UX RESEARCH & TESTING TECHNIQUES

Find the right technique for the job

Fatima Kanji
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Akendi
Intentional Experiences

There are many methods for conducting user research, each of which bring distinctive value to the table at different stages in the design process. Qualitative methods provide deep insights and rich information on what people say and do. They help answer the 'why' questions, revealing why users do what they do or why they are having trouble with certain tasks. On the other hand, quantitative methods answer the 'where' and 'how often' questions, indicating areas that have the most impact on users and helping decision makers prioritize areas of focus.

Both qualitative and quantitative methods can reveal attitudinal information (i.e. what people say and how they feel), behavioural information (i.e. what people actually do), or a mix of both. In some cases these dimensions are in alignment, yet in others they can be contrasting (i.e. people say one thing but do another). Additionally, some methods are better suited for the discovery of user needs and best used for early design research, while others are better in the formative or evaluative stages of design. Here we explore some of the methods used by Akendi, the value they bring at different phases of product development, the type of information they provide and when each is best used.

Discovery Methods

The early stage of product or services development is the most effective time to determine the viability of an idea and whether users would find it useful. Using discovery methods early in the design lifecycle can help to establish a design direction that is rooted in user research, preventing the need to make costly changes later on. *Focus Groups, User Interviews, Diary Studies, Ethnographic Observation, Surveys* and *Contextual Inquiry* are techniques that can be used to gain valuable insight into user needs, behaviours and opinions before entering the design phase.

Focus Groups
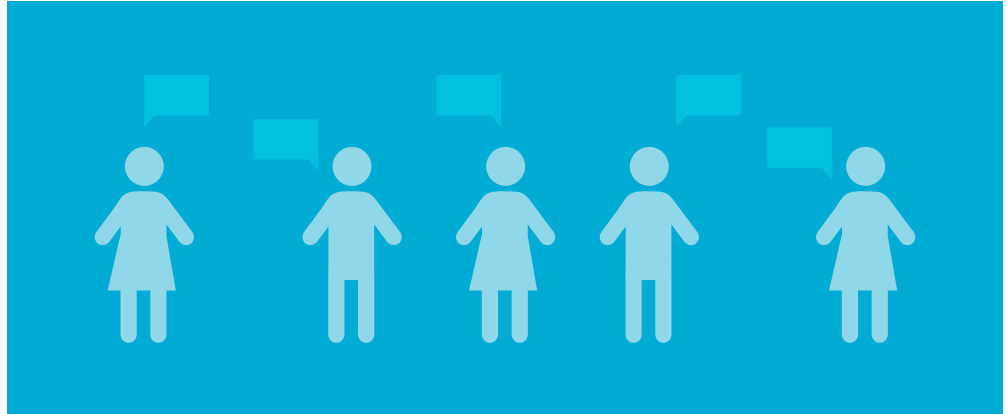
Focus groups have traditionally been used as a preliminary means of gathering attitudinal qualitative feedback including users' opinions, feelings and motivations for use. They are relatively quick to conduct and can target a large number of users in a short amount of time. A focus group setup typically consists of 6-10 representative users sitting around a table and participating in a guided discussion for approximately two hours; input from a number of users can be gathered within a few days. Focus groups can uncover things that users don't like about a current design or process, how they feel, work-arounds they may use, or high-level feedback around a new concept or idea.

One drawback of the focus group setup is that participants can be influenced by each other; for example, everyone around the table may start to agree with a single, strongly stated opinion in an effort to generate consensus. A skilled moderator can mitigate this risk by establishing a positive group dynamic and structuring sessions to better gather a diverse range of opinions. When conducted well, focus groups can reveal initial user attitudes and insights that provide guidance for future research and direction. However, focus groups do not provide sufficient information on their own (i.e. they cannot explore how people use things or whether existing processes work well) and results cannot be extrapolated to the wider population. Findings should be investigated further with other quantitative or qualitative methods.

User Interviews

User interviews are a valuable means of gathering individual user insight. Like focus groups, user interviews also provide user-reported qualitative feedback, however, they result in richer, more in-depth and focused insights that are free from group influences. Usually, interviews are one-on-one sessions that typically last half an hour to one hour each. Thus it can take longer to gather feedback from the same number of users.

Interviews can be exploratory or confirmatory in nature depending on whether they are used as the first foray into user research or are following up on previous findings. Exploratory interviews are generally unstructured, allowing the interviewer to probe and explore topics that are brought to the surface by the user. These types of interviews can be more conversational and natural for the participant, although the interviewer usually follows consistent themes for discussion. Confirmatory interviews are more scripted, and all participants are asked the same questions. This allows for better comparison across users. In general, user interviews are fundamental to user research and result in valuable findings. Where possible, it is best to supplement these findings with other qualitative or quantitative methods such as observations that will provide behavioural data or questionnaires that can extrapolate findings.

Diary Studies

Usually long-term in nature, diary studies offer a participant-reported, in-context look into user journeys with a product, service or experience. Participants are provided with a hardcopy or digital journal with instructions on when and how to make entries. Information recorded can relate to key themes, situations participants encounter or behaviours and interactions with a particular product or service.

One advantage diary studies provide is that they allow users to record their experiences in real time or just after they occur instead of relying on memory. Additionally, any impact an observer/interviewer would have on user behaviour is removed. Diary studies usually reveal rich, emotional, in-context data; however, because they can take place over days or even weeks, they tend to be lengthier than other user research methods. The longitudinal nature of these studies usually means that participants need to be properly incented to avoid high abandon rates. Diary studies can be limited by what participants decide to share; thus, augmenting diary studies with other methods, such as interviews or focus groups, allows researchers to probe and explore further on any themes that may emerge.

Ethnographic Field Observation

Ethnographic observation immerses the researcher into the user's environment and is a trusted method used for various research purposes both within and outside the design field. This method is particularly useful when designing new or innovative products. The key advantage to ethnographic observation is the ability to observe user behaviours first-hand in the context in which they occur. Observers can unobtrusively gather information from afar (fly-on-the-wall observation) or actively immerse themselves in the experience while interacting with users. Information captured can include behaviours, motivations, interactions and perceptions. Observation also allows for the capture of tacit and unarticulated information that may not be revealed via other methods.

While observation for design research is not as long and involved as traditional ethnography, it is still a lengthy process, can be costly and have a smaller reach in terms of the number of representative users that are included in the study. That said, ethnographic observation is one of the least-biased methods of gaining understanding and insight into actual user experience.

(On-line) Surveys

Surveys are often used to gather information from a large number of users and to extrapolate findings from other forms of primary research. Survey results, if the sample size is large enough, can be analyzed statistically. The advantage surveys provide is that they are useful for collecting a large amount of data in a short period of time, with little cost per participant. They can be conducted remotely, either online or by phone, allowing for rapid collection of data. They can also be re-used over time to analyze trends.

For confirmatory research, it is best to use closed questions that limit response options (i.e. multiple choice) and are quick to analyze. Surveys can however be open and less specific if the purpose of the study is more exploratory. Surveys are a good quantitative method for collecting user attitudes and behaviours although they lack the deep user insight provided by other methods. Because they are usually structured and administered remotely, a researcher does not have the opportunity to probe further on responses or ask "why." Thus, surveys are best paired with more in-depth methods such as ethnographic observation, interviews or contextual inquiry.

Contextual Inquiry

Contextual inquiry is a research method used in focused studies when known workflows or processes need to be improved or re-designed. It is a hybrid method that combines user observations with in-context interviews. It differs from general user interviews in that the relationship between the user and the researcher is more akin to a master/apprentice model than an interviewee/interviewer model. The researcher can observe the user within the context of work and ask questions as the user is going through and explaining task-flows.

Contextual inquiry sessions can be short and more focused than traditional interviews and observations, may be more cost effective, and provide attitudinal and behavioural information that is directly observable by the researcher. Contextual inquiry helps designers understand communication flows, processes, tools and artifacts currently in use, physical and cognitive requirements as well as cultural impact. When the goal is to redesign an existing workflow of process, contextual inquiry is often the best method to use for understanding user needs and requirements.

Formative Methods

After initial exploratory research has been conducted, and a design direction is chosen, more formative user research methods can be used to guide the early design phase. *Task Analysis, Card Sorting, Participatory Design* and *Concept Testing* are useful in this regard and discussed next. While these formative methods are discussed here, they are often paired in an iterative manner with the evaluative methods discussed in the next section.

Task Analysis

Task analysis is a research method that identifies and captures a user's workflow. It is a more focused form of ethnographic observation or contextual inquiry where the target output is a breakdown of what a user does, step-by-step. Thus it is best used when the design direction has been identified and the task flows need to be formulated. Task analysis helps uncover users' intended goals and what they actually do to achieve these goals. It may also identify frequency of tasks, time to complete tasks, and any physical, cognitive or material requirements.

Hierarchical task analysis, a thorough process where users' high-level goals are decomposed into a hierarchy of sub-tasks, is primarily used for identifying the structure of user workflows. This can be used to improve flows or create efficiencies by uncovering unnecessary steps or potential errors that may occur. Another method, called cognitive task analysis, focuses more on complex tasks that engage users' cognitive capacities such as memory, attention, judgment, decision-making or problem solving. Cognitive task analysis helps identify areas where users face high cognitive loads and thus can have several implications for the design of expert interfaces in particular. Task analysis can be a time consuming activity and is usually best applied to more complex user workflows.

Card Sorting

Card sorting is a user research method that helps create or refine the information architecture of a site or application; as such card sorting can be a generative or evaluative method. Having a good information architecture helps users find the information they are looking for. Information architecture forms the skeleton or structure of the design; therefore card sorting is best performed early on in the design phase, prior to interaction design. The main benefit of conducting a card sort is that it exposes users' mental models. Understanding how users organize, associate and categorize content helps inform an information architecture that is intuitive, be it a navigation structure, multi-level menu or taxonomy.

Card sorting can be done in person or online and is relatively simple and quick to conduct. Usually the items or "cards" participants are asked to sort have a term, concept or feature on them and can sometimes include a description. When trying to understand what groupings, labels, or headings to use in an information architecture, open card sorting is used. Open card sorting allows participants to freely group cards as well as label the groupings they create in a manner that makes sense to them. If, however, categories are pre-determined and the goal of the card sort is to evaluate whether the selected labels make sense to users, then closed card sorting is recommended. In closed card sorting, participants sort cards into pre-defined categories. Open and closed card sorting can be conducted iteratively; the former can be used to discover category labels and the latter to evaluate how well the category labels work. The flexibility of card sorting means that it can be conducted with a small number of users in a moderated, exploratory form that can provide deeper user insights or with a large number of users, remotely and unmoderated, so that it can be analyzed statistically.

Participatory Design

Participatory design involves bringing users and other stakeholders to the design table. Instead of just capturing users' experiences, users are able to work alongside designers in creating their ideal solutions. Often this involves conducting participatory design workshops that include activities such as scenario refinement, affinity diagramming, paper prototyping, etc. Participatory design is best conducted early in the design process because it encourages ideation and the generation of sketches and other low fidelity prototypes.

One benefit of participatory design is that it extracts users' tacit knowledge that often comes through when users are trying to solve their own problems (instead of simply describing them). Additionally, participatory design directly draws user insights into a design process guided by experienced designers and often injects creativity into the design. Collaborative outputs of participatory design sessions can be translated into early stage designs and requirements. Participatory design sessions can also take place in later design phases as a method of gathering feedback and actively engaging users throughout the design lifecycle.

Concept Testing

Concept testing is a research method that focuses on capturing user feedback very early in the design phase. A high-level solution is shown or described to users to garner user/consumer response before more detailed design takes place. Sketches, storyboards, mock-ups or computer models that convey the concept of the product or system are presented to users and a discussion is facilitated to gather feedback on various elements of the proposed design and/or to generate new ideas.

Quantitative or qualitative feedback can be gathered on general appeal, feature combinations, likelihood of purchase and value trade-offs. This can be done as part of a focus group session, with multiple users at once, or as part of structured one-on-one interviews. The advantage of putting early concepts in front of users is that it eliminates poor ideas quickly and helps narrow the design focus. This can lead to large savings on time and cost that may otherwise be put towards developing a bad idea. It is important to keep design concepts simple and low-fidelity as a flashier mock-up may result in biased and less valuable feedback from users. What concept testing cannot tell you about is the usability of the proposed design, thus it is not a replacement for conducting usability testing later on.

Evaluative Methods

Evaluative user research methods are used to test designs at various stages of development. Used early in the design process, they help evaluate design decisions and inform further iterations. In later stages, they can be used for benchmarking or identifying areas for improvement. Evaluative research methods include *Reverse Card Sorting & Information Architecture Testing, Usability Walkthroughs, Usability Testing, Analytics* and *A/B Testing*.

Information Architecture Testing & Reverse Card Sorting
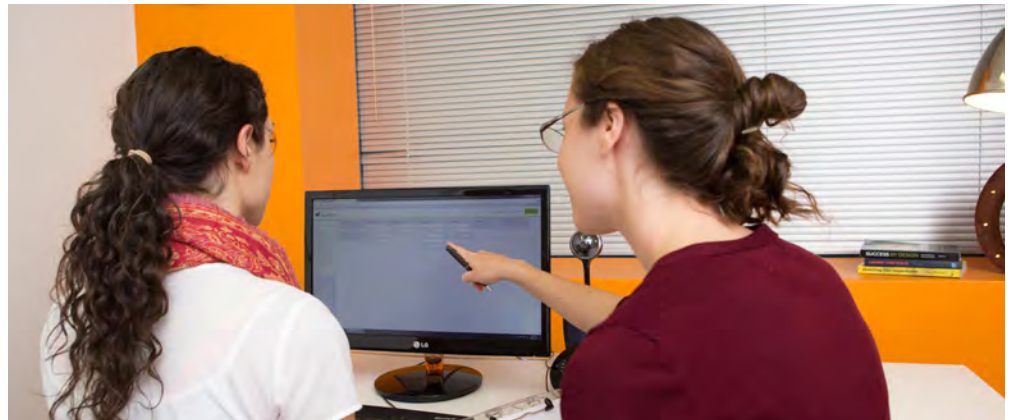
Testing for findability is usually conducted after an information architecture has been generated or the results of a card sort have been analyzed. Reverse card sorting and information architecture (IA) testing are common methods for evaluating the results of a card sort or any information hierarchy. Reverse card sorting involves testing only the top-level menu items or group labels that result from a card sort. Participants are asked to identify the heading under which they would expect to find specific content (cards).

Although useful, reverse card sorting can be limiting because it often does not test deeper levels of the information hierarchy or give insight into paths users may take if they are unable to find an item right away. IA testing, on the other hand, presents participants with realistic tasks and a clickable menu hierarchy. Participants can navigate between levels of the hierarchy until they find a sub-menu where they think they would find the information they need to complete the task. This provides more insight into the first place users may look and subsequent paths they may take in addition to whether or not they were successful. The advantage to using either of these methods is that one can test the information architecture prior to, or without the confounds of, interface design. There are many online IA testing tools that can be cost-effectively used to gather input from a large number of participants in un-moderated tests; these tools also provide valuable quantitative summaries.

Usability Walkthroughs

Usability walkthroughs, although not as comprehensive as usability tests (see below), are very useful for evaluating early stage prototypes and wireframes with representative end users. They provide a first look at how real users would interact with your product. Typically paper-based, usability walkthroughs can also be conducted electronically with digital wireframes. Users are "walked through" a set of screens or paper wireframes that represent the main task-flows of the system and asked how they think they would interact with the system at each step. The focus of a usability walkthrough is to gather general feedback on the design and flow of the system as well as insights on usefulness and usability.

Unlike usability testing, formal metrics on efficiency, satisfaction and success are not usually captured. However, usability walkthroughs do evaluate task flows, reveal usability issues and identify system features that users may expect to see or not see. This can validate the key scenarios that the system is being designed for and highlight any discrepancies. In addition, seeing what language users use to describe objects and content and where they experience difficulty can uncover usability issues and provide valuable insight. The advantage to conducting usability walkthroughs is that they expose such issues prior to even functional prototype development. Thus, designers are able to iterate on interactions and task flows and refine the design of a system even earlier. Once a design has been iterated upon and a more functional prototype is built, it is recommended to conduct usability testing to better evaluate the interactions of the proposed design.

Usability Testing

Usability testing is one of the best methods of systematically evaluating an interface with representative end-users. It is task based and can be conducted at various stages in the design process. Be it an early stage paper prototype or a live product, usability testing provides a comprehensive measure of how well users can interact with the product or system and where they encounter frustration and confusion in completing their tasks. Both qualitative and quantitative in nature, it measures effectiveness – if users are able to achieve their goals, efficiency – how easy it is for users to complete tasks without getting lost or making errors, and satisfaction – what are users' feelings and perceptions about the process they just went through.

Usability testing can be formative or summative in nature. Formative usability testing takes place early on and iteratively in the design process in order to find and fix usability issues, support decision-making and inform the design. It is more cost-effective to be able to find usability issues at this stage when the design can easily be adapted and changed. Users are generally asked to think aloud while completing tasks, providing the observer with insight into the users' mental model. Summative usability testing on the other hand is generally conducted towards the end of a design process in order to evaluate the design against pre-defined measures. Summative usability testing is typically un-moderated and emphasis is placed on whether users can successfully complete tasks. Although usability testing at this stage can also find usability issues, they are usually more costly to fix.

Analytics

Analytics are a popular tool for capturing quantitative data related to actual use of a live website or application. A lot of information can be gleaned from tracking user behaviour online and many tools are available to capture this wealth of data. Effectively using analytics to improve user experience, however, requires identifying user goals and selecting metrics to properly capture the success or failure of these goals. Identifying the proper metrics and extracting this information after the fact can be very time consuming.

When done correctly, analytics can help identify usability issues, or at least where usability issues may be occurring. This often warrants further investigation to determine why users are experiencing issues. Following up with a qualitative method such as usability testing can help answer this question. On the other hand, analytics can help verify the results of qualitative research. If qualitative research was conducted with a smaller sample size, as is usually the case, pairing the results with analytics can help confirm that success rates achieved in usability testing, for example, are not misrepresentative of the wider population.

A/B Testing
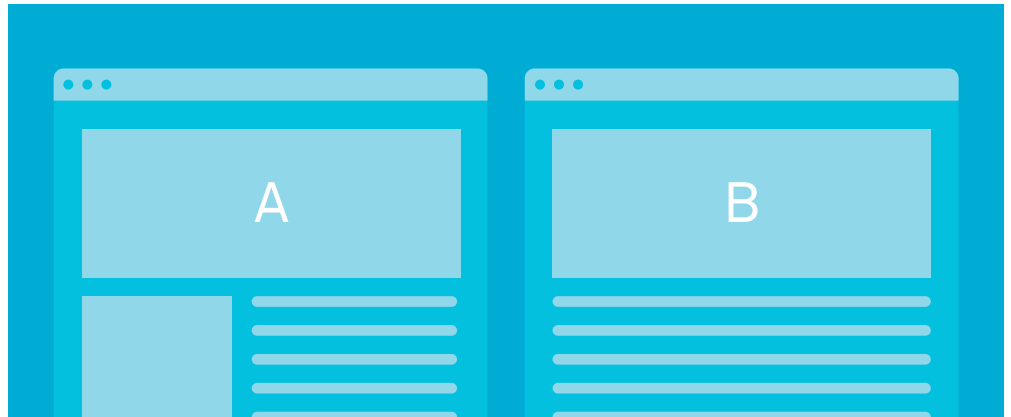
A/B testing is a quantitative method for measuring the effectiveness of one design compared with another. It is usually used as a method for evaluating which design best meets a defined business objective. In the case of a website, users are randomly assigned to see design A or design B; once a large enough sample size has been tested, a statistical measure of the more effective design is discernible. The advantage of such a test is that it can measure actual user behaviour, outside of a lab environment. It is also relatively cost-effective (provided that full implementation of the two designs is limited in scope) and provides a quantitative measure that can help resolve any conflicting evidence found via qualitative methods.

What A/B testing cannot tell you however, is why one design is better than the other or what prompted users down a certain path with a certain design. A/B testing is limited in how and in what contexts it can be applied and can usually only test a single and easily measurable user task or outcome. In most cases, there are many designs and task flows that need to be tested. While still useful, A/B testing is best supplemented by other qualitative measures that can also capture user needs, behaviours and perceptions.

Creating a User Research Plan

Creating a User Research Plan at the start of any design process is the best way to ensure your end product will be useful and usable for your users. Ultimately a research plan will be determined by the time and budget constraints of the project. When limited by these constraints it is best to invest in user research upfront when the design is malleable and changes are relatively easy and inexpensive to make.

Performing a usability test in later stages can be very informative but it may be too late to make any impactful changes to your product. If funds are limited, focus groups or exploratory interviews with a few users followed by a survey that is sent out to a larger user group can be a good option for helping to establish early design direction. If a design direction is more or less set, contextual inquiry can help ensure your user requirements are appropriate and limit surprises that may come later in the process. Following early user research with iterative design and evaluation that is informed by users is the cornerstone of a good user research plan. To this end, card sorting and usability testing are efficient and cost effective methods that can help steer your design in the right direction. Whatever methods you choose, getting input from users early and often is the key to ensuring product success.

ABOUT AKENDI

Akendi is a human experience design firm. Since 2007, we leverage equal parts user research and creative design excellence. We are passionate about the creation of intentional experiences, whether those involve digital products, physical products, mobile, or web interactions.

We provide strategic insights and analysis about customer and user behaviour, combine this knowledge with inspired design, and architect the user experience to meet organization goals. The result is intentional products and services that enable organizations to improve effectiveness, engage users and provide remarkable customer experiences.

Contact us today to learn more!

contact@akendi.com