MAKE IT A GAME!

Engaging Students in Searching the Literature

Carol Shannon
Taubman Health Sciences Library,
University of Michigan

Jacqui Brown, https://www.flickr.com/photos/120600995@N07/14048178193/ (CC BY-SA 2.0)
Issues

- Students have years of experience using search engines
- Search skills taught in year 2, far from when the skills are perceived to be necessary (years 3–4)
- Students may have different expectations of their needs
- Teaching focus on advanced searching
- Students had little time to practice the skills

Changing the Curriculum

- Increase the number of sessions from two to three
- Scaffold instruction
- Flipped classroom model
  - active learning and assessments
The New Curriculum - LOs

Session 1
Use PubMed & Embase for literature searching
Use synonyms & Boolean operators
Identify & use appropriate filters
Identify index terms in PubMed & Embase & understand their importance

Session 2
Locate & use effectively index terms for searching in PubMed & Embase
Use the Disease search & Drug search in Embase, especially the drug subheadings & routes of administration options
Use Advanced Search page & Clinical Queries in PubMed appropriately

Session 3
Use wildcards (new databases: CINAHL, International Pharmaceutical Abstracts)
Construct more complex searches for comprehensive literature reviews by 1) trying out different terms; 2) mining different resources for search terms; & 3) knowing when to stop searching.
The New Curriculum - Class Structure & Assessment

- **Session 1**
  - Pretest + assignment
  - Small group work, Quiz 1

- **Session 2**
  - Repeat Quiz 1, some instruction
  - Small group work, Quiz 2

- **Session 3**
  - Prework, Repeat Quiz 2
  - Small group work, Quiz 3 & posttest
What Is a Serious Game?

- Specific goals tied to learning outcomes
- Rules that affect how the game is played
- Feedback for the players
A 47-year-old man has a family history of diabetes, hypertension, and coronary artery disease. He has had “borderline” hypertension in the past, but was never told to take medication. He complained to his doctor about fatigue and breathlessness on activity. On exam, he was found to have elevated blood pressure, weight gain (20 pounds), and both legs were significantly swollen. Following a heart echocardiogram, he was diagnosed with congestive heart failure secondary to cardiomyopathy.
A 47-year-old man has a family history of diabetes, hypertension, and coronary artery disease. He has had “borderline” hypertension in the past, but was never told to take medication. He complained to his doctor about fatigue and breathlessness on activity. On exam, he was found to have elevated blood pressure, weight gain (20 pounds), and both legs were significantly swollen. Following a heart echocardiogram, he was diagnosed with congestive heart failure secondary to cardiomyopathy.
A 47-year-old man has a family history of diabetes, hypertension, and coronary artery disease. He has had “borderline” hypertension in the past, but was never told to take medication. He complained to his doctor about fatigue and breathlessness on activity. On exam, he was found to have elevated blood pressure, weight gain (20 pounds), and both legs were significantly swollen. Following a heart echocardiogram, he was diagnosed with congestive heart failure secondary to cardiomyopathy.

Would starting him on a regimen of digoxin (digitalis) be helpful or would another medication, such as ACE inhibitors, be better?
P: patient, population, problem

I: 

C: 

O: 
Exercise 5: Choose one method, **drag & drop** or **type** search terms into the boxes to create simple & more complex searches.

- **congestive heart failure**
  - **OR**
  - **heart failure**
- **AND**
  - **digoxin**
  - **OR**
  - **digitalis**
- **AND**
  - **ace inhibitor**
  - **OR**
  - **angiotensin-converting inhibitor**
  - **OR**
  - **beta blockers**
  - **OR**
  - **treatment outcome**
  - **OR**
  - **drug therapy**

*Clinical Scenario & Question & PICO Available in the Glossary*
Exercise 5: Choose one method, **drag & drop** or **type** search terms into the boxes to create simple & more complex searches.

- congestive heart failure
- OR
- heart failure
- AND
- digoxin
- OR
- digitalis
- AND
- angiotensin-converting inhibitor
- OR
- beta blockers
- AND
- treatment outcome
- OR
- drug therapy

*Clinical Scenario & Question & PICO Available in the Glossary*
Exercise 5: Choose one method, *drag & drop* or *type* search terms into the boxes to create simple & more complex searches.

- congestive heart failure
- OR
- heart failure
- AND
- digoxin
- OR
- digitalis
- AND
- angiotensin-converting inhibitor
- OR
- beta blockers
- AND
- ace inhibitor
- OR
- treatment outcome
- OR
- drug therapy

*Clinical Scenario & Question & PICO Available in the Glossary*
Exercise 6a: Applying what you’ve learned - PubMed

(congestive heart failure OR heart failure) AND (digoxin OR digitalis) AND (ace inhibitor OR angiotensin-converting inhibitor OR beta blockers) AND (drug therapy OR treatment outcome)

Using the search strategy above on the Advanced Search page in PubMed, add one new MeSH term at a time from the list below to see what difference, if any, it makes to the search results. What you should look at is not just the number of results, but whether adding a term increases the quality of the results.

Which term is the best one to use? Be prepared to discuss your choice in class.

- digitalis glycosides
- diuretics
- therapeutics
- adrenergic beta-antagonists

*Clinical Scenario & Question & PICO Available in the Glossary*
Exercise 6a: Applying what you’ve learned - PubMed

(congestive heart failure OR heart failure) AND (digoxin OR digitalis) AND (ace inhibitor OR angiotensin-converting inhibitor OR beta blockers) AND (drug therapy OR treatment outcome)

Using the search strategy above on the Advanced Search page in PubMed, add one new MeSH term at a time from the list below to see what difference, if any, it makes to the search results. What you should look at is not just the number of results, but whether adding a term increases the quality of the results.

Which term is the best one to use? Be prepared to discuss your choice in class.

- digitalis glycosides
- therapeutics
- digitalis glycosides
- diuretics

Correct
That's right! “Diuretics” is the correct answer.
Exercise 7: Applying what you’ve learned - Embase

(congestive heart failure OR heart failure) AND (digoxin OR digitalis) AND (ace inhibitor OR angiotensin-converting inhibitor OR beta blockers) AND (drug therapy OR treatment outcome)

Using the search strategy above, try it using the Advanced, Drug, and Disease search pages to see what difference, if any they make to the search results. Again, what you should look at is not just the number of results, but whether using a different search page increases the quality of the results. Pay attention to the Embase Mapping Options below the search boxes.

To see the options for this question, click the Next button.
Exercise 7: Applying what you’ve learned - Embase

Which search is the best one to use? Be prepared to discuss your choice in class.

- All concepts searched on Advanced Search page with Map to preferred term & Explode mapping, with filters for Date (2013-2018) and Practice Guideline.

- Disease concept searched on Disease Search page with Drug Therapy subheading; and remaining concepts searched on Advanced page, deleting “drug therapy” from search strategy, all with Map to preferred term & Explode mapping, with filters for Date (2015-2018) and Practice Guideline.

- Drug concepts searched on Drug Search page with Drug Combination and Drug Comparison subheadings; other concepts searched on Advanced Search page, all with Map to preferred term & Explode mapping, with filters for Date (2015-2018) and Practice Guideline.

- Copy & paste search strategy on previous slide on the Quick Search page, with filters for Date (2013-2018) and Practice Guideline.

*Clinical Scenario & Question & PICO Available in the Glossary
Results

Students appeared to be working together much more than in the past.

Class quiz scores are still mixed.
Try it yourself!  
https://tinyurl.com/MakeItAGame