Card Sorting as Collaborative Usability Method for User-Driven Information Organizing on a Website

Recommendations for Running Collaborative Group Card Sorts in Practice

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Abstract

Card sorting is an easy-to-use, quick, inexpensive, yet powerful usability method for information organizing on a website as it generates usable input directly from end-users as to how they would expect to find information on a website. When run collaboratively in groups, the discussion between the users about the content of the cards and their relatedness provides valuable insight into the users' mental models. Focusing on epistemic asymmetry in the group discussion, this article highlights important issues which may affect the outcome of group card sorting. It is demonstrated that group card sorting demands great attention from the test manager in relation to the composition of the group, i.e. the number of users per group and the users' educational level and formal organizational positions, in order to ensure a result that is representative of the group as a whole.

Introduction

At some point in time, many of us have come across a website on which we had difficulties finding the information we were looking for because the organizing, grouping, and labeling of the content and navigation menus did not make sense to us. The structure of the website could, however, fairly quickly and easily have been improved by means of the card sorting method.

Within usability, web design, and information architecture, the card sorting method is designed to generate a structure for information and navigation of a website by uncovering how its end-users would expect to find content on the website. The card sorting method is a common, easy-to-use usability method that can be used by anyone, practitioners as well as persons with no formal prerequisites for running user tests, who

needs to organize information on any website in order to help create, validate, or improve its information structure (e.g. Spencer 2009).

This article is based on my Master's thesis from the Department of Design and Communication, University of Southern Denmark on "Card sorting as a method for non-professional test managers for user–driven information organizing on a website" (Bjerre 2013). In my study, I observed and analyzed how three card sorting sessions for the website www.videreuddannelsen-nord.dk (Videreuddannelsesregion Nord) - the website for the Postgraduate Medical Training Program in the Northern Region of Denmark - were run collaboratively in groups of three to five users. The users were actual end-users of the website and were divided into the following three groups according to their job function: members of staff in the secretariat for postgraduate medical training, postgraduate clinical associate professors, and postgraduate medical trainees.

Based on my findings, the purpose of this article is to account for the significance of the social interaction that takes place between the users in the groups with specific focus on epistemic asymmetry in the interaction and subsequently to propound recommendations for running collaborative group card sorts in practice.

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FactBox: Card sorting in short

- Card sorting is an easy-to-use, quick, inexpensive, yet effective usability method for information organizing on a website.
- The method can be used by anyone who needs to organize information on any website in order to improve its information and navigation structure.
- End-users of a website are handed out cards containing concepts from the navigation menus and pieces of content on the website and are asked to sort the cards in categories based on the relatedness of their concepts and/or functionality, thus uncovering the users' mental models, i.e. way of thinking.
- Card sorts can be run either individually with one user at a time or collaboratively with a group of users cooperating on sorting the cards. Run with individual users, the card sorts will identify similarities and differences in the users' mental models, whereas card sorts run in groups will provide valuable discussion and debate about the users' understanding of the content of the cards and how the cards are related.
- Depending on what you want to learn, card sorts can be either open or closed. As a method for discovery, the users create and name the categories in which they have sorted the cards (open card sort). As a method for validation, the users sort the cards into pre-defined categories (closed card sort).

(E.g. Spencer 2009, Gregersen & Wisler-Poulsen 2009)

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A best practice as a standard of comparison

In order to be able to analyze and discuss the card sorting sessions in my study, I developed a best practice for the planning, running, and analysis of card sorts. Based on fourteen established practitioners and research articles representing among others case studies and practical guidelines for the

Figure 1: *The group of postgraduate medical trainees sorting the cards* (Bjerre 2013).

usage of the method, twelve methodological parameters were identified, thus providing a standard of comparison for the card sorting sessions which I observed. In addition to analyzing the card sorts in comparison with best practice, I analyzed each card sorting session in relation to theory on social interaction, i.e. in an epistemic perspective.
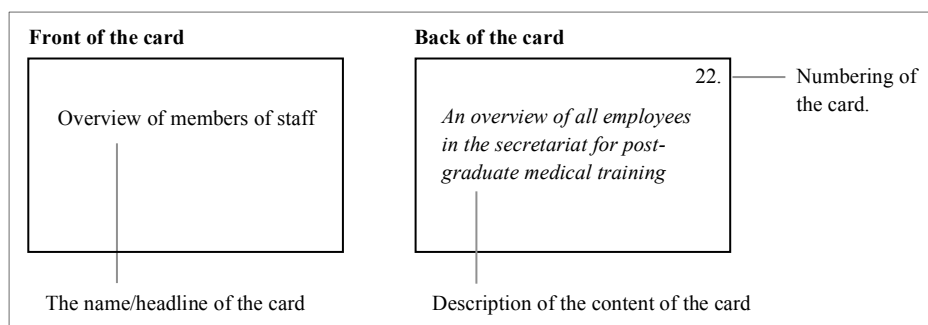
Figure 2: *A best practice example of the appearance and content of a card* (Bjerre 2013).

Best practice compared with the actual card sorting sessions

The best practice parameters concerning the group aspect of card sorts included 1) the differences between individual and group card sorting depending on the type of results one wishes to achieve, 2) the number of users to include, and 3) the number of card sorts to run.

Choosing between individual or group card sorting

The choice between individual or group card sorts depends on the purpose of the method, i.e. what you want to learn from it. In the case of group card sorting, the test manager benefits from the discussion and debate that take place between the users about their understanding of the content of the cards and their relatedness, whereas individually run card sorts capture the users' individual approaches to information organizing. Thus, group card sorts are, according to best practice, great for qualitative data gathering, whereas individual card sorts are well suited for collecting quantitative data. According to best practice, individually run card sorts are the most common approach.

In the study, the test manager's aim of the card sorts was to gather qualitative data with focus on the dialogue between and reflections of the users. The test manager also pointed to the time factor arguing that several individually run card sorts would take up too much time in proportion to the potential extra output. In addition, the users afterwards stated that solving the task collaboratively, and the discussion which this entailed, had been beneficial for the process and outcome of the card sorts.

The number of users and card sorts

The number of users to include in group card sorting sessions should be sufficient enough to make up a basis for decision for the subsequent information organizing but should at the same time not surpass a manageable data quantity. According to best practice, five to six card sorts with three to five users per sort are recommended.

In my study, the test manager ran three card sorting sessions with three to five users in each card sort. After the first card sort, he argued that four users per group would be suitable considering the sound level and overview of the cards for him as well as for the users.

The card sorts in an epistemic perspective

All aspects of our social lives are based on our ability to interact socially. In the daily social interaction, social actions define a social relation between the person performing the action and the person receiving the action. Through such social actions, both parties in the interaction continually position themselves in relation to each other. Hence, the

interaction and the display of our knowledge are coordinated social actions based on morally founded conversational and social practices. At the intersection of knowledge and morality in social interaction thus lies an epistemic perspective which focuses on the epistemic positions occupied by the interactants through verbal and nonverbal actions (Heritage 2009; Stivers et al. 2011).

This epistemic perspective is important to be aware of during the group card sorting session as it may negatively influence the outcome of the card sort. As presented at the end of this article, there are, however, certain measures for test managers to take in practice in order to counter the possible pitfalls of collaborative group card sorting.

Epistemic primacy and asymmetry

Epistemic primacy is concerned with the interactants' relative rights to know about the subject matter of the interaction, their relative rights to display knowledge, and the completeness of their knowledge. One of the social norms within epistemic primacy is that interactants who have in-depth knowledge about the subject matter have primary rights to make assertions about it. Thus, epistemic primacy induces an asymmetry in the interactants' knowledge (Stivers et al. 2011).

Downgrading and claiming epistemic primacy

In an interaction, a distinction is made between (first) speaker and recipient (second and third speakers) (Sidnell 2012). Using verbal and nonverbal actions, the speakers can either downgrade or claim epistemic primacy by structuring the interaction through turn-taking systems in which the interactants take turns at speaking (Heritage 2009).

The person who speaks first is considered to have epistemic primacy. This first speaker can, however, downgrade his inherent epistemic primacy through the use of apparent nonverbal actions (Landgrebe & Heinemann 2014), mitigating words and phrases such as "maybe" and "I think", tags added to an assertion (Stivers et al. 2011), e.g. "so-", "or what" (Landgrebe & Heinemann 2014), and "isn't it". If the first speaker adds a tag to his assertion, he then phrases his speaking turn as a question rather than merely an assertion on which the second speaker is expected to agree. In addition, the use of 'wh-questions' also points to an epistemic downgrading as the questioner indicates to be less

informed about the subject of conversation than the recipient. Table 1 below shows the knowledge ('K') asymmetry for 'telling' and 'asking' between the (first) speaker and the recipient of the assertion/question (Sidnell 2012):

	(First) speaker	Recipient
Telling	K+	K-
Asking	K-	K+

Table 1: *Knowledge asymmetry for 'telling' and 'asking'*
(Sidnell 2012).

Conversely, the second speaker can also add a tag to his utterance. By doing so, he challenges the first speaker's inherent epistemic primacy as he resets the speaking turn. Another way the second speaker can claim the first speaker's epistemic primacy is by answering the first speaker's assertion with an actual response or corroboration. Hence, a so-called mismatch arises. A mismatch can also appear if the second speaker subordinates to the first speaker by answering the first speaker's assertion with words such as "yeah" (Stivers et al. 2011), "oh", and "okay" (Landgrebe & Heinemann 2014).

In my study, all three groups turned out to consist of dominant first speakers and more reserved second and third speakers. Thus, there was a risk that more reserved interactants would compromise too much on their own mental models by which the outcome of the card sort would perhaps not be representative of the group as a whole.

Regarding the more reserved interactants, there did, however, not seem to be an unequivocal correlation between being a reserved interactant and using explicit, subordinating expressions. In fact, such expressions were used both by reserved second and third speakers and dominant first speakers. In the following, we see an example (ex. 1) of how the first speaker (A) ends up subordinating to second speaker (B) by fully complying with B's reasoning using the words "yeah" and "okay":

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A:	Then, this one
	Points at the card with the headline "General courses in basic clinical, introductory, and specialist training should be split up in three. Where you have –
B:	- No, it says "General courses", you see.
A:	Yes.
B:	That's all right.
A:	Yeah. Yes.
C:	Yes.
A:	Okay.

Example 1: *Example of first speaker (A) subordinating to second speaker (B)* (Bjerre 2013).

There were also examples of the dominating first speakers (A) downgrading their epistemic primacy by the use of 'wh-questions' (ex. 2), tags (ex. 2 and 3), and mitigating phrases (ex. 2 and 3):

A:	And what would you like to do with that one?
	Points at a card
B:	But if it's, if it's something very specific about anesthesia, then we could consider –
A:	No, I don't think it is, is it?

Example 2: *Example of a first speaker (A) downgrading his epistemic primacy* (Bjerre 2013).

| A:	This is also 'Who are we', wouldn't you say?
B:	Yes, but that was also the pile it was in. And that one
	Points at a card
	was too. No.
A:	Yeah. Regarding the national council. Isn't it?
B:	Yes.
A:	Wouldn't you say?

Example 3: *Example of a first speaker (A) downgrading his epistemic primacy* (Bjerre 2013).

Examples of second speakers challenging the first speaker's epistemic primacy were also seen. In example 4, second speaker B challenges first speaker A's epistemic primacy by corroborating A's assertion. In addition, B adds a tag to the reply, hence resetting the speaking turn and paving the way for a new speaking turn:

A:	We have to go through them[1] one at a time.
B:	Yes, don't you think?

Example 4: *Example of a second speaker (B) challenging the first speaker's (A) epistemic primacy* (Bjerre 2013).

Yet, in general, the study showed that the role as first speaker entailed a role as leader, hence acting as the spokesperson on behalf of the group, determining a method for sorting the cards, reading aloud the text on the cards, placing the cards in the piles, and filling in new cards or correcting the content of existing cards. This, however, did not seem to be problematic to the other users - in fact they afterwards stated that it had been an advantage that one person took the lead and ensured an outcome of the card sorting process.
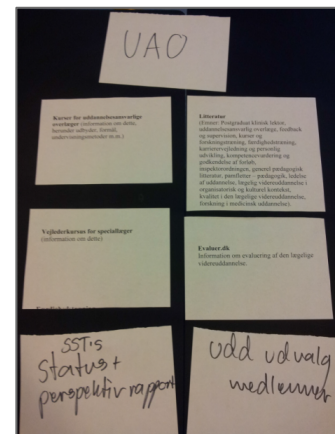
Figure 3: *One category sorted by one of the groups. The users have added two handwritten cards to the category and have named the category ("UAO")* (Bjerre 2013).

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[1] In this context, "them" refers to the cards.

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**Externally defined vs. locally established epistemic primacy**

Epistemic asymmetry can be found in other situations as well. For instance, an externally defined role, e.g. the formal organizational position of the interactants, may induce epistemic asymmetry. In addition, locally established epistemic primacy can occur if not all interactants have been present during the whole interaction due to factors outside of the interaction. In such cases, there is a natural difference in the interactants' locally established epistemic primacy, and the epistemic asymmetry is then not necessarily unfortunate but can be accepted by the interactants because their knowledge of the subject matter actually differ (Landgrebe & Heinemann 2014).

In the study, all three groups represented differences in the interactants' formal organizational positions due to differences in levels of education, job function, and consequently different levels of knowledge about the content of the cards. In two of the groups, there seemed to be a connection between occupying the role as first speaker and holding a prominent externally defined organizational position.

In two of the three card sorting sessions, there were also differences in the interactants' locally established epistemic primacy. These differences were a consequence of the externally imposed responsibility of being on phone duty which resulted in two interactants from two different groups leaving the room and card sorts for a longer or shorter period.

However, in one of these two groups, it seemed to be of greater importance to have a prominent formal organizational position in the group than to have been present the entire time. In this group, the person on phone duty (A) left the room to answer the phone already before the card sorting had begun. When returning, A did not, however, take a subordinate position compared to the other two interactants (B and C) who had been present all along. On the contrary, B and C gave A an introduction to the task and how they had sorted the cards up till that point. Shortly after, A took over the role as first speaker and leader of the card sort. B, who was the primary first speaker before the return of A, subsequently took a subordinate position compared to A. C, who was the primary second speaker before the return of A, afterwards took an even more reserved position. In a subsequent interview, both C and the test manager stated that the nature of the cooperation had changed after the return of A from being an equal dialogue between

B and C and transforming into a process controlled by a leader (A). On the contrary, however, B appeared to accept A's externally defined epistemic primacy which was expressed when B at the end of the card sort explicitly asked A to explain to the test manager how they had sorted the cards and their reflections on their way of sorting.
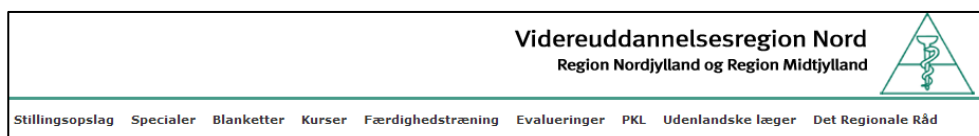
Figure 4: *The main menu of the website as it appeared before the card sorting sessions* (Bjerre 2013).

Figure 5: *The main menu of the website as it appeared after its redesign based on the card sorting sessions* (Videreuddannelsesregion Nord).

Recommendations for running collaborative group card sorts in practice

My study showed that running collaborative card sorts in groups involves a risk of the process being managed by a dominant user at the expense of the contribution of more reserved users. However, the study also showed that the interaction in a group is not necessarily damaged by epistemic asymmetry, but that epistemic asymmetry can in fact be accepted by the interactants. Also, in spite of a dominant leader, group card sorting entails a valuable discussion between the users about which cards should be placed where and why. In several cases, the users' understanding of the content on the cards differed, and this debate contributed to a thorough discussion. Yet, it cannot be ruled out that epistemic asymmetry may in fact lead to an outcome that represents only some of the users of the group.

Weighing up the advantages and disadvantages of card sorting in groups, the qualitative data, which the social interaction gives through its valuable input from the discussion and the reflections of the users, should be emphasized. Such qualitative data are very useful in the subsequent analysis and interpretation of the results. In many cases, the

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qualitative data also means that fewer card sorts are necessary in order to obtain useful input for the information organizing on the website.

An appropriate number of participants to include in each card sort are two or four users per group. Including an even number of users reduces the risk of one user being left out. A relatively small number of users ensure a good overview of the cards for all the users as well as an acceptable sound level.

The users' educational levels and formal organizational positions seem to influence how dominant or reserved the users are, and the composition of the group may be of importance to the outcome of the card sort. Thus, it is worth considering if the users should all hold equal formal organizational positions.

Running collaborative card sorts in groups demands a great deal of attention from the test manager in order to achieve a result which is representative of the group as a whole. In general, the test manager should keep in the background as to not disturb or affect the sorting. However, if there are participants who are not included in the discussion, the test manager should intervene and facilitate an equal discussion.

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