Research Strategy & e-Portfolio

CHEM 23201
Fall 2012

2. Pick up the handouts.

Quote

“...”

Fogarty, Mignon; Bahls, Christine. Information overload. The Scientist 2002, 16 (Aug 19), 16.

Overview

1. Publication Types
2. Research Strategy
3. e-Portfolio

Library of Congress Call Number Classification

• Q - Science
  – QC - Physics
  – QD - Chemistry
    • QD146 - 197 Inorganic
    • QD241 - 441 Organic
  – QH - Biology
  – QP - Physiology

• R - Medicine
  – RS - Pharmacy
• S - Agriculture
• T - Engineering
  – TA - Civil
  – TN - Mining
  – TP - Chemical

Reading a Call Number

• Raman/Infrared Atlas of Organic Compounds
  – By Bernhard Schrader

QD 272 S6
Subject: Organic Chemistry - organic analysis - special methods - spectrum analysis

S3713
Author: Schrader

1989
Year published

• Dictionary of Inorganic Chemistry
  – J.E. MacIntyre, Editor

QD 148
Subject: Inorganic Chemistry - Dictionaries and encyclopedias

D53 1992
Title: Dictionary...

Podcasts

• Due next week
  – Be prepared to discuss
1. Publication Types

- Abstracts
- Almanacs
- Books
- Dictionaries
- Encyclopedias
- Guides to Literature
- Handbooks
- Indexes
- Journals
- Patents
- Preprints
- Proceedings
- Technical Reports
- Theses

Classifying Publication Types

- Original Research
  - Lab Notes or Observations
- Primary
  - Reporting original research
- Secondary
  - Organizing & summarizing primary literature
- Tertiary
  - Guides to the literature

Publication Type Timeline

Key:
- Original Research
- Primary
- Secondary
- Tertiary

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2. Research strategy in six steps

1) **Summarize** your topic
2) **Identify** key concepts
3) Find Related terms and synonyms
4) **Build** a search
5) **Run** your search
6) **Examine** results & **Refine** your research strategy

Step 1. **Summarize** your Topic

- Clearly & concisely state your topic
- Put it in the form of a question
- Add comments
  - English language only
  - Material published since 1990
  - I don’t want to include…

Step 2. **Identify** Key Concepts

- Identify a minimum of two concepts
- Prioritize them
- They are usually verbs or nouns
- They can be a single word or a phrase
- Some search engines & all print resources don’t handle natural language very well
Key Concepts - Practice

- I want to find information on the resistance to antibiotics in pigs and poultry.
- I want to find forensic studies on drug overdose.
- I want to find methods for predicting earthquakes.

Step 3. Find **related** terms and synonyms

- Think of different ways someone might express each concept
  - Synonyms
  - Alternative spellings
  - Variant endings - Variant beginnings
  - Acronyms
  - Narrower/Broader terms
- Use encyclopedias, dictionaries, handbooks

Step 4. **Build** a Search

- Questions to answer for each database:
  1. What subjects / pub. types are included?
  2. What are the coverage dates?
  3. What Boolean operators are used?
  4. Can truncation symbols be used?
  5. Can wildcards be used?
  6. How to search for phrases?
  7. Can I group words from the same concept?
  8. Any unique features?

4.3 - **Boolean Operators**

- AND (must have all search terms)
  - Ex: inhibitor AND enzyme
- OR (must have at least one of the search terms)
  - Ex: corn OR maize
- NOT (excludes a search term)
  - Ex: integration NOT school

**Boolean Operator - AND**

A AND B

AND

e.g. aspirin AND blood

**Boolean Operator - OR**

A OR B

OR

e.g. (ham OR pork)
Boolean Operator - NOT

\[ \text{A} \text{ NOT B} \]

e.g. integration NOT school

### 4.4 - Truncation

- **Single letter (0 or 1 letter)**
  - Chemical?
    - Chemical, Chemicals
- **Multiple letter (0, 1 or more letters)**
  - Chem*
    - Chemic, Chemical, Chemistry, Chemists, etc.
- **Left**
  - *organic
    - Bioorganic, Inorganic, Bioinorganic, etc.

### 4.4 - Art of Truncation

Goal: Get EVERYTHING you want and NOTHING you don’t want

- **One of your key concepts is catalysts.** - Should you truncate? If so, then where?
  - catalysts =
  - catalysts* =
  - catalyst* =
  - catalys* =
  - cataly* =
  - cata* =

### 4.5 - Wildcards

- **Single letter**
  - Wom?n
    - Woman, Women
- **Multiple letters**
  - Phosphor??s
    - Phosphors, Phosphores, Phosphorous, Phosphorus
  - Lab*r
    - Labour, Labor, Labrador, Labeler, etc.

### 4.6 - Phrases

- “Fighting Irish”
  This retrieves all documents that have Fighting immediately preceding Irish such as
  - WVFI Radio: The Voice of the Fighting Irish…
- But not
  - Born Fighting: How the Scots-Irish Shaped America
4.7 – Group words from same concept

- ( ) (group synonyms from same concept)
  
  • Ex: (corn OR maize OR cereal OR cbh351 ) AND (lunch OR dinner OR "mid-day meal")

What is the answer?
Order of operators

- \( 3 + 7 \times 4 - 2 = \)
  
- \( (3 + 7) \times 4 - 2 = 38 \)
- \( 3 + (7 \times 4) - 2 = 29 \)
- \( (3 + 7) \times (4 - 2) = 20 \)
- \( 3 + (7 \times (4 - 2)) = 17 \)

- pig NOT swine OR poultry AND antibiotics
- What is first, second, etc.?

Step 5. Run your search

Step 6. Examine results & Refine your research strategy

- Review initial search results
- Are there new synonyms or related terms?
  - Add those to your list in step 3
  - Repeat step 5 with new information added
- Did you get the results you expected?
  - Either modify step 4 or reevaluate steps 2 or 3
  - Repeat step 5

Search Tips/Advice:
25 & 250 Guideline

- Results under 25
  - Subtract a concept
  - Use synonyms or broader terms
  - System may consider your terms as a phrase
    - Use AND between concepts
- Results over 250
  - Add another concept
  - Use narrower terms
  - Search terms as a phrase
  - Limit by Review Articles

Do the preceding steps

- Otherwise you will need the…
Handy Guide to Jargon

0. Integrated
1. Total
2. Systematized
3. Parallel
4. Functional
5. Responsive
6. Optional
7. Synchronized
8. Compatible
9. Balanced

0. Management
1. Organizational
2. Monitored
3. Reciprocal
4. Digital
5. Logistical
6. Transitional
7. Incremental
8. Third-generation
9. Policy

0. Options
1. Flexibility
2. Compatibility
3. Mobility
4. Programming
5. Concept
6. Time-phase
7. Projection
8. Hardware
9. Contingency

Handy Guide to Chemistry Jargon

0. <empty>
1. Covalent
2. Elemental
3. Electrolytic
4. Reduced / ing
5. Ionic / Ionized
6. Hydrogen
7. Oxidized
8. Dynamic
9. Amphoteric

0. <empty>
1. Oxidation
2. Equilibrium
3. Distillation
4. Hydrolysis
5. Filtration
6. Configuration
7. Ionization
8. Indication
9. Dissociation

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e-Portfolio