Sketch Notes, a Non-traditional Way for User Researchers to Take Notes

Maliheh Aghanasiri(⊠) and Grace Phang(⊠)

Liberty Mutual Insurance, Boston, MA, USA
{Maliheh.aghanasiri, Grace.phang}@libertymutual.com

Abstract. The User Experience (UX) research team at Liberty Mutual Insurance has implemented a new method of taking notes and sharing notes with the team, Sketch notes. The purpose of Sketch notes is to accurately convey meaning at a glance and facilitate visual memory during collaborative analysis and insight-driven workshop activities. Sketch notes are a condensed visual map of what recruited participants share with the product team in an interview session or a usability test. In the first section, we explain why note-taking is an important part of the work of user researchers. Next, we review the note-taking methods that we use at Liberty Mutual and their advantages and drawbacks. In the third section, we introduce Sketch notes and explain how both the literature and its successful deployment at Liberty Mutual Insurance support this approach.

Keywords: Sketch note · Note-taking methodology · User research notes · Visualized note-taking · Information recall

1 Introduction

1.1 Background

In the process of enhancing Liberty Mutual Insurance digital experiences for customers and prospects, the product and development team including user research has undergone a digital transformation. As part of this transformation in the past two years (starting January 2017), several portfolios and over one hundred squads operating in a customer-centric Agile model were created.

To ensure that products are desirable and usable by customers, the first step is to understand a user's goals and needs. User research activities provide valuable opportunities for designers, product owners, developers, and others in cross-functional roles to learn about user's behavior and how they interact with specific products first-hand [1]. In addition, involving and engaging development teams in research projects encourage stakeholders to develop products that align better with a user's needs and behaviors. It increases empathy for users and creates ownership for usability outcomes.

During Liberty Mutual's transformation journey, the user research team not only implemented new research methodologies into practice, but also incorporated several new data capturing processes and note-taking artifacts. Most of the artifacts were created collaboratively with the research team and Agile squad members.

We involved development teams within the research studies we conducted to give them the opportunity to learn about the users and understand their problems. One way to increase stakeholder engagement in research projects was to encourage them to observe user research sessions and take notes [2]. To bring this to realization we used multiple note-taking techniques that varied depending on the study goals, objectives, and research method. Important factors for us were to ensure the accuracy, structure, clarity, and prioritization of data we found during study sessions, such as interviews.

1.2   Note-Taking Methodologies

Note-taking methodologies that we used in different projects included:

- Handwritten sticky notes
- Verbatim note-taking tables
- Video/audio recordings
- Empathy map
- Journey map
- Scorecards
- In-session survey questions
- Sketch notes

Handwritten Sticky Notes. Handwritten sticky notes (see Fig. 1) are the company's most frequently used note-taking method. In every interview and usability test at the company, observers write their top three to five findings on sticky notes. This results in a collaborative and egalitarian process by which each person's top observations are given the same value as everyone else's in the room. Each participant is assigned a different color of sticky notes and separate white pads. At the end of the research sessions, stakeholders stack redundant observations on each white pad for each participant. That is, the same observation by different stakeholders for the same participant counts as one single observation. Stakeholders then affinity diagram common themes across all the participants.
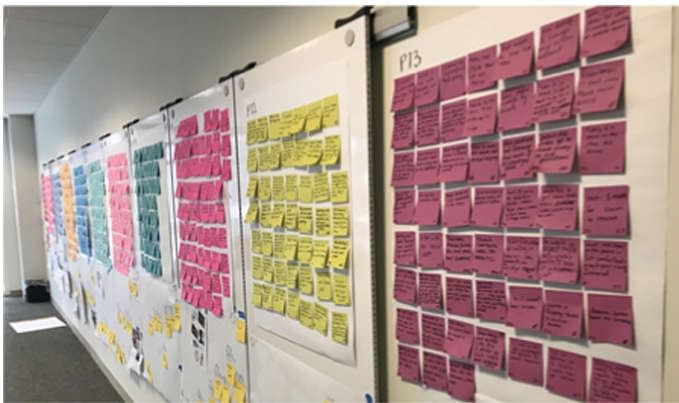

Fig. 1. Examples of handwritten sticky notes created for 13 participants.

Sticky notes are easy to explain, require low effort to set up, and color-coding makes it easy to see specific themes and identify the frequency of specific issues. However, there are a few disadvantages. Handwriting might be difficult to read, sticky notes are difficult to store if not transcribed, and they are limited in scope. They show pieces of information rather than the sequence in which issues happened.

Chronological Note-Taking Tables. Chronological note-taking tables (see Fig. 2) are similar to traditional written note-taking methods. On a grid, note-takers write down information corresponding to specific questions or scenarios.

The note-taking table makes it easy to compare findings across several participants and helps to keep track of certain identified elements. However, it requires preparation time to format and is inflexible, as it is based on the moderator guide.

Fig. 2. Example of chronological note-taking table.

Video and Audio Recordings. Video and audio are recorded for every user interview session. A variety of tools are used to take and record videos and audio: Skype, Zoom, GoToMeeting, Validately, and Morae Recorder/Observer.

Videos are the most accurate and exhaustive note-taking method. They can be stored for future use and can be shared with stakeholders who may have missed a session. However, videos require a participant's consent agreement, and it is time-consuming to review and transcribe videos.

Journey Maps. Journey Maps are artifacts that are created in-session, between a participant and a moderator (see Fig. 3). The moderator shares a screen view of a journey map template with the participant and transcribes the participant's explanation of a given process or experience. In our team, journey maps are created in either Microsoft excel files or Google Sheets, measuring several factors: emotion, question/thoughts, and devices. The emotion valence level is measured on a scale of 1 (very negative) to 5 (very positive).

The journey map is a useful tool for the comparison of the same experience across different participants. Because emotions are mapped onto a consistent five-point valence scale, it is easy to visualize the trajectory of emotions through an experience. Journey maps may vary in consistency (for example, number of steps and level of detail) depending on the moderator and participant.

Fig. 3. Example of a journey map.

Empathy Maps. Empathy Maps are a way to deepen understanding of users and are mostly used in the process of creating a customer persona [3]. Empathy maps can be used as note-taking methods that emphasize four key observations about the user - what they said, did, thought, and felt (see Fig. 4). The "does" section includes the behaviors and actions of the participant. The "thinks" section captures the user's thoughts. The "says" section includes direct quotes from the user. The "feels" section captures the user's emotional state, primarily using adjectives and contextual descriptions of what triggered that emotion.

The empathy map is a quick way to organize information about a user's attitudes and behaviors, which aids in the development of personas. However, the distinctions between the sections, such as "says" or "thinks" may appear overlapping or ambiguous. Note-takers must choose the section in which to put an idea, to prevent redundancy. Because information can be stored in multiple sections, this makes finding specific information afterwards more difficult as well.
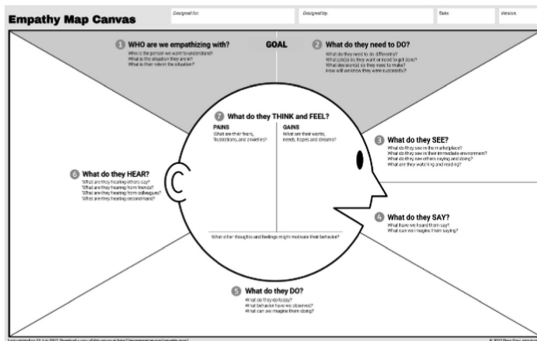

Fig. 4. Empathy map template [4].

Scorecards. Scorecards are a written note-taking method used to yield quantitative data from qualitative interviews. The scorecards are frequently used during user interviews to track metrics such as Likert scale answers, preferences, and experiences across different participants (see Fig. 5).

Scorecards help to quickly identify trends in data, especially regarding points of difficulty for users or perceptions around ease, satisfaction, and usefulness.

Scorecards have a rigid and unchanging design, because the metrics have been incorporated into the study design in advance. Scorecards also take time and expertise to set up, particularly when they include formulas and conditional formatting.

Fig. 5. Example of a score card.

Other Methods. There were other note-taking methods that we used including moderator handwritten notes, an emoji exercise, collages and headshot photos of participants. Moderator notes were used to clarify observer questions and if needed observer notes. We used an emoji exercise to ask participants how they felt in a specific stage of their experience, for example how they felt when they had to file an auto insurance claim. Participants picked 3–5 emojis out of a list of emojis to express their feelings. Collages were created prior to the session by participants to answer a few questions about their previous insurance related experiences (see Fig. 6). The collage is a useful tool in helping participants to recall relevant experiences, so they can better articulate their experiences during the session. Headshot photos of participants were

Fig. 6. Example of a collage.

also recorded. During collaboration sessions, viewing headshots helped many obser-
vers to quickly recall and differentiate participants, especially as there are typically 10–
15 participants per study.

2   Sketch Notes

2.1   What is a Sketch Note?

"Sketch notes are rich visual notes created from a mix of handwriting, drawings, hand-
drawn typography, shapes, and visual elements like arrows, boxes, and lines." [5]

Sketch notes are created in real time while listening to a story, discussion or
presentation (see Fig. 7).
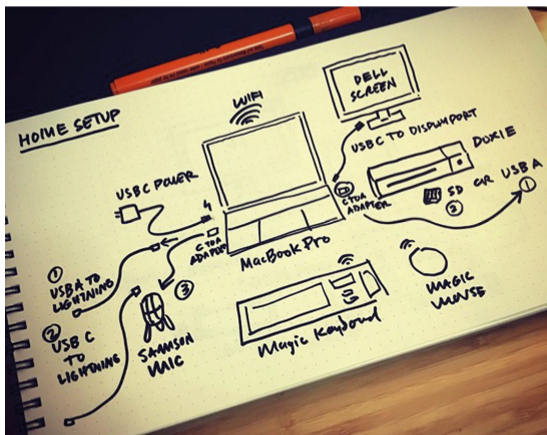
Fig. 7. Example of a sketch note created by [6]

In the process of creating Sketch notes, the note taker listens carefully to the
conversation and then draws a visual map of it. The purpose of Sketch notes is to
capture the big picture of ideas and discussions using both words and images [5].
Because the note-taker is sketching at the same time the session is happening, she can
capture information without having to recall it after the fact; there is also less chance to
"misremember" specific details. Although Sketch notes like any other creative products
are unique to the note-takers, sketch notes share some common components (see
Table 1).

Table 1. Common components of sketch notes

Common components	Example
Simple drawings of people and faces	
Common objects	
Typography to organize the visual map and to represent categories and actions	
Emojis to show feelings	
Quotes to indicate a statement or to draw attention to important points	
Containers to organize the visual components and create categorizations	
Connectors and arrows to show the flow of the processes and the sequence of actions and thoughts	

2.2 Verbal and Visual Channels in Note-Taking

An important part of a user research project is processing the collected data. Sketch notes provide a way for collaborators to use both visual and verbal information to recall and comprehend what a participant shared with them.

To understand why Sketch notes' incorporation of visual and verbal information is important, we can look to research on learning and memory. According to learning styles theory, people differ in their most effective method of instruction [7]. The popular VAK (Visual, Aural, Kinesethetic) model proposes that different people prefer to learn information through different sensory modalities. Thus, a visual learner may prefer to use pictures, images, graphs, and information requiring spatial thinking. An

auditory learner may prefer to listen to a session recording. A verbal learner may absorb written information best. A kinesthetic learner prefers to learn through physical actions such as creating tangible items. People express different preferences in how information is shown to them and have different aptitudes for processing and thinking about types of information (visual, auditory, and spatial). Learning theories that focus on these preferences have had a great influence in education from kindergarten to graduate school [7].

According to dual coding theory [8], verbal representations and mental images are processed under distinct cognitive systems. The verbal system focuses on words and speech while the non-verbal system focuses on mental images. An informational unit may be stored in both the verbal and image channels, and recall is greater when the information is stored within the two memory locations. In this theory, the two systems function independent of each other, but may interact depending on how information is activated. Information can be activated directly (representational processing), visual information can stimulate recall of verbal information and vice versa (referential processing), and information can be activated within the same system [9]. As Table 2 shows, different note-methods represent information in different channels - visual, verbal, and auditory.

Table 2. Method vs Information type.

Methods	Channels		
	Visual	Verbal	Auditory
Sketch notes	Yes	Yes	No
Sticky note-taking (individual)	No	Yes	No
Verbatim note-taking table	No	Yes	No
Scorecard	No	Yes	No
Collages	Yes	No	No
Journey maps	Yes	Yes	No
Empathy map	No	Yes	No
Audio/video recording	Yes	No	Yes

3   Methodology

In the past two years, to learn from our customers and prospects' experiences, we interviewed approximately 160 participants in twelve exploratory studies. Each study we conducted had unique goals and objectives and, as a result, distinctive recruiting criteria and participant demographics. For example, in one study we wanted to learn about the motorcycle insurance shopping experiences, so we recruited participants who had recently purchased motorcycle insurance.

Cross-functional teams (marketing researchers, data analysts, product owners, developers, UX professionals) collaborated on these studies. The user research team planned, ran, and executed the research portion of the projects. However, UX designers, developers, and product owners (members of Agile squads) fully engaged in

observation of the participant interview sessions, taking notes and finding themes and patterns across qualitative data to build empathy with participants and understand the needs of users.

For each of these studies, the UX research team planned an appropriate note-taking approach to deliver actionable and accurate insights to agile squads for their use in the development cycle. We created note-artifacts for each interview session that not only helped us uncover the experiences of users but also served as valuable reference materials from those sessions.

These artifacts were used in a multi-step collaborative analysis workshop later in the process. The artifacts helped attendees of these workshops (cross-functional team members) perceive and comprehend the information that participants shared with them.

As mentioned earlier in the paper, one of the artifacts we created was Sketch notes. Sketch notes provide a unique, easily comprehensible, visual presentation of content, which facilitates insights for product teams to use in the development of new customer-centric prototypes and applications.

We started using Sketch notes two years ago. During one of the interview sessions about purchasing motorcycle insurance, one of the researchers on the team (also one of the authors of this paper) created a Sketch note. When the observers that had watched the session put their top three findings on the wall, the researcher added her Sketch note drawing next to the sticky notes. Her drawing was simple and included important points about the participant's experience. Observers of the interview session collectively stated that the sketch helped them to recall the session. She was then asked to create Sketch notes for the rest of the sessions of that study. The Sketch notes of that study were so well perceived and shared that stakeholders of other research studies requested them as well (See Fig. 8). Some of the positive feedback about Sketch notes included:

- The visual map helps observers of research studies to recall the details within interview sessions.
- Data is in one place, and as a result, it is easy to review an entire interview session at a glance.
- They show the sequence of events that were shared in a session.
- They are fun to look at compared to text-only notes.
- Sketch notes convey the big picture and don't involve too many unnecessary details.

To enable the creation of Sketch notes for other research projects, we trained Agile team members on how to create Sketch notes. The researcher who originally crafted the Sketch notes led a training session. During that meeting she reviewed Sketch notes from previous studies and gave recommendations and tips: what types of drawing tools and papers to use, what type of information to capture, and what level of details to include.

During the study, we rotated note takers to prevent note-taking fatigue, as creating Sketch notes requires a high level of concentration. For a thirteen-session interview research study, we asked for at least three volunteers to create Sketch notes. Mostly designers, researchers, and content strategists signed up to create Sketch notes. Our team recognized that not all people were confident in their sketch abilities when being

Fig. 8. Sketch notes are exhibited in addition to other note-taking methods for research analysis.

introduced to the subject. However, an advantage of implementing Sketch notes is that it doesn't require high-expertise drawing skills. During the sketch note training process, we emphasized that anyone who can draw circles, squares, triangles, and lines can create Sketch notes.

These Sketch notes were then used in analysis and design thinking activities such as the creation of personas, problem statements, hypotheses, and concepts. For example, when creating personas, development team members would refer to quotes, bolded handwriting, bullet points, and other visualized elements on Sketch notes to recall an important characteristic of a participant and the pain point that the participant had shared during the session. They would then use this information to create distinct personas. Sketch notes were stored as raw data within the main research project folders and were shared with the members of development teams for their reference.

Overall, compared to sticky notes and other text-formatted notes, Sketch notes have been consistently identified by cross-functional development team members as one of the most referred to and valuable artifacts during the collaboration analysis process (see Fig. 9).

As with every note-taking methodology, Sketch notes have unique advantages and disadvantages. In terms of advantages, note-takers must comprehend and summarize top level ideas rather than details. Information is also concise (more concise than typed notes, which can be several paragraphs long). When viewing Sketch notes, collaborators often recall specific memories, information, and participants. Note-takers tend to be more focused and less distracted when using pen and paper than when on their laptops or devices. Creating a Sketch note also requires full attention and focus from the note-taker and as a result, note-takers tend to remember most of the details within a

research session. Furthermore, Sketch notes are powerful in multi-disciplinary environments, and their playful nature remind observers of unexpected, off-script moments, which help in team bonding.

As for disadvantages, digitizing Sketch notes requires an extra step of taking a photo or scanning the document. It also requires managing supplies (paper, markers, and pens) and enough desk space for note-takers. Another challenge with Sketch notes is that participants start with low confidence of their drawing ability and not everyone feels courageous enough to try creating a visual map. Lack of ability to search or sort information (as is available in Microsoft Excel or typed notes) is another issue with Sketch notes.

Fig. 9. Observers of research studies review all the notes and analyze the research findings.

4   The Impact of Sketch Notes

To assess the impact and importance of Sketch notes within our current research toolkit, we conducted a multi-factor analysis of all our current research artifacts.

First, we sent out a survey to user researchers to understand and identify the most important factors regarding note-taking methodologies in user research studies. Five user researchers at Liberty Mutual and four outside Liberty Mutual responded to that survey. The result of the survey showed that exhaustiveness, findability, comprehension, sharing, frequency of use, expertise, prep time, quantification of info, and flexibility are the factors researchers and designers keep in mind when it comes to note-taking (see Table 3).

Next, we sent out a survey to UX community members (including researchers and stakeholders who have attended research sessions) to rank the severity of these factors. Twenty-one participants responded to the second survey. The survey asked participants two ranking questions:

1. Choose the top 3 note-taking factors.
2. Group and rank factors: place factors into one of three importance level groups and within each group, place factors in order of importance.

Table 3. Important factors about note-taking methodologies.

Factors	Descriptions
Exhaustiveness	Level of completion as an accurate record (including details like quotes and actions)
Findability	Ability to find a specific fact or piece of information in the notes
Comprehension	Ability to easily understand the notes
Sharing	Ability to share notes with other people
Frequency of use	How often the notes are used/referenced after the study
Expertise	Level of training required to start taking the notes
Prep time	Amount of time required to set up the notes
Quantitative	Ability to quantify the notes (with numbers)
Flexibility	Ability to share the notes under changing conditions

The result from the second survey showed that exhaustiveness, findability and comprehension were the most important note-taking factors, in that order. The second most important factors were sharing, frequency of use and expertise.

After identifying the most important factors regarding note-taking methodologies, in a separate study we asked all seven user researchers on our team in Boston to rate 8 common note-taking methods that we used for interview sessions based on the top 6 factors. We used a 5-point Likert scale for that study. This way we were able to understand the impact of different note-taking methodologies on our research processes. See Table 4 for final scores of all methodologies. The highest scoring methods regarding each factor is highlighted in green.

Regarding the primary factors, the most exhaustive methods were the audio/video recording and the verbatim note-taking table. The ability to find information was highest for the verbatim note-taking table and the scorecard. Comprehension was highest for the sketch notes and journey maps.

Table 4. Methods vs Factors summary table

Factors / Methods	Exhaustiveness	Findability	Comprehension	Sharing	Frequency of Use	Expertise	Sum Total
Sketch Notes	2.86	3	4	3.14	2.86	2.71	18.57
Individual Sticky Notes	2.57	2.14	3.14	2.43	2.57	3.43	16.28
Verbatim Note-taking Table	3.86	3.71	3.14	3.86	2.29	3.29	20.15
Scorecard	3.14	3.86	3.43	4	3.14	3.71	21.28
Journey Maps	2.86	3.43	4	3.71	3.43	2.57	20
Empathy Map	2.43	2.14	2.71	2.71	2	2.71	14.7
Audio/video recording	4.29	2	3.29	3.57	2	3.29	18.44
In session survey questions	2.43	3.29	2.71	3.71	2.57	3	17.71
Mean Score	3.055	2.94625	3.3025	3.39125	2.6075	3.08875	18.39125

Regarding the secondary factors, scorecards were rated the easiest to share and the easiest method to train to use. The most frequently referred to method was journey maps.

The biggest strength of Sketch notes is comprehension, which is one of the top 3 important factors in note-taking for user researchers and observers. Journey maps were also highly rated for comprehension, as they are another verbal and visual information method. Sketch notes however, are not as exhaustive as other methods like recordings or verbatim note-tables. The findability of information is also lower than methods such as scorecards, journey maps, and note-tables, and surveys, all of which involve digital, textual documentation that can be filtered or searched.

Sketch notes rank the third lowest in terms of sharing, above sticky notes and empathy maps. Sketch notes may be less frequently shared because the information is not digital, as with other methods, and they need the additional step of being photographed or scanned in order to share. Sketch notes had an above average score for frequency of use, as they are an engaging and frequently used tool. The scorecard and journey maps scored higher than Sketch notes for frequency of use, as these tools have a standard Excel template that is consistently used and can be easily compared across different studies. Sketch notes scored below average for expertise, as people may start off with low-confidence in their sketch skills. Other note-methods like sticky notes and pre-formatted scorecards may allow people to take notes with relatively little training.

5   Conclusion

After using different note-taking methodologies for several exploratory research projects (mostly interviewing participants) at Liberty Mutual, we agree that each methodology has strengths and weaknesses. Depending on the nature of the data collected, purpose of the research study, and the research findings, one note-taking methodology might individually serve better than others. However, a mixed-methods approach works best to capture various types of information and ensure collaborators with different learning styles (visual, verbal, and auditory) can recall and comprehend information effectively.

As the multi-factor analysis of note-methods shows, Sketch notes is not a standalone tool, but it is a valuable complement to other note-methods in a user researcher's note-taking toolkit. The value of Sketch notes also extends beyond user researchers. It facilitates cross collaboration and is highly impactful to engage stakeholders. Implementation of Sketch notes as a research note-taking method has been so successful at Liberty Mutual that they have been continuously requested by stakeholders for several user studies. We recommend Sketch notes as a component of mixed-method note-taking for any user researcher.

References

1. Farrell, S.: Group notetaking for user research. https://www.nngroup.com/articles/group-notetaking/. Accessed 21 Jan 2018
2. Farrell, S.: How to collaborate with stakeholders in UX research. https://www.nngroup.com/articles/collaborating-stakeholders/?lm=group-notetaking&pt=article. Accessed 21 Jan 2018
3. Gibbons, S.: Empathy mapping: the first step in design thinking (2018). https://www.nngroup.com/articles/empathy-mapping/
4. Gray, D.: Empathy map. https://gamestorming.com/empathy-mapping/. Accessed 21 Jan 2018
5. Rohde, M.: The Sketchnote Handbook: The Illustrated Guide to Visual Note Taking. Peachpit Press, San Francisco (2013)
6. Sketch notes for Thinking Things Through. http://rohdesign.com/weblog/category/sketchnotes. Accessed 21 Jan 2018
7. Pashler, H., McDaniel, M., Rohrer, D., Bjork, R.: Learning styles: concepts and evidence. Psychol. Sci. Public Interest **9**(3), 105–119 (2008)
8. Paivio, A., Csapo, K.: Picture superiority in free recall: imagery or dual coding? Cognit. Psychol. **5**(2), 176–206 (1973)
9. Paivio, A.: Mental Representations: A Dual Coding Approach. Oxford University Press, Oxford (1990)