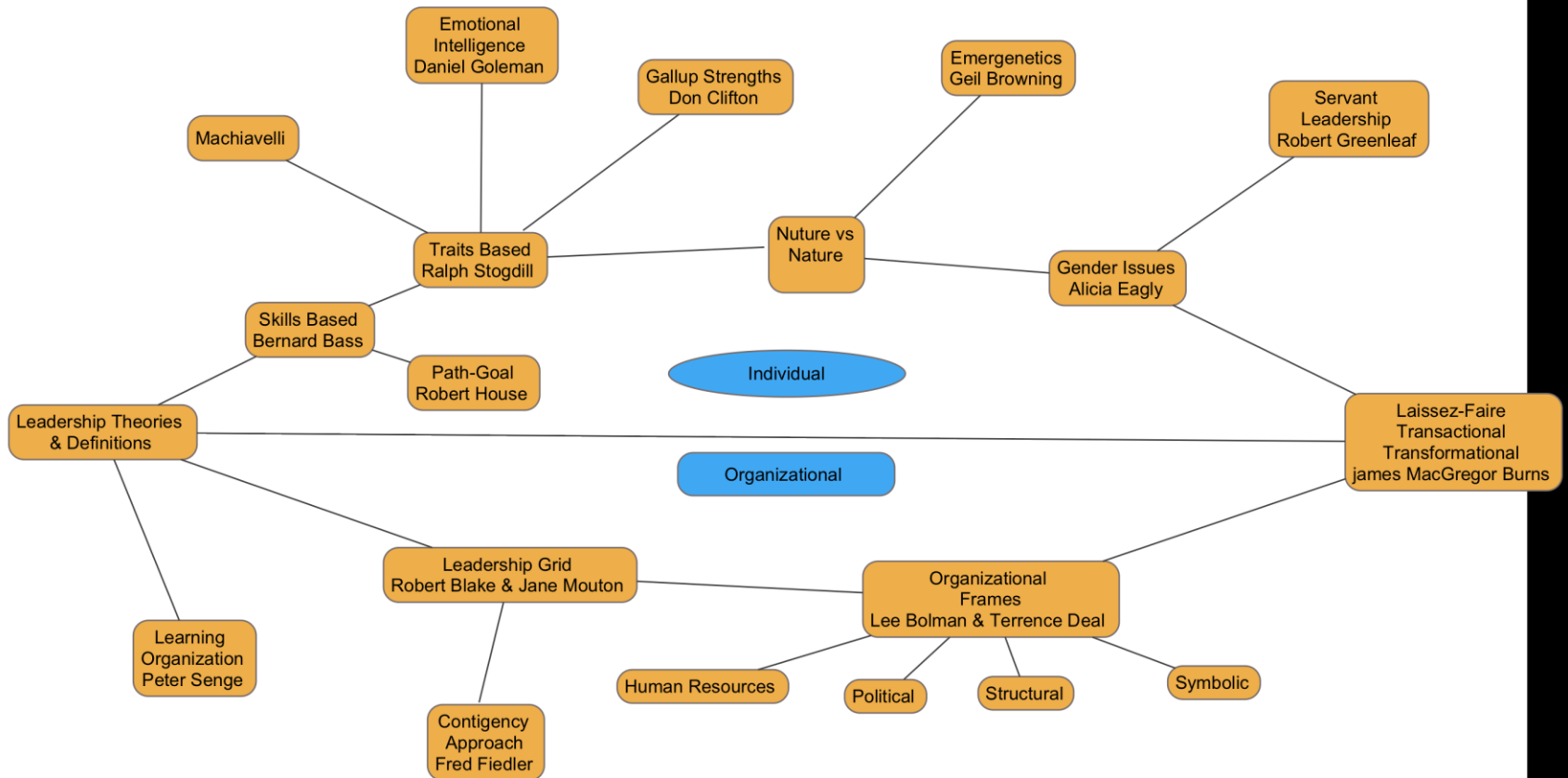
<b><u>Discipline</u></b>	<b><u>Humanities</u></b>	<b><u>Social Sciences</u></b>	<b><u>Sciences</u></b>
Areas of study	Literature, Art, Philosophy, Dance, Film Music, Religious Studies	Anthropology, Political Science, Psych, Sociology, Criminal Justice, Economics, Linguists	Geography, Geology, Biology, Chemistry, Engineering, Physics, Computer Science, Nursing
Areas of Inquiry	Text, artifacts, People create, Meaning and values	Meaning and values, Interaction	Physical World
Role of Investigator	Interpret and Make meaning	Develop theories, Identify patterns	Investigate and report
Methodology	Study of manuscripts, Primary materials, Literary works, editions, Word analysis, patterns, Data mining of large text, Databases	Qualitative methods, Quantitative methods	Scientific method

# Literature review



- share results of other relevant studies
- extend prior studies, “fill in gaps”
- provide framework for your study
- provide benchmark for comparison with other findings
- establish theoretical framework

# Leadership Literature Map



*A theory is a statement of relations  
Among concepts within a set of  
boundary assumptions and constraints.  
It is no more than a linguistic device  
used to organize a complex empirical  
world. - Samuel B. Bacharach*

# Theory and research methods

Theory	New	Intermediate	Mature
Research questions	Open-ended inquiry about an area of interest	Propose relationships between new and established concepts	Questions or hypotheses relating to established constructs
Types of data	Qualitative	Qualitative and quantitative	Quantitative
Objective	Identifying patterns	Exploratory testing	Formal hypotheses testing

Adapted from Zammuto 2008 and Edmonson & MacManus 2007

# A Three-Horned Dilemma --

Why no method is perfect

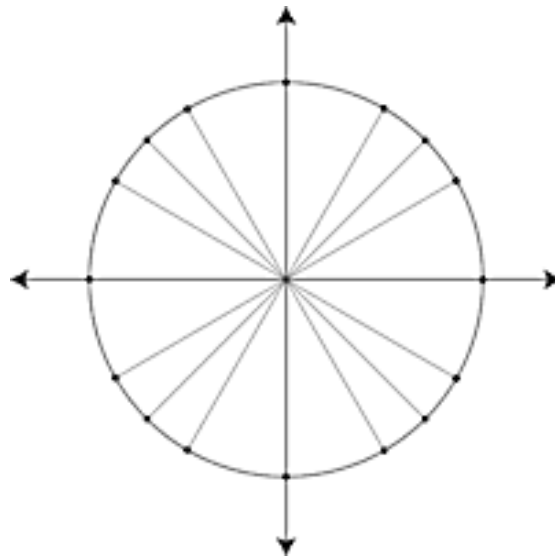
- Different methods have different strengths:
  - rigor
  - relevance
  - generalizability



*All research strategies are seriously flawed.* McGrath (1982)

# Choices on strategies

- Obtrusive to unobtrusive
- Universal behavior to specific behavior systems



# Conflicting efforts

- you can not maximize all of the following:
  - ✓ generalizability – with respect to populations
  - ✓ precision – in control and measurement of variables
  - ✓ context – real verses no context



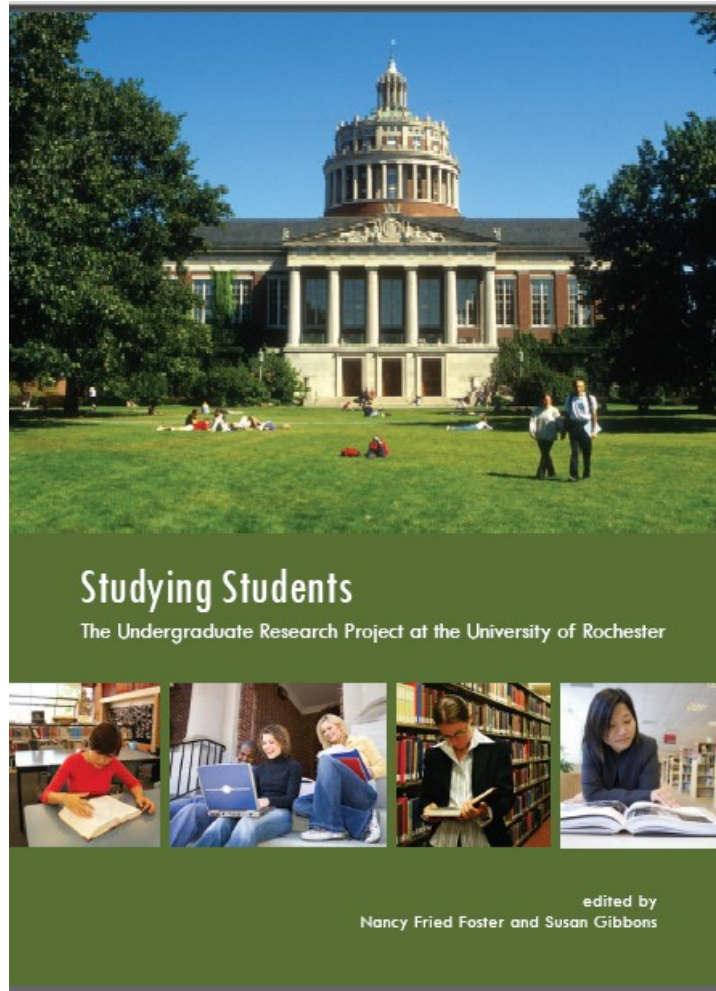


# Research methods, questions, dilemmas

Research Methods	Research Question	Research Dilemma
Historical Methods	What was the role in society of circulation music libraries in 19 <sup>th</sup> century France?	High in relevance
Case Study	What is the impact of changing promotion and tenure requirements on the retention of faculty in library X?	High in relevance
Participant/Observation	How well do reference librarians in library X respond to patron inquiries compared to the ACRL Behavioral standards for reference librarians?	High in relevance
Field Studies (anthropology)	How accurate are the answers given by reference librarians in 3 similar libraries?	High in relevance
Focus Group and/or Key Informant Interviews	What services should a 21 <sup>st</sup> century Engineering library provide to University students and Faculty?	High in relevance
Surveys	How well does the libraries organizational climate promote productivity?	High in generalizability
Bibliometric Studies	How well does Communication Abstracts index and journal needed and used by Communication Studies faculty?	High in generalizability
Grounded Theory	How do decision-making models differ?	High in generalizability
Lab Experiments	How well do the new search engines for the catalog aid discovery by students?	High in rigor
Content Analysis	How have librarians been portrayed over time in film	High in rigor

# Rochester undergraduate research project

- Research begun Fall 2004
- Led by Anthropologist Nancy Fried Foster
- Used ethnographic research techniques
- Pre-study: faculty interviews
- Objectives broadened to gain broad insight into student lives
- More than 100 students participated
- More than 1/3 of library staff involved

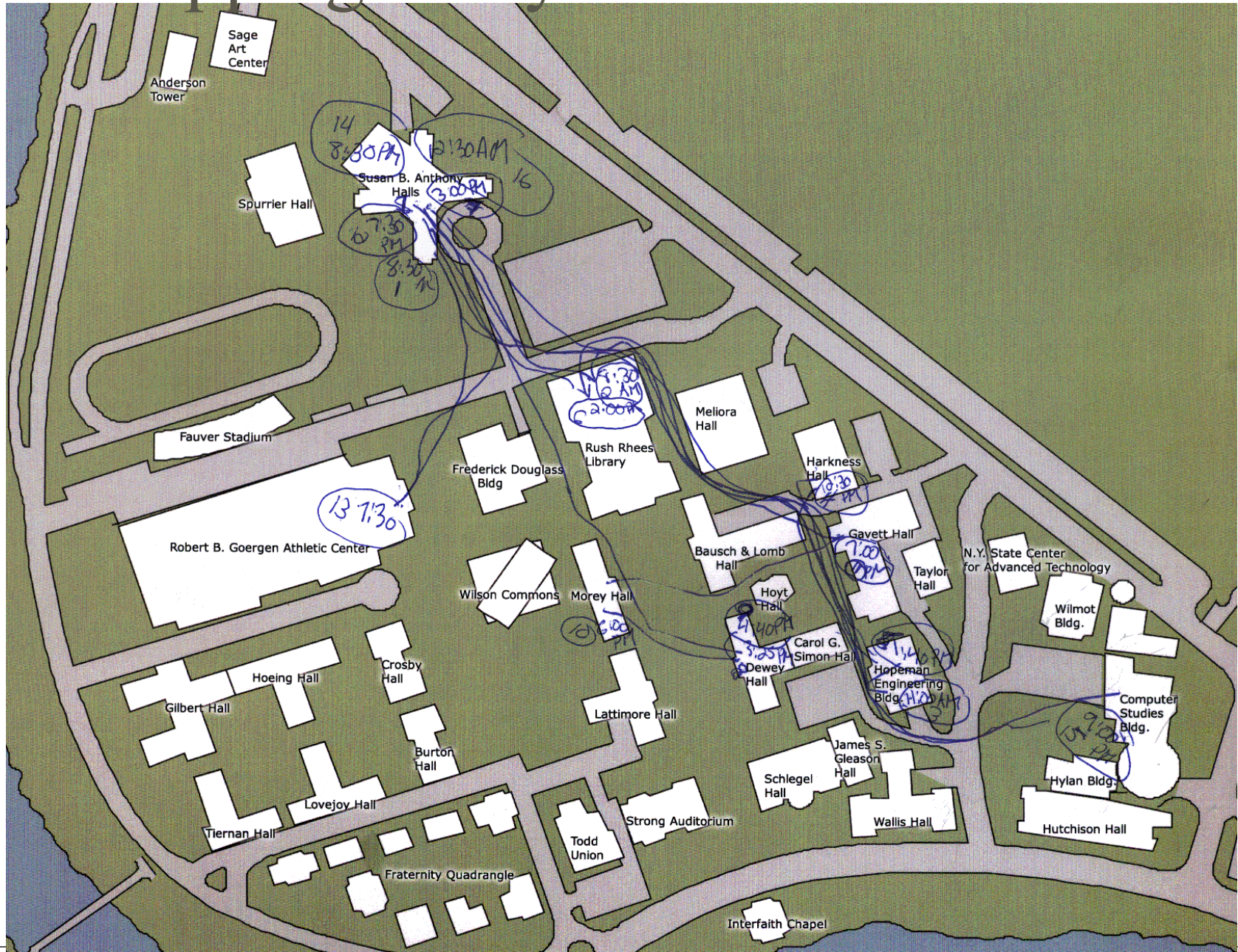


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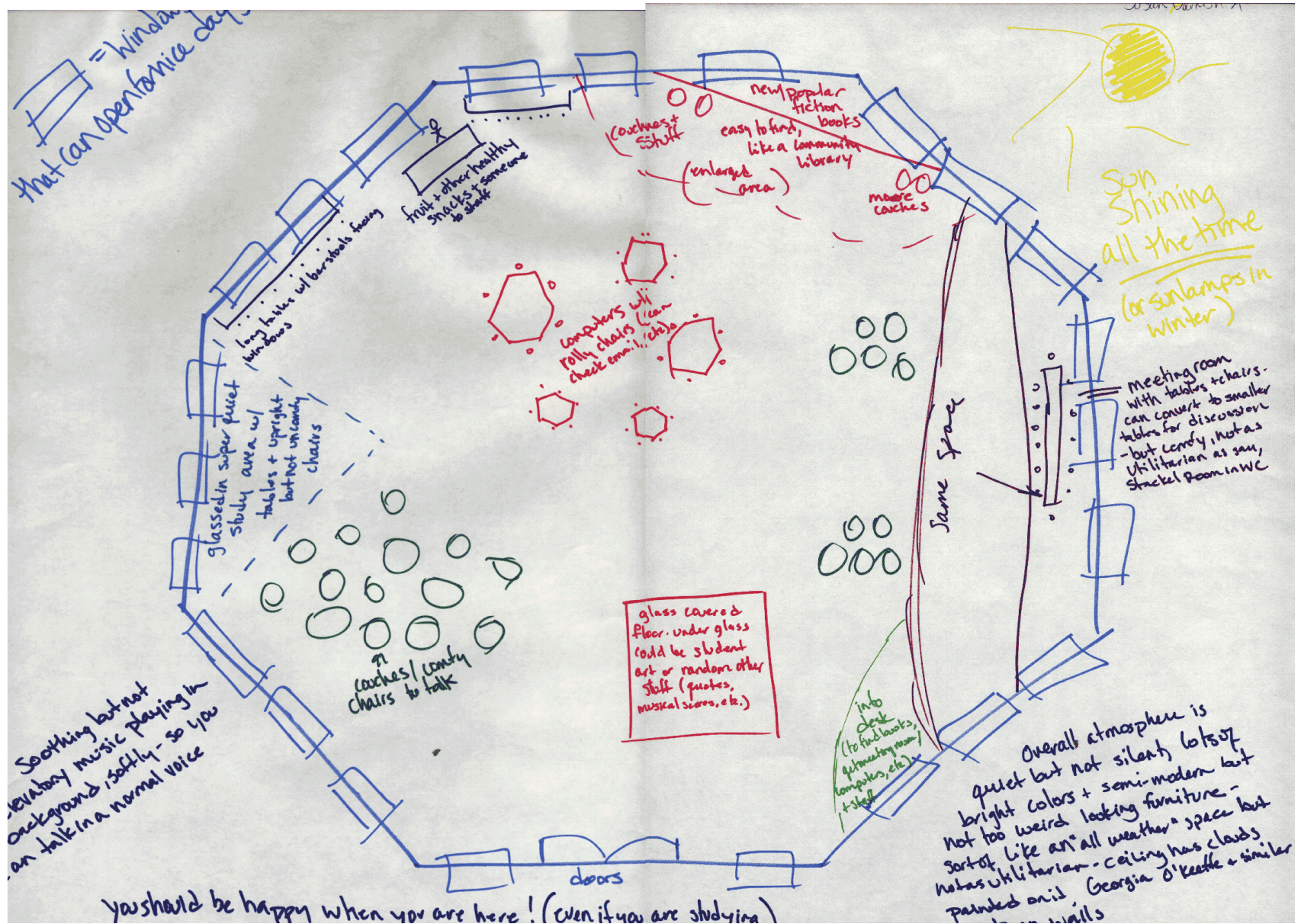


# Mapping Diary – Foster & Gibbons





# Design Charrette - Foster & Gibbons



# Web site usability – Foster & Gibbons

[University of Rochester >](#)  
River Campus Libraries

scrolling  
news  
(link)

## Finding

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Course Resources and Reserves

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hours

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Statue of Minerva, Rush Rhees Library

## News and Events



**Library Servers**  
The following servers are temporarily unavailable.  
• Voyager

Finals  
schedule



**Writing a research paper?**  
Can't get started on your paper? Way too many sources? Imagine yourself sitting down with a sympathetic reference ...



**Senior Thesis Exhibitions--Russell Wyner--April 13 to 21** Five graduating studio art majors from the Department of Art and Art History will be installing successive exhibitions ...

[More News and Events](#)

## Giving

[Friends of the Library](#)  
[Programs and Development](#)

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# *Informing Innovation: Tracking Student Interest in Emerging Library Technologies at Ohio University – Char Booth*



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# Informing Innovation - Booth

- *The modern library can develop a range of personalizable, practical tools adaptable to diverse student learning environments, but will only succeed if it does so based on insight and direct user feedback. Library 2.0's prescriptive utopianism has given way to an emphasis on technology as a means rather than an end. Social, mobile, and dynamic tools can be as capricious as they are beneficial, and it is not advisable to assume that the range of products commonly described as '2.0' are innately needed, anticipated, supportable, or effective. [Booth, p.102]*



# Break



A person who can identify the inevitable tradeoffs in inquiry and relax gracefully having done so is a seasoned inquirer.

-- Karl E. Weick

# Small group work – Research proposal



- same small groups of 7 or 8
- select a facilitator and a recorder
- work through question 6 (handout)
- ask clarifying questions
- everyone participates

# Reporting results

- audience
- finding the ‘story’ – making sense
- formatting considerations
- methods used
- limitations
- copy of instrument



# Reporting cautions

- don't assume facts speak for themselves
- don't make unwarranted claims or conclusions from the evidence
- acknowledge findings that are debatable and controversial
- consider alternative explanations
- recognize limitations of your research

*All animals are able to think, and many can use tools. What sets humans apart is our ability to deceive ourselves.” Anonymous*

# Ethical and other issues

- confidentiality and anonymity
- reporting and interpretation
- voluntary participation
- informed consent
- risk of harm
- right to service
- IRBs
- web-related issues

# IRBS -- Belmont Report

- <http://www.youtube.com/watch?v=W7sfIA1dIGQ>
- [http://videocast.nih.gov/ram/belmont\\_tribute.ram](http://videocast.nih.gov/ram/belmont_tribute.ram)



# Wrap-up

- Questions and comments?



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Joan R. Giesecke [jgiesecke1@unl.edu](mailto:jgiesecke1@unl.edu)

# My research to-do list

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_

6 \_\_\_\_\_

7 \_\_\_\_\_

8 \_\_\_\_\_

9 \_\_\_\_\_

10 \_\_\_\_\_



# My research collaborators

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_

