Welcome to this SIE, we will start shortly

Putting information behaviour on the cognitive map: exploring information seeking behaviours of academic researchers

Yaming (Cindy) Fu       Elizabeth Lomas       Charlie Inskip
University College London

Session for Interaction and Engagement
iConference 2020 March
Boras, Sweden
Before the start

● Timeline:
  11:30-12:00 Introduction & background
  12:00-12:20 Cognitive mapping practice
  12:20-12:35 Online discussion
  12:35-12:50 Q&A; summary

● Use the Chat or ‘raise your hand’ to discuss or ask any questions
Origin of cognitive mapping

- Cognitive mapping, a term which was first introduced in 1948 by psychologist Edward Tolman who did research on finding how cognitive map helps human and animals find their way in a complicated environment differently (Tolman, 1948).

- Derived from psychology field, it is also applied in geography and ethnography research to learn about the relationship between human and the surrounding environment.
The term “Cognitive mapping”

- A method that is used to get visual representations on the way users utilize or think about a certain resource or place (Bullingham, 2015).

- In the field of social science, it is used in a more general way to map how people understand the world (Pinch, Sunley, & Macmillen, 2009).

- “Cognition”: the way people perceive and interpret events; and it’s also a process of refining information (Rosenthal & Zimmerman, 1978).

- “Map”: process of forming the cognition of the outsider environment and the representation of such cognition (Downs & Stea, 2011).
Cognitive mapping in LIS field

Donna Lanclos:
• “the anthropologist in the stacks”
• Anthropologist view on library user experience

Successful application in the library:
ERIAL Project
(Ethnographic Research in Illinois Academic Libraries)
• Ethnographic techniques in academic library
Why “Cognitive mapping”

- Generate data in a very short time;
- Good way to elicit the topic;
- Participant make direct contribution in a speedy way (participative relationship), they generate the research output directly and there is no wrong result;
- Easily adaptable to difference context and research topic;
- The usage can be in diverse forms and it can be adapted with different research methods;
- It is an effective approach of stimulating dialogue and exploring relationships (Emmel, 2008).
How to?

- Think carefully about the direction you give to participants
- Draw your conception on a piece of paper
- Use three different color pens in 6 minutes
- Change the color of the pen in every 2 minutes

(Asher & Miller, 2013)

Notice

- There’s no right or wrong way to draw up thoughts
- Can include words, texts, keywords, phrases, abbreviations, characters, rough scribbles, or diagrams
Interview as a supplement

- a supplement to cognitive mapping that gives participants space to explain or elaborate on their behaviour or the maps they produce

- questions asked can be moved around and added along with the responses from participants (Priestner & Borg, 2016).
Map analysis technique-Qualitative thematic analysis

Thematic analysis is “a method for identifying, analysing and reporting patterns (themes) with data” (Braun & Clarke, 2006, p. 79)

• Identify elements from cognitive maps (keywords, objects, items and concepts)
• Generate a set of elements
• Group elements into categories (by theme or research question)
Map analysis technique-Coding visual elements

Coding is “a process of identifying aspects of the data that relate to your research question” (Braun & Clarke, 2013, p. 206)

• Identify elements from cognitive maps (keywords, objects, items and concepts)
• Organize elements that can form a complete meaning into groups
• Discover relations between groups
• Focus on spatial relations and how they formulate the map
Map analysis technique-Quantitative counting

- Identify elements from cognitive maps (keywords, objects, items and concepts)
- Calculate the frequency of each element and create indexes to sort them based on their frequency and their occurrence sequence (mean position) in the drawing
- Calculate the F/P index

\[ \text{F/P} = \frac{\text{Frequency}}{\text{Mean position}} \]

\[ \text{Mean position} = \frac{\text{Color A} + (2 \times \text{Color B}) + (3 \times \text{Color C})}{\text{Frequency}} \]

(Asher & Miller, 2013).
A Case Study
Theme of drawing

“perceptions, usage and expectations of digital library”

To explore:
• Information seeking behavior
• User experience
• Context: digital library
- Context-organised
- Core: academic tasks
- Average portion of three colors

First: green; second: orange; third: red
• Device-organised
• On laptop: academic searching, retrieving
• On mobile phone: checking, library service information

First: red; second: purple; third: yellow
• Laptop: searching & downloading
• Mobile phone: daily searching, short-time reading
• Reading device (Kindle): long-time reading
• Expectation: VR experience to engage with library resources

First: orange; second: green; third: blue
Data Analysis

Visual data analysis in Nvivo
(segments of the image can be selected and coded)

Code stripes in Nvivo
(colors are assigned automatically by the software)
Code tree

- I hey wish to search to...
  - Information seeking beha...
    - Activities
      - Buy e-books
      - Downloading
      - Read e-books
      - Search academic res...
      - Search other things
      - Self-study
      - Take e-notes
      - Write papers
    - China Library&library s...
      - Cheching Library app
      - CNKI
      - Terminal machine
      - Website
      - WeChat
      - WeChat public acco...
    - Devices&apps
      - Amazon
      - Devices
        - Desktop

F/P index table

<table>
<thead>
<tr>
<th>Name of code</th>
<th>Type of code</th>
<th>Files (n/15)</th>
<th>Frequency</th>
<th>Mean position</th>
<th>F/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information seeking behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search academic resources</td>
<td></td>
<td>4</td>
<td>4</td>
<td>1.75</td>
<td>2.29</td>
</tr>
<tr>
<td>Read e-books</td>
<td></td>
<td>3</td>
<td>4</td>
<td>2.25</td>
<td>1.78</td>
</tr>
<tr>
<td>Search other things</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td>1.33</td>
</tr>
<tr>
<td>Devices &amp; apps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td></td>
<td>7</td>
<td>8</td>
<td>1.38</td>
<td>5.8</td>
</tr>
<tr>
<td>Mobile phone</td>
<td></td>
<td>6</td>
<td>6</td>
<td>1.17</td>
<td>5.13</td>
</tr>
<tr>
<td>Desktop</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>iPad</td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Kindle</td>
<td></td>
<td>3</td>
<td>4</td>
<td>2.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Devices</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td>1.33</td>
</tr>
</tbody>
</table>
Questions & Practice time (20 minutes)

➢ Any questions so far?

Prepare
- a piece of plain paper
- three colored pens
Practice time! (20 minutes)

Please draw a cognitive map in 6 minutes by 3 colored pens. I will give you signs to change pen color in every 2 minutes (if you have them).

**Topic of drawing:**
Your information seeking behaviour as an academic researcher

Welcome to share your cognitive map on social media, by using #iconf!
Welcome to share your cognitive map on social media, by using #iconf!
Discussion time (15 minutes)

Now discuss with each other:
• What did you draw in the cognitive maps?
• How you expressed yourselves by drawing?
• What did you draw first and what did you add at the last minute?
• Is the 6 minutes enough to express what you want to express?
• How the cognitive mapping can be used to learn about information behaviour?
• How cognitive mapping can be used in your field and research?

Welcome to share your cognitive map on social media, by using #iconf!
Q&A

https://www.shutterstock.com/zh/image-photo/thinking-cat-questions-mark-above-against-208701973
To close

Strength
• A speedy way to generate data
• Adaptable to different research contexts
• Can be analysed from diverse perspectives

Weakness
• Difficult and time-consuming data analysis process
• Complementary techniques should be used along
References


