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Exploring card sort methods: interaction and implementation for research, education and practice

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ABSTRACT

Exploring new research methods can help scholars and professionals accurately answer questions and solve problems. Card sorting, which encompasses a variety of methods aimed at understanding participants' subjectivities, is not commonly used in information science research. This panel intends to familiarize attendees with the purpose and procedures of card sort methods and to allow for hands on interaction with the artifacts and software used by the methods. The opportunity to interact with the tools of card sorting methods will help to familiarize the method and allow attendees to better evaluate it for their research needs. Panelists, who have used these methods in industry and research can discuss specific research questions with attendees and offer advice. (115 of max 150 words)

KEYWORDS

Card sorting; research methods; Q methodology.

ASIS&T THESAURUS

Card sorting; Research design; Data collection; Data analysis

INTRODUCTION

Exploring new research methods can help scholars and professionals accurately answer questions and solve problems. Card sorting, which encompasses a variety of methods aimed at understanding participants' subjectivities, is not commonly used in information science research. This panel intends to familiarize attendees with the purpose and procedures of card sort methods and to allow for hands on interaction with the artifacts and software used by the methods. The opportunity to interact with the tools of card sorting methods will help to familiarize the method and

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allow attendees to better evaluate it for their research needs. Panelists, who have used these methods in industry, education, and research can discuss specific research questions with attendees and offer advice.

During the first section of the presentation, the panelists will provide an overview of card sorting methods, so that attendees have a general understanding of the variety of procedures available. Following the overview, each participant will present a use case in greater detail, so that attendees also gain in-depth understanding of some specific methods and applications. These exemplars will include 1) Q methodology, 2) a hybrid variation used in qualitative interviews, 3) application of the method in industry, and 4) application of the method in professional education. A question and answer period will follow the presentation.

During the second section of the presentation, attendees will be invited to interact with tools typical of card sorting methods, such as card sorting software on tablets and paper cards on sorting mats. Panelists will demo the tools and answer questions about using them for study in IS.

PRESENTATION SECTION

Conrad: Method Overview & Hybrid Case Sort Case Illustration

Card sorting is an interactive research method that aims to illuminate how participants understand and organize concepts. In the broadest context within the social sciences, sorting – or card sorting – is a participatory research method that aims to engage participants in co-development of conceptual categories and definitions, and to illuminate their approach to and organization of the topics at hand (Coxen, 2004; George, 2008). From the techniques used in software and computer science fields, to academic variations across social science research, as well as therapeutic approaches and educational design, card sorting methods are used to generate diverse datasets for qualitative, quantitative, or mixed-method analysis.

These variations often guide the degree to which an investigator pre-defines the labels or values signified by the

cards, and the headings or categories against which they are sorted. Where card-sort methods invite participant-defined labels and/or categories, resulting datasets are best managed via qualitative analysis; whereas, card-sort studies that prescribe card labels and/or categories can numerically tabulate results for quantitative analysis, such as similarity matrices. While card sorting was initially developed for in-person research using physical cards, web-based tools now offer the option to conduct card sorting online, which offers benefits such as remote card-sort studies.

Whether open, fixed, or hybrid variations, conducted with digital or physical cards, “think-aloud” observation is a key component of card-sort activities, where participants can explain their decisions and actions as stream-of-consciousness thinking during the card labelling and sorting exercises. As noted by Nielsen, “much of the value from card sorting comes from listening to the users’ comments as they sort the cards: knowing why people place certain cards together gives deeper insight into their mental models” (2004, para. 12). The addition of think-aloud or interview discourse to explain participants’ sorting rationale introduces an opportunity for mixed qualitative and quantitative analysis of card-sort research data. Card sorts within interviews allow for fluid integration of follow-up questions to contribute to answering the given research question.

Card sort exercises conducted within in-depth, qualitative interviews offer scholars another dimension to a study, increasing opportunities for an investigator’s understanding and interpretation of the interview data and participant experiences. Card sorting is an approachable, object-based method to elicit deeper reflections and greater recall during interviews, build rapport during a research session, and can help engage other mental faculties and deepen participant reflection and recall, offering first-hand contact with abstract, sensitive, or rarely articulated concepts or feelings.

As demonstrated in a case illustration of a doctoral study currently in progress (Conrad & Tucker, 2019), hybrid card sorting within qualitative interviews offers added flexibility, allowing participants to reflect and respond at their own pace, to consider and revise sorting decisions. Whether adapting methods from computer science, psychology, or some intersection therein, card-sorting techniques within interviews are often cited as especially effective in examining individual conceptual frameworks and approaches to organizing concepts.

VanScoy: Case Illustration: Q Methodology

Q methodology is one type of card sort method that has been widely used and LIS and has a large, interdisciplinary community of support. Developed in 1935, the method aims to categorize points of view or opinions. Data is factored on clusters of opinions, rather than on individuals, allowing researchers to characterize perspectives about a phenomenon (Stephenson 1935; Watts & Stenner 2005). Procedures begin with the development a Q sample – a collection of statements that reflect the breadth of opinions about a topic. During data

collection, participants sort the Q sample into a quasi-normal distribution based on which cards are most and least like the way they think. Following the card sort, participants elaborate on the cards they placed in the most extreme positions – this qualitative data is later used to inform the quantitative results.

Several apps are available to analyse data, such as PQ Method (<http://schmolck.org/qmethod/>) and Ken-Q Analysis (<https://shawnbanasick.github.io/ken-q-analysis/>). By comparing participants’ card sorts, these apps identify factors, as well as statements from the Q sample that distinguish the factors. The researcher then describes each factor, drawing on the distinguishing statements and the qualitative data.

Suitable for topics where there is literature covering a variety of approaches or opinions or where the research has collected a large dataset of opinions on the topic. These form the concourse from which the Q sample is drawn.

Q methodology in that it is inexpensive and portable (Durning & Osuna, 1994), forces participants to prioritize amongst competing values, and provides participants with an opportunity for reflection and learning. Drawbacks of Q methodology include researcher bias in the creation of the Q sample (Zabala et al. 2018), concerns about language barriers, and the inflexible nature of the Q sample once it is developed.

Gorichanaz: Card Sorting in Web Design

In information architecture, card sorting is a human-centered design method used for improving the findability of information (Spencer, 2009). The method is simple, inexpensive, and reliable. It is often used in industry settings to understand users' needs and mental models. For example, card sorting can be used to inform the design of a website's navigational structure, including what content areas are grouped together and what labels are given to each group. Card sorting can be used as part of designing a new site, adding a new area to an existing site, or redesigning an existing site. While valuable, card sorting is best implemented as part of a fuller research-for-design program, including research on users' information needs (Rosenfeld, Morville & Arango, 2015).

Card sorting for information architecture can be open- or closed-ended. Open-ended card sorting is best for exploration in the early stages of a project, while closed-ended card sorting is useful for validation later in the process. In open-ended card sorting, participants are given a stack of cards (generally about 20–25) labeled with categories of information (e.g., About, How it works, Blog, Recipes, etc.). Participants are asked to sort the pile into smaller stacks that make sense, and then to label each stack with a term of their choosing. The participant is asked to think aloud (Ericsson & Simon, 1993) while they work. Closed-ended card sorting is quite similar, except there the major labels are predefined

and participants are asked to sort into those labels. A succinct guide is given by Spencer (2004).

Both qualitative and quantitative data can be captured in card sortings. Qualitatively, card sorting can help designers understand users' frustrations, reasoning and questions as they navigate a world of information. Quantitatively, designers can analyze the number of times that two cards are groups together, or the number of times a particular card is placed in the same category. Both sorts of data can inform design choices.

Demasson: Broadly speaking, seeing and doing, the appeal of educational card sorting

When discussing the value of card sort within educational contexts it is typically proposed that it can be beneficial in areas such as

- Identifying strengths and weaknesses
- Identifying values
- Reflecting on progress
- Develop linkages between ideas and concepts
- Build models of an area of knowledge/practice (Boyle and Jackson, 2009, p.1, para 3)

That's all true. However, those benefits are more akin to learning outcomes than expressions of value to the student coming by way of their engagement with learning. Where card sort really shines is in its ability to allow for data collection and analysis by way of a process that is at once familiar, logical and sensory.

Where other methods may be difficult for a layperson to engage with, the idea of sorting cards based on value, preference or visual similarity is at once familiar and widely embedded across many cultures. That makes it a highly suitable instrument for educational and research practices. The immediate familiarity your audience or participants will have with the ethos of sorting cards reduces the amount of time necessary to explain the process of card sorting before introducing the learning component or data collection phase of your work. That sense of familiarity and simplicity (Fincher and Tenenber, 2005) is also beneficial when dealing with cohorts who may require a delicate approach to data collection due to language, learning or personal factors.

What then is the logical component? That simply refers to the rationale behind grouping items based on a particular scale – similarity, preference, value, trust, etc. It is a process undertaken on a daily basis across any number of different contexts and requires little to no conceptual reframing in order for a participant group to be comfortable with its requirements. What we mean by sensory, refers to the tangible component of card sorting. The cards must be moved in order to be sorted which appeals to human physicality and provides a way in which to reach those who learn kinesthetically (Waite, 2011). The tactile nature of the card sort allows for direct physical engagement rather than relying on less interactive verbal or static presentations.

A similar value can also be had by those who are visual or spatial learners (Fleming and Baume, 2006). Within a classroom or educational setting, regardless of context, the need to engage with all types of learners – auditory, visual and kinesthetic – is key. However, it is equally important in a research setting where the aim is to extract the richest source of data. When the cohort is human there is almost certain to be diversity of learning styles. Therefore, a data collection instrument with broad appeal is invaluable and card sort method can be an ideal fit (if there is greater desire to engage auditory learners then 'think-aloud' method can be used so the participant thought process is brought to the fore).

INTERACTION SECTION

During the interaction portion of the alternative event, attendees will participate in a trial demonstration of the card sort method. Led by Dr. Demasson, with the in-audience support of the other panelists, the group will experience the simplicity, tactility, and familiarity of card sort exercises. Using a simple PowerPoint application, participants will have a chance to see how card sorting works as a reflective activity without significant expense or effort.

A barrier to use of card sorting is researchers' lack of familiarity with these methods' procedures and tools. During the interaction section of the panel, attendees will have the opportunity to explore a digital variation for data collection and analysis. Panelists will provide demos and share advice from their experience.

Panelists will be available to answer questions and share advice related to card sort methods.

CONCLUSION

It is one thing to read about a new method in an article or hear about one in a presentation, and another to actually use a method in one's research. This panel aims to move beyond simply describing procedures and advantages of a method, to encourage attendees to interact with the tools of the method and envision using them in their own research.

PANELISTS

The panelists have differing areas of experience with card sort techniques, as well as a broad awareness of the variations of this method.

Lettie Conrad is Information Science Doctoral candidate at Queensland University of Technology via the San José State University's School of Information Gateway PhD Program. With more than 15 years of publishing experience, Conrad has led user-centered product research and development, leveraging creative design methods, such as card sorting. In both her professional and academic work, Conrad is dedicated to humanizing the development of digital resources to support the scholarly lifecycle. ... She has recently published a paper about card sort methods, and her

use of a hybrid variation in her doctoral research, in the *Journal of Documentation* (DOI: JD-06-2018-0091).

Andrew Demasson is an Associate Lecturer in the Information Systems School, Science and Engineering Faculty at Queensland University of Technology. His research has focussed on reconceptualising theoretical approaches to and understandings of information literacy as well as examining the area of information experience within community contexts. Work in progress include implementation of card sort as a reflective and evaluative tool in the ePortfolio framework and research outlining the information experience of aged persons after the loss of a spouse/partner.

Tim Gorichanaz is an assistant teaching professor at the College of Computing & Informatics at Drexel University, where he teaches courses such as *Introduction to Human-Computer Interaction* and *Design of Interactive Systems*. Previously, Gorichanaz worked in the digital department of Laughlin Constable, a full-service marketing agency in Milwaukee, Wisconsin, where he learned and used card sorting as a tool in web design.

Amy VanScoy is an associate professor in the Department of Information Science at the University at Buffalo. Her introduction to Q Methodology was participating in a study of subjectivities about homeschooling conducted by a doctoral student in education. VanScoy has recently completed a Q Methodology study of her own exploring conceptualizations of reference and information service, with participants from Slovenia, South Africa, and the United States.

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