Using Research Synthesis Assignments to Teach Information Literacy and Critical Appraisal Skills to University Students

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Outline

1. Introduction to topic
2. What is research synthesis?
3. Background
4. Research Plan
5. Lesson plan
6. How we taught the class
7. Research results
8. Recommendations
Introduction

By the end of the session participants will:
1. Understand how information literacy instruction is evolving to include interdisciplinary forms of knowledge and synthesis methodologies
2. Be aware of the challenges librarians face when teaching evidence-based methods to students
3. Have the skills to develop in-depth lesson plans and assignments for teaching evidence-based methods
What is research/evidence synthesis?

“synthesis as 'the contextualization and integration of research findings of individual research studies within the larger body of knowledge on the topic. A synthesis must be **reproducible and transparent** in its methods, using quantitative and/or qualitative methods.” (CIHR, https://cihr-irsc.gc.ca/e/41382.html)

The most commonly known form is a systematic review.

Described as “a review of a clearly formulated question that uses **systematic and explicit methods** to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review.” (Cochrane: https://community.cochrane.org/glossary#letter-S)
What is a Critically Appraised Topic (CAT)

A Critically Appraised Topic is a type of Rapid Review (White, Raghavendra, and McAllister, 2107).

Originates in Evidence-based medicine, but has been used in other disciplines (Management)

It is a quick assessment of what is known in the scientific literature about a topic or practical issue. It uses aspects of systematic review methodology (with concessions) to search, select and appraise evidence. (Guideline for Critically Appraised Topics in Management and Organizations)
Steps to conduct a CAT

Step 1: Background
Step 2: Formulate question
Step 3: Define inclusion criteria
Step 4: Search
Step 5: Study selection
Step 6: Data extraction
Step 7: Critical appraisal
Step 8/9/10/11: Results, Conclusion, Limitations, Implications

(CEBMa, 2017)
Benefits of CATs?

- Can be done in a relatively short time (days or weeks)
- Incorporates scientific/scholarly literature
- Culminates in recommendations/implications for practice
- Has a methodology that needs to be followed → mimics research
- Incorporates critical appraisal of scientific literature
Background

CATs/Systematic Reviews in Business

- Skills-based perspectives (Briner & Walshe, 2014)
- CATs are well-suited to a management classroom due to the applicability on decision-making skills (White, Raghavendra & McAllister, 2017)
Graduate Business Instruction

- Discusses student disengagement in orientation sessions – authors noted that increased engagement occurs in workshop style sessions with activities and a chance to build relationships (Baxter, Johnson & Chisholm, 2016)

- Brinkman & Hartsell (2012) discussed building relationships with incoming students and as students view librarians with trust, they become more comfortable with asking for help from library staff.
Background

Graduate Info Needs

- Graduate business students vary from other student populations in that they are often older and more experienced (Mallon, 2014). They are often balancing families and full-time careers with increasing responsibilities in addition to a full-time course load

- Students rely heavily on their workplace knowledge – skills may not be transferable-showed difficulty in finding information outside of the industry. Students perceive a lack of transfer between academics and workplace (Quinn & Leligdon, 2014)

- Discusses false confidence leading to information literacy issues – students who have been in the workplace or recently graduated may confuse ability to browse the Internet with research skills (Hesseldenz, 2012)
Research Plan

We wanted to assess:
- Student knowledge about the process
- Student research skills
- Evaluation about teaching session
- Evaluation of term process
- Evaluation of usefulness of assignment
- Suggestions for improvement

Background: Teaching - Winter 2019 (multiple sessions- varied approaches)

Class/Research development- Block Week Fall 2019

Ethics and Survey development - Fall 2019
The course assignment

Students groups (4-5 students) are assigned an HR topic and have to complete a 20-25 page CAT.

Protocol template due approximately 3 weeks after the in-class session.

Librarian to discuss the protocols and provide feedback to students during a consultation.

Final project at the end of the semester.
Designing the lesson: skills that students need

1. Formulating a research question
2. Searching a bibliographic database using subject headings and keywords
3. Critical appraisal of scientific studies
4. Scientific writing and reporting methods used
5. Research methodology (CAT)
6. Time management and project management

Lesson plan: Learning outcomes

Students will be able to:

1) **Describe** the steps to conduct a CAT
2) **Create** a focused researchable question using the PICOC mnemonic
3) **Create** and run a search strategy in the Business Source Complete database using subject headings and keywords
4) **Apply** inclusion/exclusion criteria to select studies relevant to their topic
5) **Describe** the purpose of critical appraisal and where to find critical appraisal checklists
6) **Describe** the limitations of a CAT
Lesson plan: Learning activities

**Lecture** – The process of conducting a CAT (LO #1, LO #6), using PICOC for question formulation (LO #2), searching for studies including search syntax (LO #3), Defining, selecting, and using inclusion/exclusion criteria to select studies (LO #4), finding and using checklists for critical appraisal (LO #5)

**Demonstration** – How to locate subject headings, and use correct syntax to build a search in Business Source Complete (LO #2)

**Activities**

1) How to formulate a PICOC question (LO #2)
2) How to create a search in Business Source Complete (LO #3)
## How we taught the class (3 hour session)

<table>
<thead>
<tr>
<th>0-90 minutes</th>
<th>&gt;&gt;</th>
<th>15 min</th>
<th>&gt;&gt;</th>
<th>105-180 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0-45 min:</strong> Introduction to research synthesis, what is a CAT, what are the steps to conduct a CAT, and PICOC activity.</td>
<td></td>
<td><strong>105-135 min:</strong> Activity - Students were given a topic and had to use PICOC to refine and create a research question, find subject headings and keywords, and create a search in Business Source Complete.</td>
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<tr>
<td><strong>45-90 min:</strong> Searching for information (what is a subject heading, what is a keyword, search operators such as truncation, proximity/wildcards, what fields to search in a database, how to use database filters to limit date, language, source type, etc.) followed by a demonstration on Business Source Complete.</td>
<td></td>
<td><strong>135-180 min:</strong> Working session where student groups worked on picking a topic for their project, creating a PICOC-based research question, and create preliminary searches in Business Source Complete - with the help of the librarian, as needed.</td>
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Activity: Think-Pair-Share

How to assess → What to assess → When to assess?

Submit your responses to the padlet
## Activity: Think-Pair-Share

### Submissions from participants

<table>
<thead>
<tr>
<th>How would you assess the variety of learning that is happening in the session and throughout the rest of the semester as students complete the course assignment?</th>
<th>When would the assessments take place?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self assessments before &amp; after course; Peer-to-peer assessments midway &amp; end of course</td>
<td>Before, middle, end</td>
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<tr>
<td>In class quizzes or marking of assignments after the class.</td>
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<tr>
<td>Peer feedback during the library session</td>
<td>After a demonstration; at the end</td>
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<tr>
<td>In-class activities - including searching on their own or in groups, sharing strategies and findings</td>
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<tr>
<td>Kahoot</td>
<td>Pre and post test/survey</td>
</tr>
<tr>
<td>Survey at end of teaching, how confident do students feel about their research abilities now compared to how they felt before</td>
<td>Assess the final CAT Halfway point for check-in</td>
</tr>
</tbody>
</table>
Lesson plan: Assessment

In-class
- Student presentations from the PICOC activity
- Librarian observations during the search activity (while going around and talking to the groups)

Mid-semester
- Submitted topic protocols

End of semester
- Survey
Survey

- End of term (after major assignments submitted)
- Short survey (12 questions)
- 20 respondents (from class of 60)
- Qualtrics
Research results: Overall Knowledge

- What is a CAT?
- What are some limitations?
## Research Results: CAT skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Value</th>
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<tbody>
<tr>
<td>Confidence in using Business Source Complete</td>
<td>10</td>
</tr>
<tr>
<td>Ability to quickly assess scholarly literature for data extraction purposes</td>
<td>9</td>
</tr>
<tr>
<td>Group work skills</td>
<td>8</td>
</tr>
<tr>
<td>Understanding the difference in keywords and subject headings</td>
<td>7</td>
</tr>
<tr>
<td>Ability to assess scholarly literature to answer specific questions</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
</tbody>
</table>
Research results: Student research skills

Q8 - After the session, I felt prepared to

- Yes
  - a. Refine a research question
  - b. Identify keywords and subject headings
  - c. Search in Business Source Complete
  - d. Analyse literature (extract data)

- No
  - a. Refine a research question
  - b. Identify keywords and subject headings
  - c. Search in Business Source Complete
  - d. Analyse literature (extract data)

- Maybe
  - a. Refine a research question
  - b. Identify keywords and subject headings
  - c. Search in Business Source Complete
  - d. Analyse literature (extract data)
Research Results: Teaching Session

Pace

- Too slow
- Too fast
- Just right

Length

- Good
- Too Long
- Too Short
- Other
Research results: Evaluation of term process

Q9 - The support from the library in regards to team meetings and follow up questions was:

- Excellent
- Very good
- Good
- Adequate
- Not helpful
- Waste of time
“This was an irrelevant assignment for any of my past or future needs. The MBA level does not need a report writing assignment, the participants are professionals and do not have time for this.”
Activity

Part One: Identify and rank the main challenges (3 per group)

Part Two: Pick your top challenge and identify strategies you would use to resolve some of the issues

Submit your responses at the Padlet
## Activity - responses

### Part One: Identify the main challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauging students’ level of knowledge</td>
<td>Guide students to research issues relevant to them</td>
</tr>
<tr>
<td>Maintaining student motivation</td>
<td>Have a conversation about relevance right after the session introducing CATs</td>
</tr>
<tr>
<td>Establishing and sustaining the level of support</td>
<td>Show a comparison of a student keyword search to a more sophisticated search to show value</td>
</tr>
<tr>
<td>Too much information in one session, consider scaffolding</td>
<td>Discuss the idea of best practice versus preferred practice</td>
</tr>
<tr>
<td>Workload</td>
<td>Have an industry person bridge the gap and show relevance</td>
</tr>
<tr>
<td>Weight of the assignment</td>
<td>Showcase evidence-based changes that have had success in business</td>
</tr>
<tr>
<td>Ensuring students see the value/relevance</td>
<td>Have students pitch their evidenced based solutions in a competitive environment</td>
</tr>
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</table>
Research Results: Improvements

- Selecting research questions
- Articulation of applicability
- Remove from block week (or shorten)
- Turf the whole assignment
Benefits/Challenges

Benefits

- Relationship building
- Introduction of research skills early
- Systematic approaches to research (talk about follow up class in Winter 2020)

Challenges

- Balance between research rigour and needs of MBAs
- Block week
- Length of instruction (heavy on searching, less time for appraisal and data extraction)
- Lack of longitudinal information
Thank you!

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References


