Collaborative Information Synthesis: Information Literacy Instruction for Group Projects

Anne R. Diekema (annediekema@suu.edu)
Kelly Goonan (kellygoonan@suu.edu)
Katie E. Englert (katieenglert@suu.edu)
Southern Utah University

- Kinesiology & Outdoor Recreation
  Associate professor Kelly Goonan
  ORPT 3060: Behavioral Aspects of Outdoor Recreation
- Honors
  Lecturer Katie Englert
  HONR 2040: Honors Inquiry & Analysis
- Sherratt Library
  Associate professor / Department Chair / Instruction librarian Anne Diekema
Outline

● Introduction
  ○ Objectives of the presentation
● Information synthesis
  ○ What is information synthesis?
  ○ Synthesizing collaboratively
● Collaborative synthesis activity
  ○ Interactive practice
● Assessment
● Questions
Objectives

After attending this session participants will be able to:

- Explain the role of information synthesis in research and writing instruction
- Design a group information synthesis one-shot instruction session
- Facilitate a dynamic and engaging interactive instruction session
The what, the why, and the how

- Information literacy instruction
  - Searching, finding, evaluating information
  - What to do with the information?
- Preparing for professional information practices
  - Complex problems require collaborative research
  - Interdependent research practices
  - Cooperation versus collaboration
- Collaborative information synthesis
  - Sociocultural approach to learning
  - Informed learning
  - Scholarship is a conversation
Information synthesis
Information synthesis and the scholarly conversation

Information synthesis is the process of analyzing and evaluating information from various sources, making connections between the information found, and combining the recently acquired information with prior knowledge to create something new (Lundstrom et al., 2015, p. 61).

- Pulling out ideas from sources to work at the idea level
- Focus on the ideas relayed in the sources
- Ideas make the scholarly conversation visible
- Keeping track of the ideas in a grid or synthesis matrix
- Matrix is what students use to write, adding in their own interpretations
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparedness</strong></td>
<td>(Be prepared when hiking. If you are not prepared, do not go. Gear, Supplies, Planning) = ! Know before you go!</td>
<td>the development of preventive efforts to minimize SAR’s assistance - the most SAR assistance happens on Saturday and Sunday, so preparing to have more SAR assistance on those days for extra help.</td>
<td>Visitors rely on devices instead of developing appropriate skills</td>
<td>Unpreparedness can lead to death, sticky situation</td>
</tr>
<tr>
<td><strong>Skill Level</strong></td>
<td>Evaluate your Skill Level. Do not hike things that you are not able to. <em>(We second this)</em></td>
<td></td>
<td>People use technology in place of skill and knowledge and by doing that they put themselves above others (rescuers and other hikers).</td>
<td>many people don’t know what they’re doing</td>
</tr>
<tr>
<td><strong>Risks</strong></td>
<td>When planning, take into account inherent risks, possible risks, worst case, time environmental factors, etc. People often underestimate the risk of hiking.</td>
<td>The increase of more adventurous activities in the outdoors</td>
<td>Devices add a false sense of security, contributing to riskier behavior and not understanding risks</td>
<td>underestimate the risk involved</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Education for hikers about risks and preparedness need to be increased. Know where to seek education/ false info on social media.</td>
<td>Different age in demographics, which led to the requirement of more SAR assistance</td>
<td></td>
<td>hikers have a lack of education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Social media and marketing are advertising the park as a developed tourist spot. Visitors misinterpreted</td>
<td></td>
</tr>
</tbody>
</table>
Collaborative information synthesis

- Connecting ideas not only across sources but across each other’s sources
- Important because complex problems transcend disciplinary boundaries
- Creates opportunity for students to learn from each other
- Thwarts divide-and-conquer approaches
- Results in cohesive final projects
Activity 1: Practice pulling out ideas
The experiment is part of a collaboration between six universities across the country funded by the National Science Foundation’s Brain Initiative. It’s called the Odor Navigation Project. The collaborators come from disparate fields of study, including animal behavior, genetics, physiology and fluid mechanics, to study how animals use smell to understand their surroundings.

The national project has a far-reaching goal: to help develop more effective devices — perhaps even a new generation of robots that seek specific odors — to detect explosives, drugs and other dangerous chemicals in airports, subways, factories and other locations.

For Jinn’s contribution to the project, she set up an experiment in which a “target hiker” would walk a preset route along crisscrossing trails in the park. Then she used GPS and other sensors attached to the search dog’s harness to record how closely Zinka followed the hiker’s path. https://www.kqed.org/science/1938255/how-your-dogs-nose-knows-so-much
Pulling out ideas

- **Interdisciplinary research:**
  - NSF-funded brain research project with 6 universities
  - animal behavior, genetics, physiology and fluid mechanics
- **Robotic nose**
  - Robot to detect specific odors to help drug searches, explosive detection etc.
- **Dog scent experiment**
  - Detect hiker’s path and measure path deviation
Collaborative synthesis activity
The research assignments

- ORPT 3060
  Create an integrated literature review for your group’s research proposal

- HONR 2040
  With your group, research and present to the class a complex interdisciplinary global issue
The collaborative synthesis activity

- Address shortcomings observed in student group assignments
- Help students learn how to work as a member of a research team
- To prepare for the activity, students processed six sources
- The objectives
  - Share and discuss key concepts and ideas students identified in the literature
  - Organize and combine shared ideas into “clusters” based on their similarity
  - Construct an outline based on the concept clusters identified
  - Students conclude the activity by sharing their outcomes with the rest of the class
Collaborative synthesis activity outline

1. Brief recap on information synthesis
2. Activity to guide team information synthesis
   A. Individually, decide what ideas to share with group
   B. As a group, discuss and share ideas with each other
   C. Individually, create Post-it notes with ideas from the sources
   D. As a group, combine similar ideas into clusters
   E. As a group, name clusters
   F. As a group, decide on outline
A: Get situated with your sources (5 mins)

Individually, using your (annotated) bibliography and/or information synthesis matrix, quickly figure out the following:

1. What themes/ideas seem important or meaningful
2. What points could you share and explain to your teammates
3. What are points that need clarification or you are confused about
Activity 2: Pulling out ideas
Articles on dogs and their sense of smell

https://tinyurl.com/loex22nose
B: Share what you have learned (10 minutes)

With your team:

- Share what you learned
- Ask each other questions for understanding
- Teach each other
C: Organizing information individually (10 mins)

Individually:

- Pull out key points (main ideas) from your articles
- Write one idea per post-it note (3-5 words, using large letters)
- Also note the number of your article in the corner of the note
- Three Post-its per source
D: Organizing information as group (10 mins)

With your group:

- Group like post-its together
- Start with a few, add a few more
- Negotiate, explain, as you go along
- Work until all post-its are in a group (cluster)
- Name each cluster (1-2 word nickname that covers EVERY post-its in the cluster)
E: Review your information (5 mins)

With your group:

- Narrowing (splitting big clusters into smaller ones)
- Broadening (drop clusters that have few post-its OR find more info to add, or rehome post-its to other clusters if possible)
- Name clusters with names that are meaningful
F: Wrap-up and make connections (10 mins)

With your group:

- Look at clusters and cluster names
- Create an outline for your literature review
- Share your outline with the rest of the class
What did we just do?

- Pulled out main ideas from sources
- Combined main ideas that go together in clusters
- Merged ideas across team members
- Created an outline for your literature review
Assessment
Measuring the impact of collaborative synthesis

- Instructor (ORPT 3060) observed significant positive change in students’ ability to
  - synthesize information
  - write coherent and consistent papers
- Informal feedback from students
  - Collaborative synthesis improved their understanding of what their group members were working on
  - “I wish I had learned this years ago. It made working with a group so much better!”
Measuring the impact of collaborative synthesis

- Control and treatment group sections, 4 groups per section (HONR 2040)
- Both groups taught information synthesis for individual projects
- Treatment group does collaborative information synthesis activity
- Scoring of synthesis in group presentations and content analysis of student reflections on interdisciplinary learning

*Presentation rubric adapted from the Global Learning VALUE Rubric/Integrative Learning VALUE Rubric, Association of American Colleges and Universities and Lundstrom et al. Teaching & Learning Info Synthesis, Communications in Information Literacy, Vol. 9, Issue 1, [2015], Art. 4*
Findings

- Treatment group achieved better disciplinary integration than the control group.
- Divide and conquer approach to group work hurts interdisciplinarity.
- Students have difficulty thinking on idea level (superseding disciplines).
- Successful groups found “glue” to connect ideas.
- Most successful groups had philosophy majors among students.
Student comment

It’s been awhile since I’ve had a group project. I think I’ve kind of forgotten how to work as a team mate and listen to people’s ideas. That was the most valuable thing I got out of this. Everyone has a perspective and ideas and when we really work hard to put a project together, we’re stronger! I think this helped me realize the importance of having interdisciplinary perspectives.
Conclusions

- Group research projects mimic the work environment
- Students tend to cooperate rather than collaborate
- Hinders learning and leads suboptimal final projects
- Students have trouble integrating ideas
- Collaborative synthesis lesson appears to help
Questions?

Contact us!
Anne R. Diekema (annediekema@suu.edu)
Kelly Goonan (kellygoonan@suu.edu)
Katie E. Englert (katieenglert@suu.edu)
References

- “Tree knits” by Katie Englert, used with permission.
- “map” by Sean Muson is licensed under a Attribution-NonCommercial-NoDerivs License. https://www.flickr.com/photos/logicalrealist/4710184353/
- All other photos by Anne Diekema, used by permission.