Ensuring Integrity of the Research Process: Nurses' Experiences and Insights

Presentation and Panel Discussion

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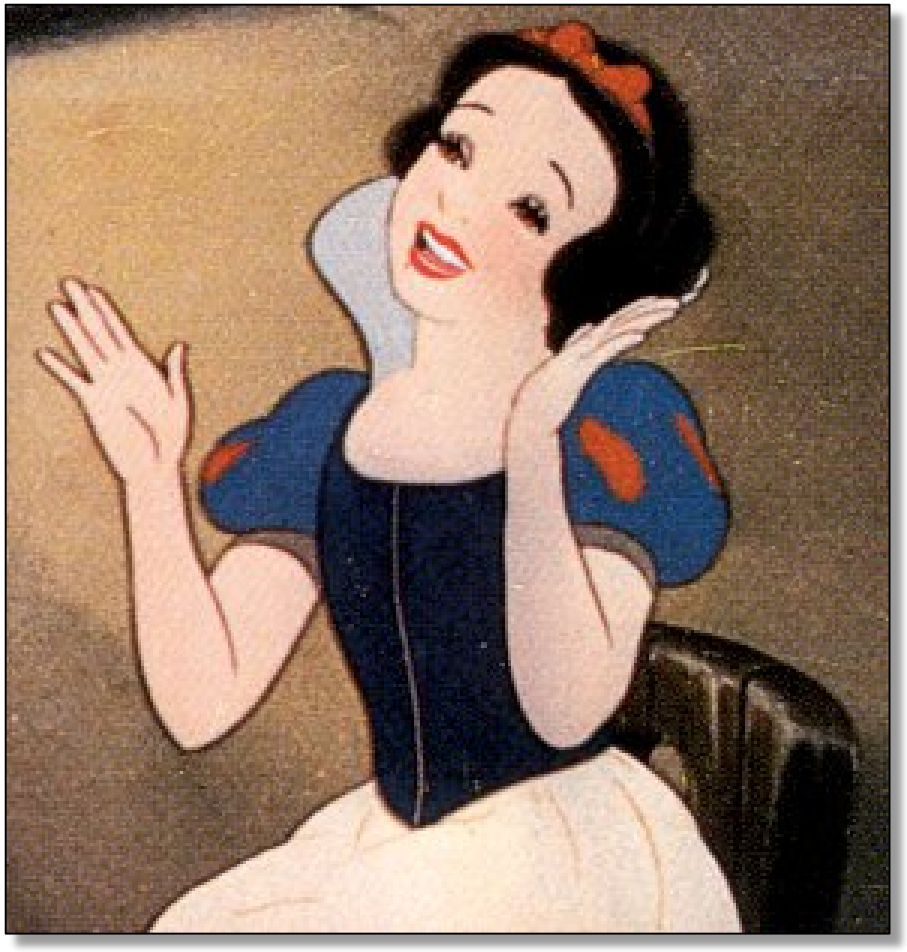
Pennsylvania Hospital

Penn Medicine

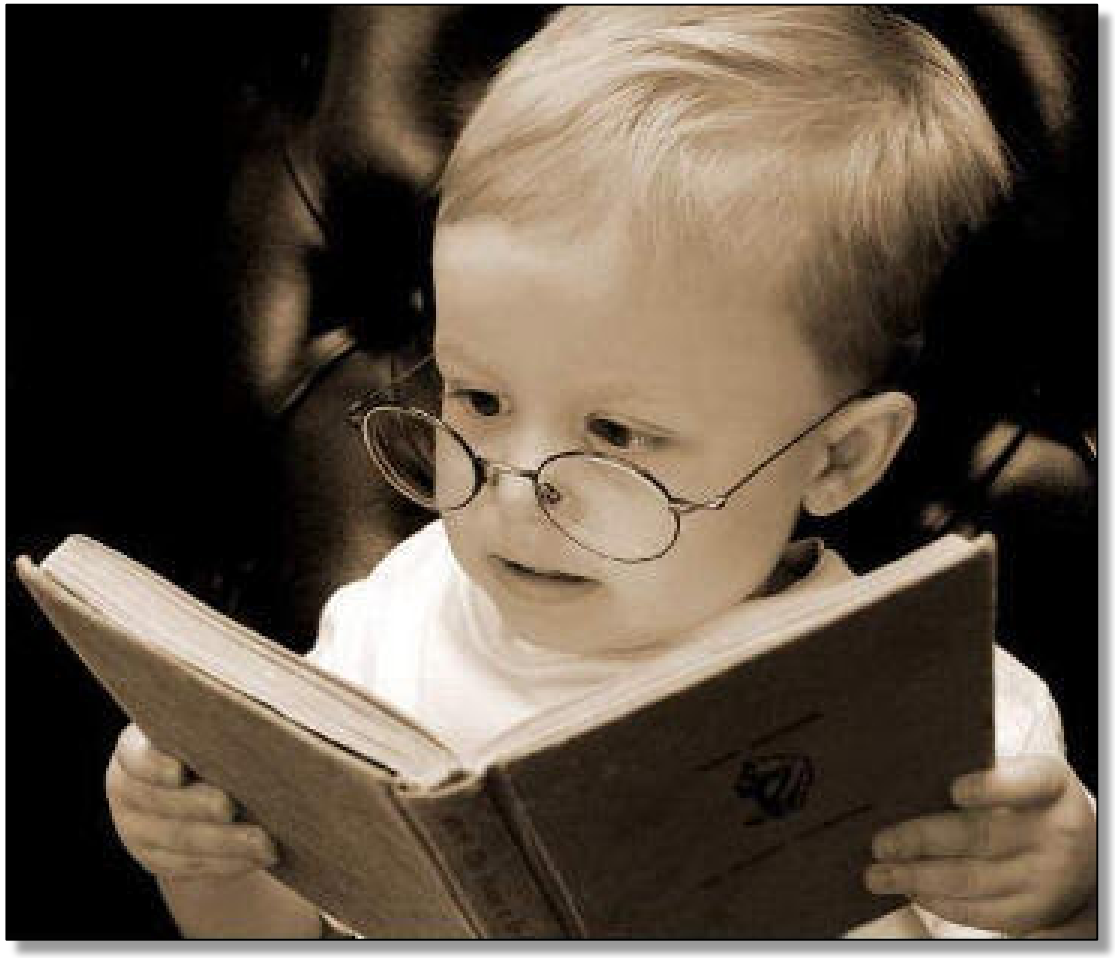
Special

http://www.greenwicharts.org/images/swan2.jpg

Perfect



Gifted



http://www.parentsprecinct.com/reading/

Lucky

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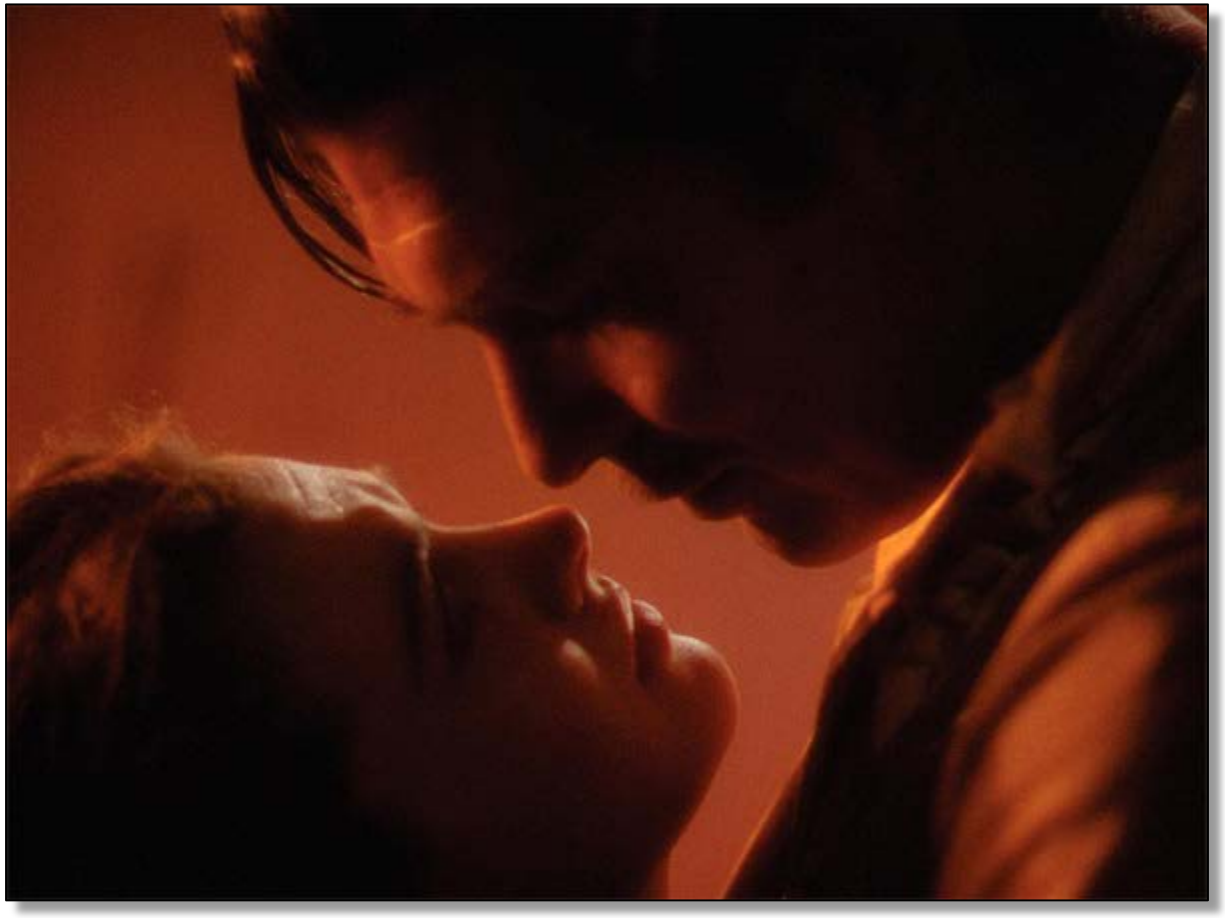
Passion



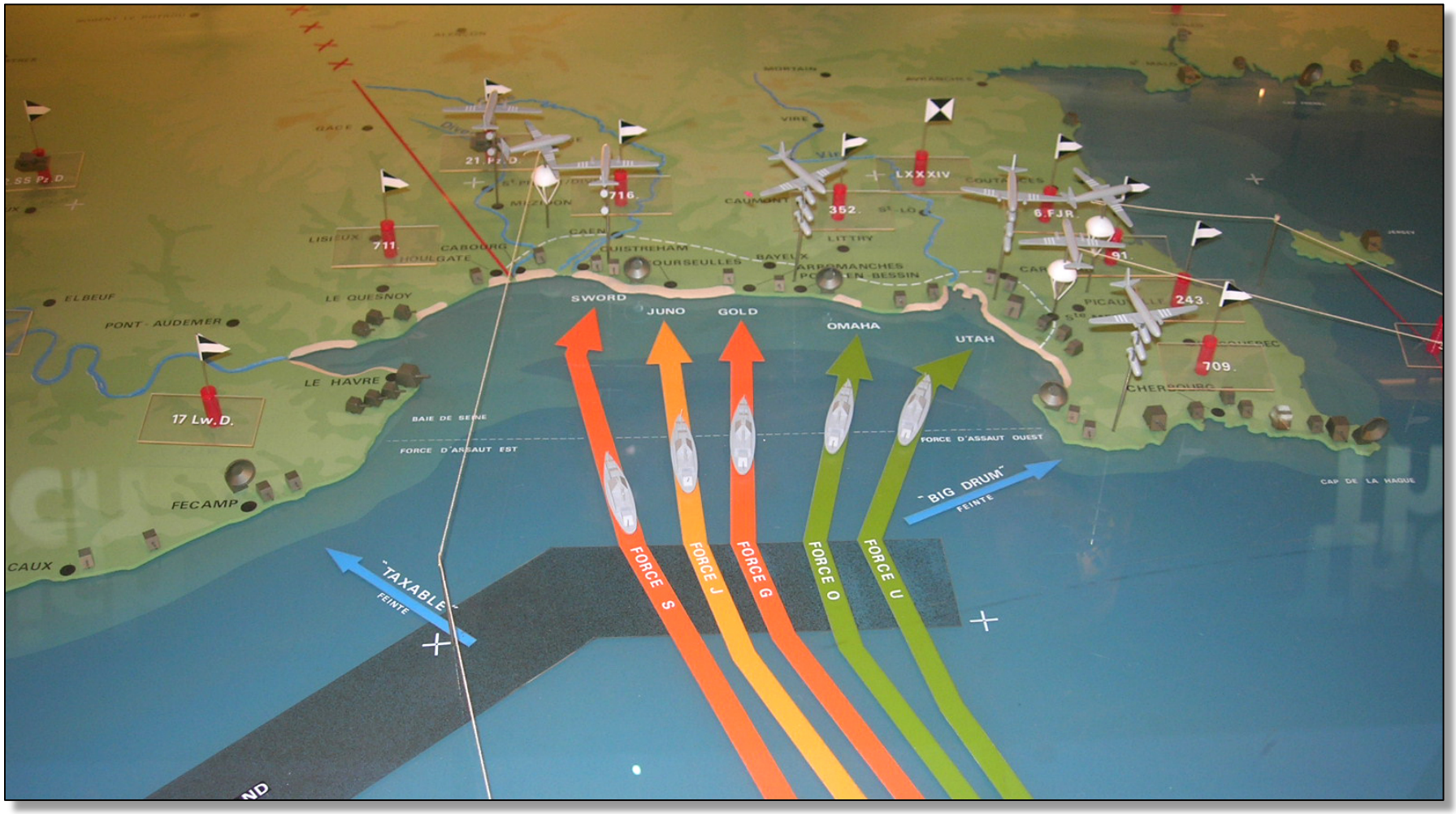
Tenacious

www.gettyimages.com/detail/6529-000222/Photonica

Team

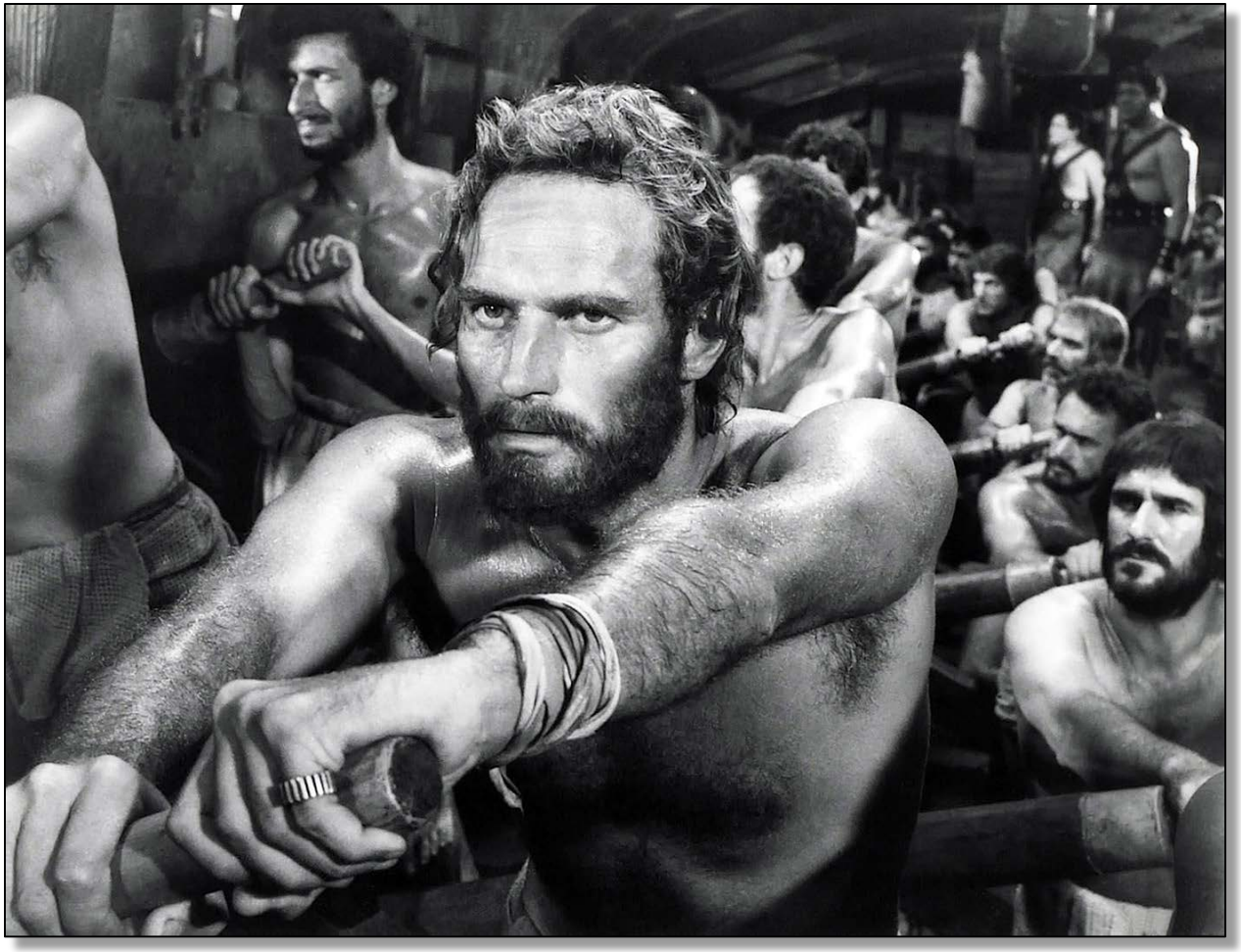
http://www.theargonath.cc/pictures/fsmp/fsmp17.jpg

Plan



http://patandlewtravel.files.wordpress.com/2007/06/dscn0802-invasion-map-blog.jpg

Hard work



http://www.doctormacro.com/Images/Heston,%20Charlton/Annex/NRFPT/Annex%20-%20Heston,%20Charlton%20(Ben-Hur)_NRFPT_09.jpg

Bad reviews

http://cockoonest.wordpress.com/2010/04/14/765/

Team

http://www.thinkchristian.net/wp-content/uploads/2009/11/the-wizard-of-oz.jpg

Revise

http://www.buzzfeed.com/reddit/osmosis-resubmit-from-imgur

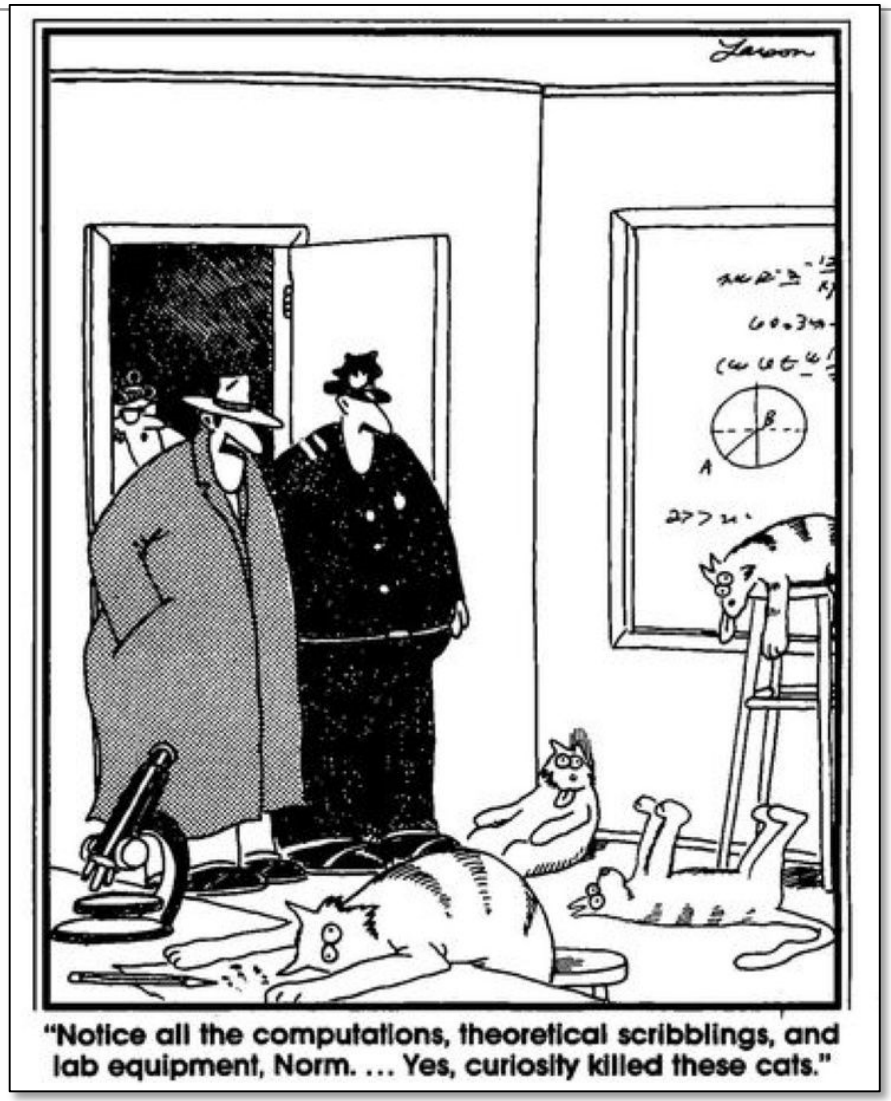
Journey is Not a Straight Line

http://autopinionsbyvolk.files.wordpress.com/2009/11/transfagarasan_twisty_road.jpg

Successful

Objective

- **Describe the steps in the research process**
- **Identify the significance of each stage in the development a research study**



RESEARCH PROCESS

Research Process

I. Research problem

An enigmatic, perplexing, or troubling condition

II. Problem statement

A statement articulating the research problem and indicating the need for a study

III. Purpose

The researcher's summary of the overall study goal

Research Process

IV. Research aims or objectives

The specific accomplishments to be achieved by conducting the study

V. Research questions

The specific queries the researcher wants to answer in addressing the research problem

VI. Hypotheses

The researcher's predictions about relationships among variables

Research Process

VII. Research design

The research question determines the type of design you can use

The blueprint for the collection, measurement, and analysis of data

Design integrates the different components of the study in a coherent and logical way to effectively address the research problem

Research Process

VIII. Data Collection

The process of gathering and measuring information on variables of interest, in an established systematic fashion

IX. Data analysis

The process of systematically applying statistical and/or logical techniques draw inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data

Research Process

X. Conclusion

Restatement of the thesis and a summary of the evidence

XI. Dissemination

A planned process for the flow of information from a source that is tailored and targeted for an intended and identified audience

RESEARCH PROBLEM

Sources of Research Problems

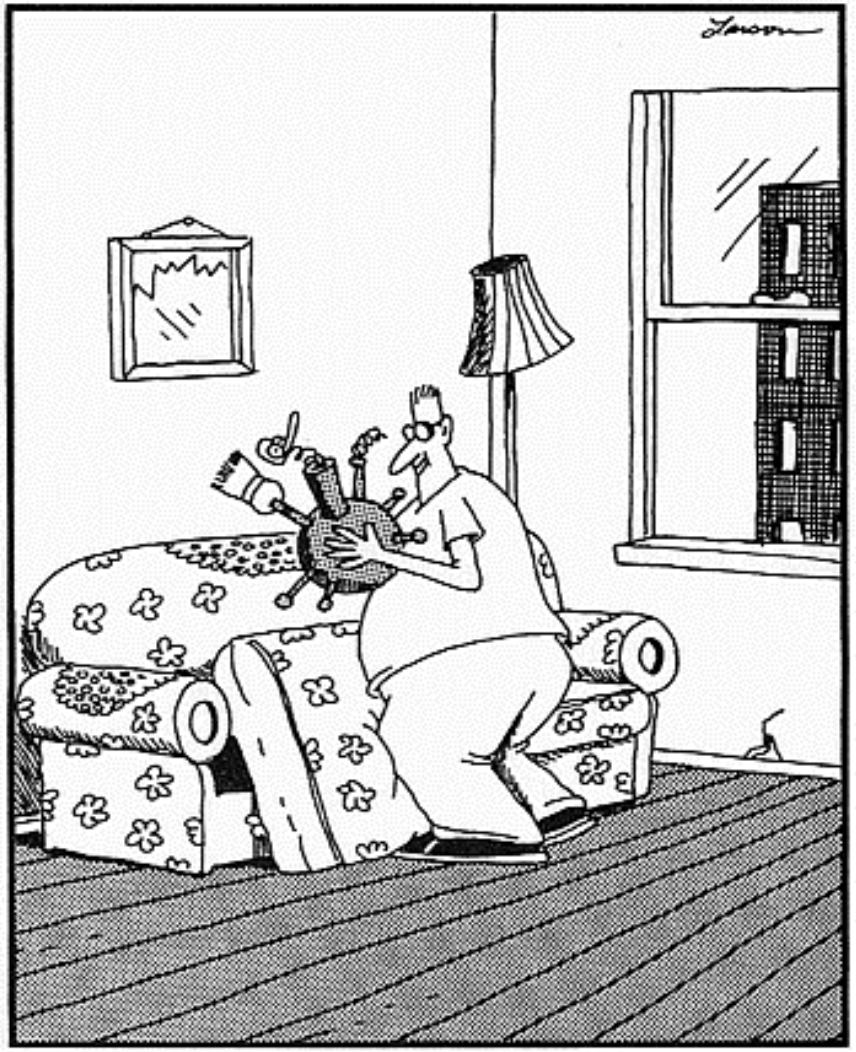
- Experience and clinical fieldwork
- Social issues
- Nursing literature (including theory)
- External sources

Developing Research Problem

- **Select a broad topic area**
  - Should broad enough to include central concerns (e.g., patient compliance, caregiver stress)
- **Narrow the topic—ask questions to help focus the inquiry**
  - Should be narrow enough to serve as a guide to study design

Evaluating Research Problem Statements

- **Should identify the nature, context, and significance of the problem**
- **Should be feasible (researchable)**
- **Should be narrow enough to serve as a guide to study design**
- **Interest to the researcher**



Edgar finds his purpose.

PURPOSE

Retrieved from: https://paddycorry.files.wordpress.com/2013/03/farside-edgar-finds-his-purpose.gif

Purpose Statement-Qualitative Studies:

- **Suggests, through use of verbs, the nature of the inquiry (e.g., to describe…, to discover…, to explore…)**
- **Indicates the group, community, or setting of interest**
- **Indicates the research methodology or tradition (e.g., grounded theory, ethnography)**
- **Identifies the central phenomenon**
- **Exemplar: The purpose of this descriptive qualitative study was to explore family management among survivors of childhood brain tumors and their families**

Purpose Statement-Quantitative Studies:

- Suggests, through use of verbs, the nature of the inquiry (e.g., to test…, to compare…, to evaluate…)
- Indicates the population of interest
- Identifies key study variables, the independent and dependant variables
- Suggests a possible relationships among variables
- Exemplar: The purpose of this randomized clinical trial was to investigate the analgesic effects of oral sucrose as a pre-procedural intervention prior to routine immunizations in infants at two and four months of age

RESEARCH QUESTION AND HYPOTHESIS

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Clinical Questions

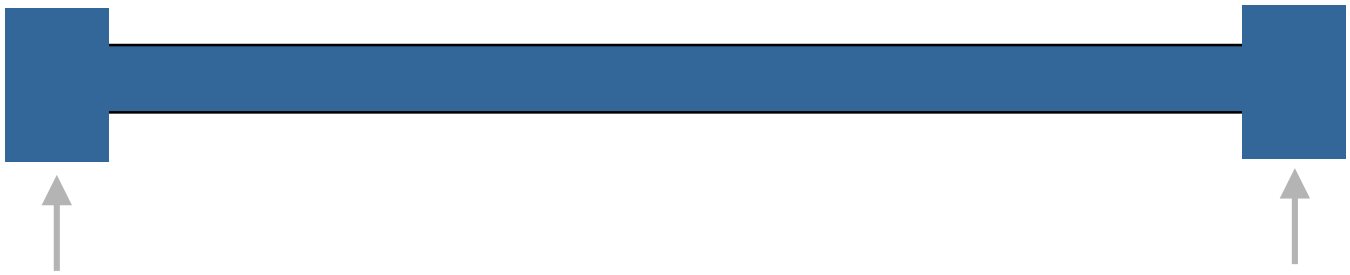
Clinicians ask clinical questions when they do not have all the information they need to make the best decisions about patient care.

Retrieved from: http://michelleeroberts.weebly.com/week-4-role-of-a-clinical-nurse-educator.html

Kinds of clinical questions

- **There are different kinds of clinical questions:**
  - Background vs. Foreground
  - Qualitative vs. Quantitative
- **The kind of question you are asking will guide the type of evidence for which you search**

Kinds of clinical questions: Background vs. Foreground



Background questions usually ask for general or factual information. They are a foundation for foreground questions

Foreground questions are usually relational and do not have generally accepted answers. Specific knowledge to inform clinical decisions

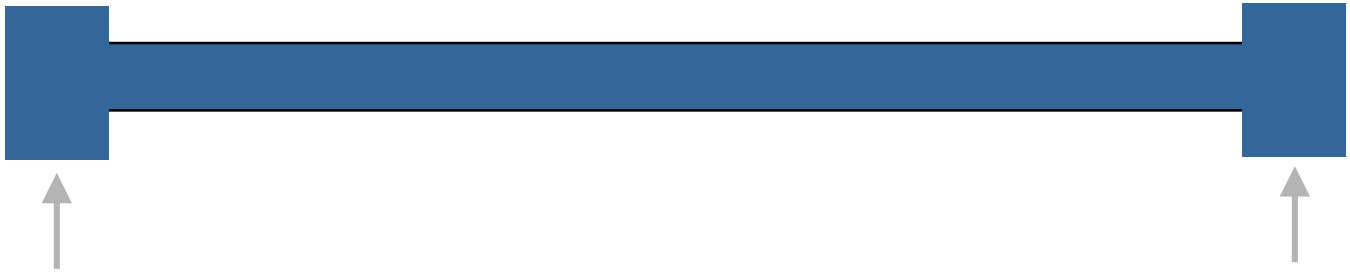
Background Question Exemplars

- **What is the pathophysiology of heart failure?**
- **What are risk factors for decubitus ulcers?**
- **At what age do children usually speak in complete sentences?**
- **How does Lasix work as a diuretic?**
- **Generally has two components**
  - Who what when where
  - Verb plus area of interest

Foreground Question Exemplars

- **These questions are answered from scientific evidence about diagnosing, treating, or assisting patient.**
- **What is the most effective intervention for preventing sternal wound infections after heart surgery?**
- **Does self-management among adults with diabetes improve their glycemic control?**

Kinds of clinical questions: Qualitative vs. Quantitative



Questions that focus on the meanings and interpretations of human phenomena or experience of participants in a study; e.g., case studies and interviews.

Questions that ask about the relationship between or among measurable variables; e.g., experiments (clinical trials) and surveys.

Qualitative Research Questions:

- **In qualitative studies, pose queries linked to the research tradition:**
  - **Grounded theory: *process* questions**
  - **Phenomenology: *meaning* questions**
  - **Ethnography: *cultural description* questions**

Examples of Qualitative Questions

- **What is the experience of having cancer like for children?**
- **How do older women respond to a residential move to congregate living facilities?**
- **What are the differences in nurses' work culture between acute care and home care agencies?**

Quantitative Research Questions:

- **Are sometimes direct rewordings of statements of purpose, worded as questions**
- **Formatted utilizing PICO**
  - Population
  - Intervention
  - Comparison
  - Outcome
- **Pose queries about the relationships among variables**

A second look

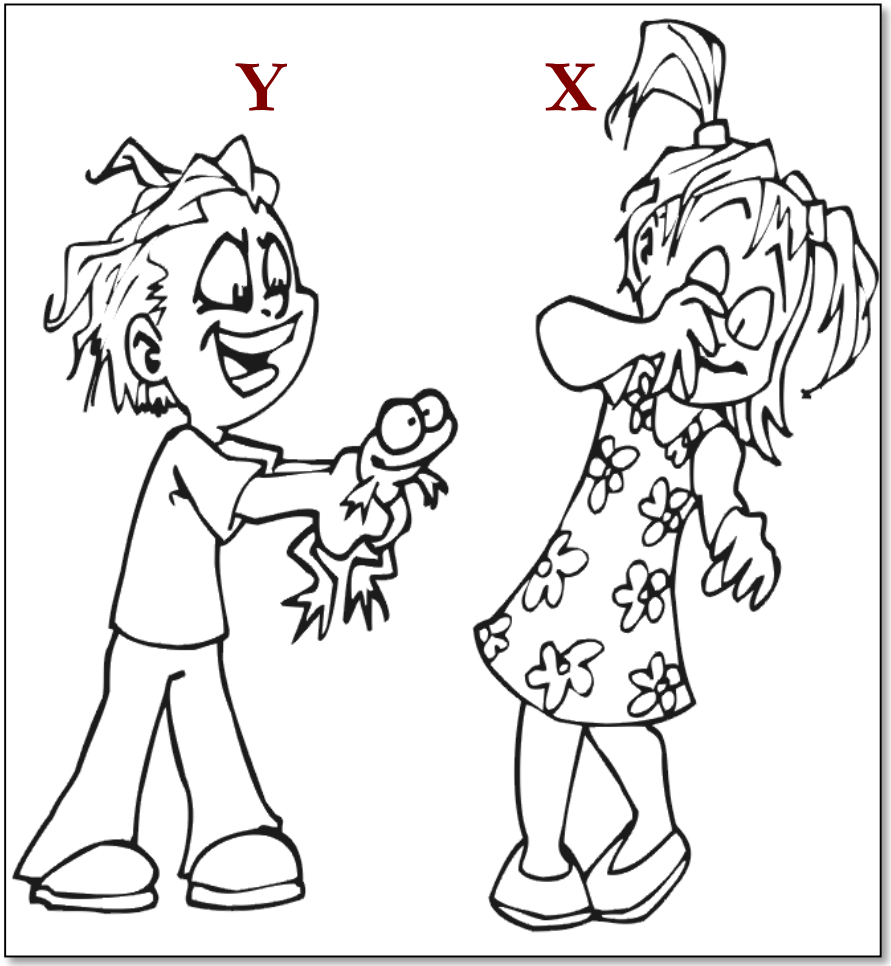
Purpose-Quantitative Studies:

- Suggests, through use of verbs, the nature of the inquiry (e.g., to test…, to compare…, to evaluate…)
- Indicates the population of interest (P)
- Identifies key study variables, the independent (I) and dependant variables (O)
- Suggests a possible relationships among variables
- The purpose of this randomized clinical trial was to investigate the analgesic effects (O) of oral sucrose as a pre-procedural intervention prior to routine immunizations (I) in infants at two and four months of age (P).

Examples of Quantitative Questions

- **What is the effect of using a new assessment tool (I) to predict likelihood of falling to frequency and severity of falls (O) in patients undergoing hip replacement (P)?**

- **Will sucrose (I) decrease behavioral pain response during routine immunizations (O) in an infant at the two and four month well-child visit? (P)**



Hypothesis Testing

 Retrieved from: http://www.printactivities.com/ColoringPages/Frogs/Boy-teasing-girl.html

Hypothesis:

- **Must suggest a predicted relationship between at least two variables-the independent variable and the dependent variable**
- **Must contain terms that indicate a relationship (e.g., more than, different from, associated with)**
- **In infants 2 and 4 months of age, (P) a 24% intra oral sucrose solution and pacifier, 0.6 ml/kg (0.3ml/lb), (I) will significantly decrease the objective measures of acute pain during three serial routine immunizations (O) compared to a volume equivalent dose of a sterile water control solution and pacifier (C).**

RESEARCH DESIGN

 Retrieved from: http://cancergrace.org/wp-content/uploads/2007/02/placebo-cartoon.jpg

Study Designs Utilized by Nurses

Experimental

- Pre-test Post-test
- Cross Over
- Randomized Control Trials

Non Experimental

- Correlational
- Survey
- Cohort Studies
- Case Studies
- Descriptive/Observational

Study Design Challenges

- **Sample size**
- **Valid and reliable**
  - Validity and Reliability (quantitative studies)
  - Trustworthy (qualitative studies)
- **Have control**
  - **Randomness (quantitative studies)**
  - **Reflexivity (qualitative studies)**
- **Bias**
- **Masking**
- **Generalizability**

Sample Size

- **The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample**

- **A power analysis is frequently used to estimate how large a sample is needed to reliably test hypotheses**

Reliability and Validity
Quantitative Research

- **Reliability**

The accuracy & consistency of obtained information

- **Validity**

The soundness of the evidence—method that truly measures the idea or construct in question

Trustworthy Qualitative Research

- **Credibility-are the results believable**
- **Confirmability-can the findings be collaborated by others? Is there a documented check recheck procedure?**
- **Dependability-are the findings reliable? Do two people get the same results is the observe the same thing?**

Control in Quantitative Studies

Achieved by holding constant factors (extraneous variables) that influence the dependent variable in order to better understand its relationship with the independent variable

Randomness
Quantitative Research

- **An important tool for achieving control over extraneous variables**
- **Having certain features of the study established by chance rather than by design or personal preference**

Reflexivity
Qualitative Research

- Process of reflecting critically on the self and of scrutinizing personal values that could affect data collection and interpretation
- Understanding what the researcher brings to the research and how they influence the research
- Qualitative equivalent to randomness

Bias

Influences distorting in study results

Examples:

- **Lack of participants' candor-participants distort information so they look good**
- **Faulty data collection methods - wrong instrument**
- **Researcher's preconceptions - look for what they want**
- **Faulty study design - structure the study to get the outcome they want**
- **Sample - over or under representation**
- **Systematic - consistent distortion in the same direction (usually inaccurate scale)**
- **Random - participant gives inaccurate information**

Masking or Blinding

- **Used to avoid biases stemming from participants' or research agents' awareness of study hypotheses or research status**
- **Single-blind studies**
- **Double-blind studies**

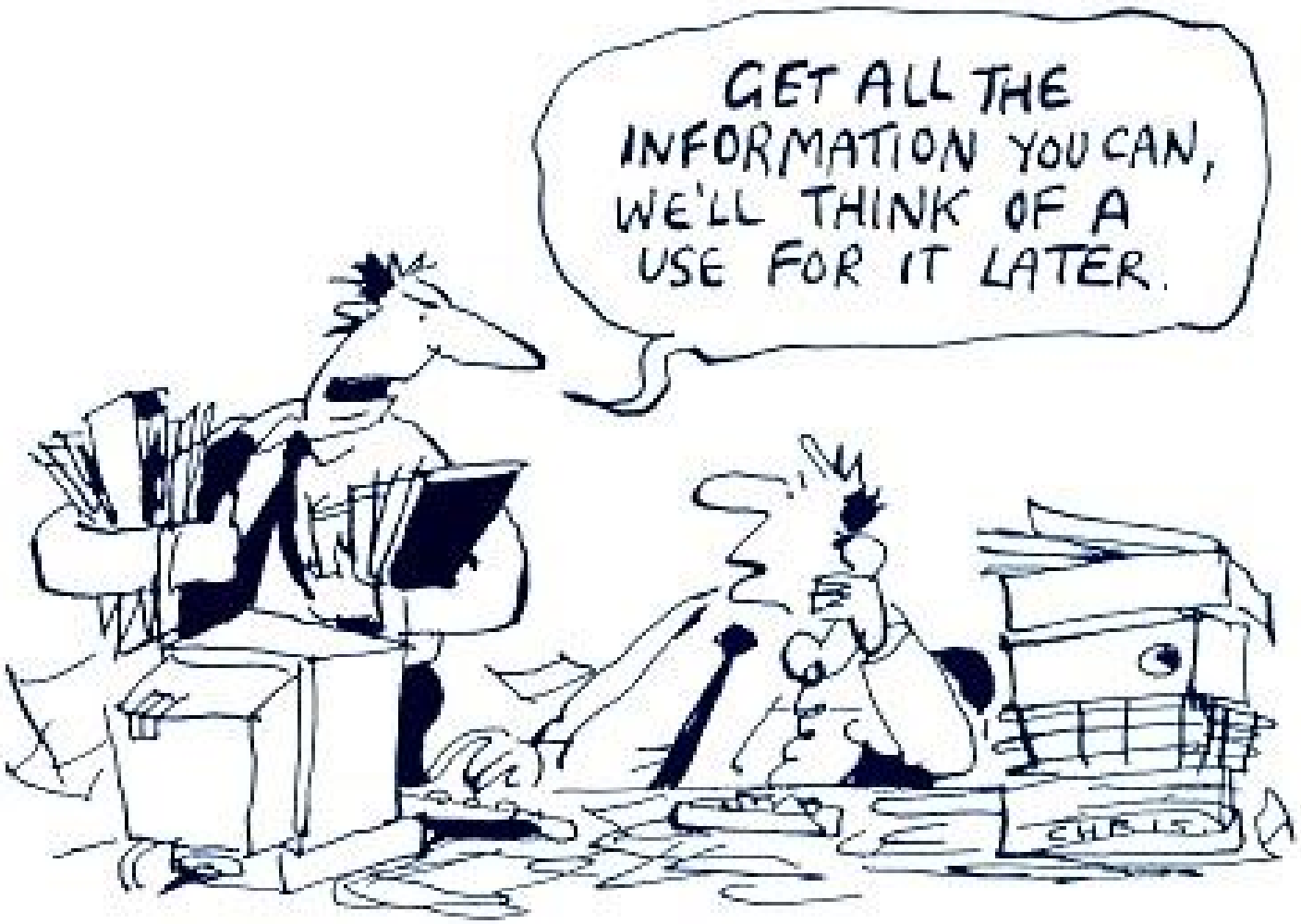
Generalizability and Transferability

♦**Generalizability (Quantitative research)**

- The extent to which study findings are valid for other groups not in the study

♦**Transferability (Qualitative research)**

- The extent to which qualitative findings can be transferred to other settings



DATA COLLECTION

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Data Collection and Management

- **Collection**
  - Good idea to pilot test data collection to identify area that may need attention
  - Create a structured process for data collection so there is no variation (Interrater reliability)
  - Valid and reliable instruments
- **Management**
  - Limit the number of people entering data
  - Enter reasonable amount of data a one time
  - Check data for accuracy

DATA ANALYSIS

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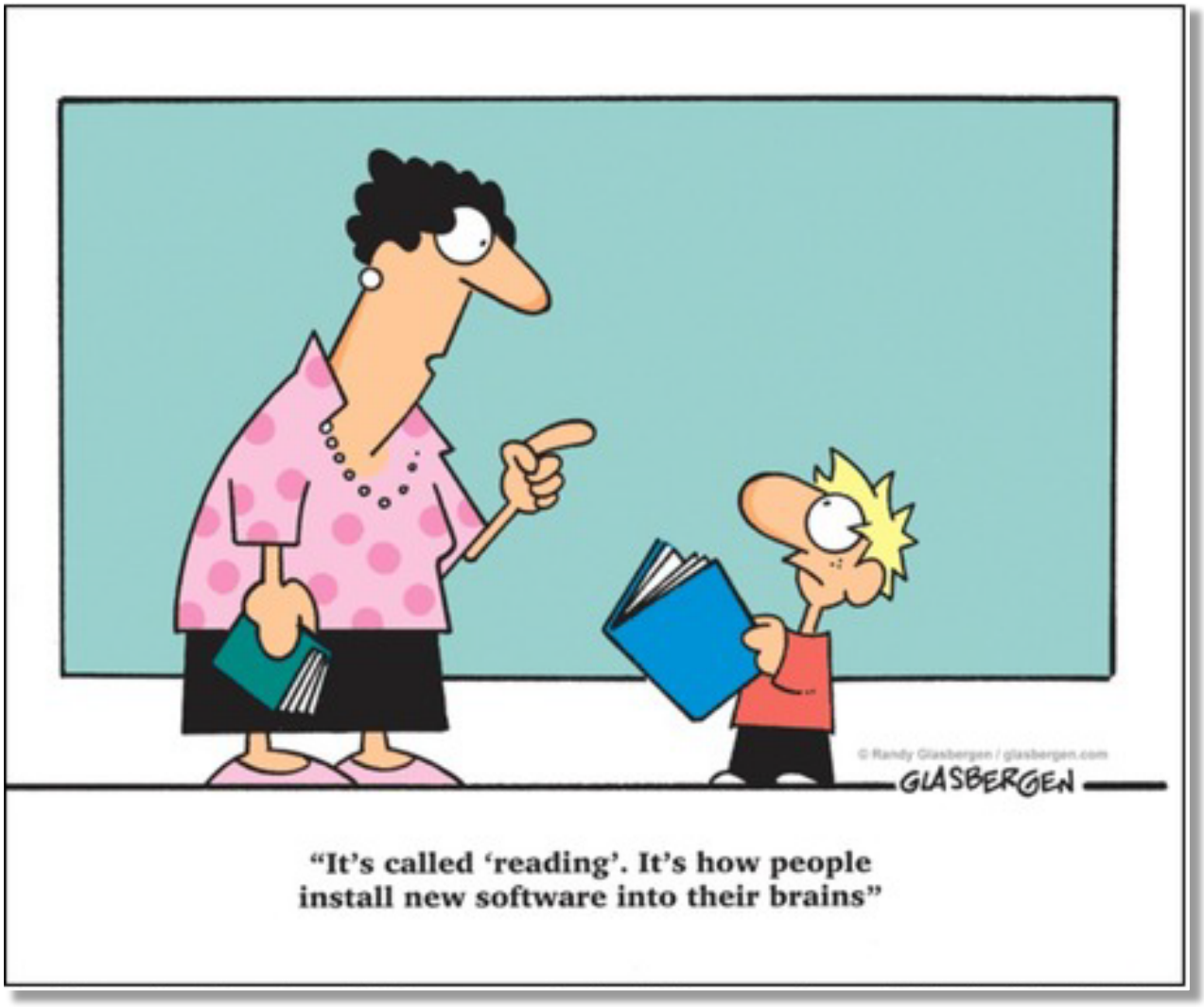
Data: A Revolution in Health Care

- **Statistical test is determined by research question**
- **Utilizing the right statistical test results in valid findings that allows clinicians and hospital staff to make informed decisions to improve quality of care**



DISSEMINATION

Retrieved from: http://www.dontwasteyourtime.co.uk/elearning/its-called-reading-cartoon/

An Essential Step in the Research Process

“ The researcher’s job is not complete, however, until the results of the study are disseminated.”

(Polit, Beck, & Hungler, 2002)

“Dissemination is an essential part of research process, not an after thought.”

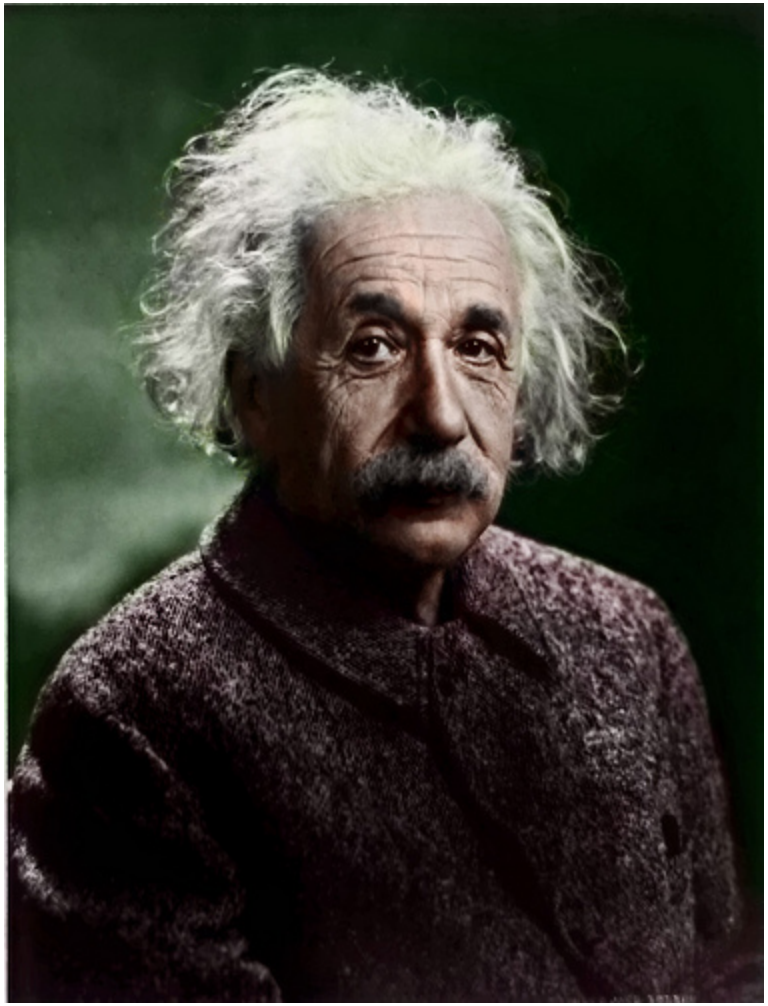
(Raynor & Silcock, University of Leeds)

Reasons to Disseminate Research

- **Inform the professional community**
  - Positive and negative results
- **Add to the evidence base for nursing practice**
- **Improve patient outcomes**
- **Create collegial relationships**

Presentation Formats

- **Written**
  - Report to funder
  - Research journals
  - Theses & dissertations
  - Books
- **Internet: Open Access**
- **Lay press**
  - Hospital news letter
  - Newspaper
  - TV/radio
- **Oral**
  - Presentation at professional conferences
  - Institution sponsor conferences
  - Teaching
- **Posters**



If we knew what we were doing it wouldn't be research

Albert Einstein