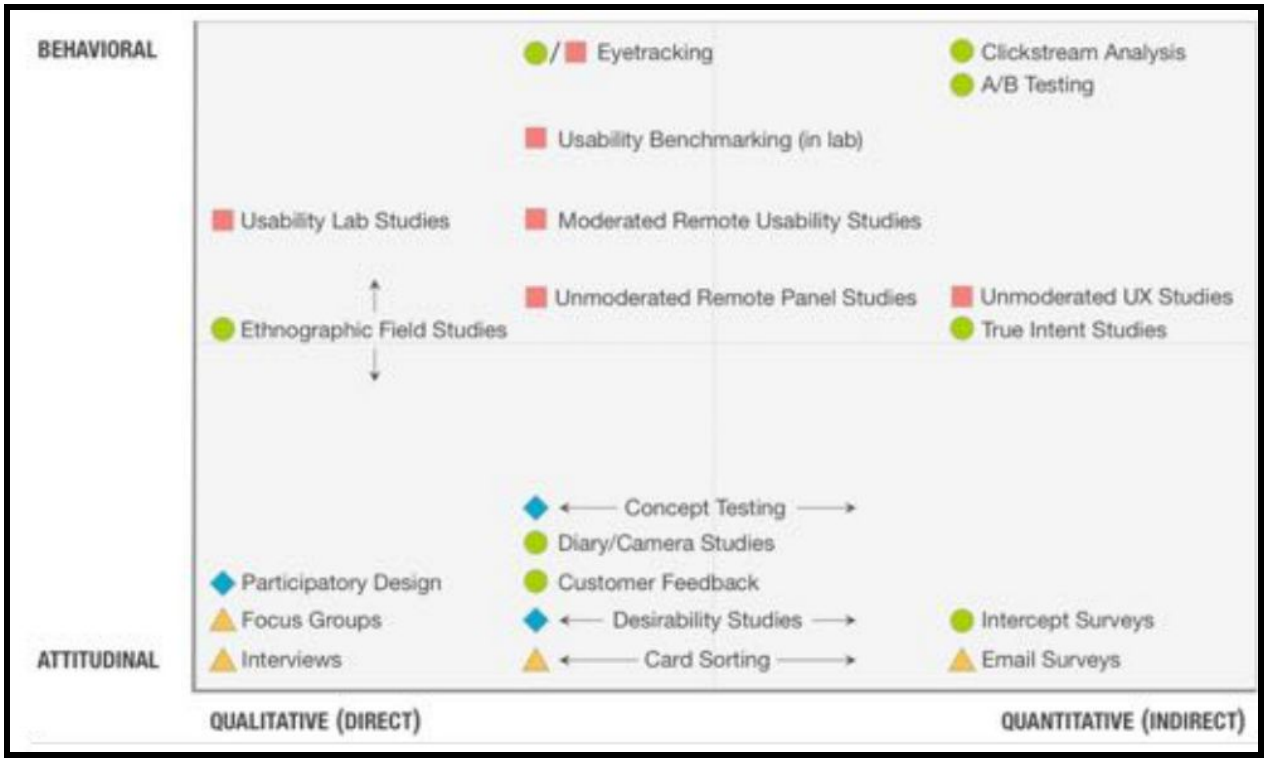
Lecture Notes:

- **Research Methods:**



- **Advantages and disadvantages of various data collecting techniques:**

	Good for	**Data**	**Adv**	**Disadv**
Naturalistic observation	Understand context	Qualitative	Discover things that users can't/won't tell you	Very time consuming, lots of data
Interviews	Exploring issues	Mostly qualitative	Can guide interviewee, establish contact with users	Time consuming
Questionnaires	Answer Specific questions	Quantitative & Qualitative	Can reach many people easier	Design is crucial, responses may be ambiguous, response rate

				low
Focus Groups/ Workshops	Collecting multiple viewpoints	Mostly qualitative	Highlights consensus and conflict, establish contact with users	Dominant participants
Study Documentation	Learn procedures, regulations, standards	Quantitative	No user involvement	May not reflect reality
Diary/Logging	Procedures, patterns, frequency	Quantitative	Automated (from researcher's perspective)	Lots of data, Diary is hard for users to remember to do.
Expert Review	Evaluation of design	Qualitative	No user involvement needed, if experts are available	Experts needed, expert opinions vary, heuristics needed

- **Bias in User Research:**
- Removing the data of users who don't fit the profile.
- Questions not matched carefully to the goals, unclear.
- Setting: familiar, comfortable, relevant, influencing.
- Facilitator: leading questions, hints, social setting, judgmental.
- Methodology: instrument choice, group influences, interruptions, recording.
- Reporting results not directly derived from data.
- Observers: Users behave differently when observed.
- **Ways to Improve User Research:**
- Iteration
- Pilot testing
- Practice
- Triangulation
- Repetition
- Multiple perspectives
- **Analysis – Qualitative & Quantitative:**
    - **Qualitative:**
        - Data: Difficult to measure sensibly as numbers.
        - Analysis: Expresses the nature of elements and is represented as themes, patterns, stories.
    - **Quantitative:**
        - Data: Expressed as numbers.

    - Analysis: Numerical methods to ascertain size, magnitude, amount.
    - **Note:** Be careful how you manipulate data and numbers.
  - **Simple Quantitative Analysis:**
    - **Mean:** Add up values and divide by number of data points.
    - **Median:** Middle value of data when ranked.
    - **Mode:** Figure that appears most often in the data.
    - Percentages
  - **Simple Qualitative Analysis:**
    - **Recurring patterns or themes:** Emergent from data, dependent on observation framework if used.
    - **Categorizing data:** Categorization scheme may be emergent or pre-specified.
    - **Looking for critical incidents:** Helps to focus in on key events.
- **Affinity Diagrams:**
- Traditional design methods struggle when dealing with complex or chaotic problems or with large amounts of data. The **affinity diagram** organizes a large quantity of information by natural relationships. This method taps a team's analytical thinking as well as creativity and intuition. It was invented in the 1960's by Japanese anthropologist Jiro Kawakita and is sometimes referred to as the KJ Method.
- An affinity diagram is a method used to organize many ideas into groups with common themes or relationships. Affinity diagrams are tools for analyzing large amounts of data and discovering relationships which allow a design direction to be established based on the associations. This method may uncover significant hidden relationships.
- Looks like this:

- Use an affinity diagram to:
  1. Understand what is most important from ambiguous data
  2. Tame complexity
  3. Identify connections in data
  4. Create hierarchies
  5. Identifying themes
  6. Identify what factors to focus on that will support the most successful design possible from a customer's perspective
  7. Brainstorm ideas
- An Affinity Diagram is useful when you want to:

1. Make sense out of large volumes of chaotic data.
2. Encourage new patterns of thinking. An affinity diagram can break through traditional or entrenched thinking.

- Strengths:
  1. It is a simple method
  2. Supports innovation
  3. Causes breakthroughs to emerge
  4. Helps groups come to consensus about most important issues
  5. Multiple people can combine their ideas by post-it notes and be organizing/clustering them
  6. Organizing generates useful discussion
  7. Build critical thinking skills
  8. Allow for involvement of each team member
  9. Helps a team see the big picture and where the biggest problems are
  10. Post-It notes are a flexible method to organize ideas into various levels of groups and sub-groups
  11. It is both a creative and analytical method
  12. Promotes the emergence of breakthrough thinking
  13. Most effective when applied to a team with varied perspectives and open mindedness
  14. Is useful to make sense of complex apparently unrelated ambiguous or chaotic data
  15. It makes your analysis highly visible to others in the company
- Weaknesses:
  1. Good facilitation is required when there is a lot of data expected
  2. Affinity diagrams are not portable or mobile
  3. Affinity diagrams occupy a large space for an extended time period
  4. Can be time consuming when there are a large number of pieces of data
  5. The small size of post-it notes and the effort of writing forces you to be brief
  6. It is an analog and physical activity
  7. The rationale behind particular groupings can get lost
  8. Affinity diagrams are temporary and must be photographed for permanent record
  9. It may be difficult to find individual pieces of information/data.
- **Affinity Diagram Process:**
  - You'll need these items:
    - Whiteboard
    - Large wall spaces or tables
    - Dry-erase markers
    - Sharpies
    - Post-it Notes
    - Mural Board
  1. Select your team: Care should be taken in choosing your team. As many groups and diverse points of view involved in a design delivery and use of the service as possible should be represented.
     - Keep groups to six people or less
     - Break large groups into smaller groups of six or fewer people
     - Have a diverse team with different gender, age, occupation, and status represented

- Have at least two or three people with two or more areas of expertise such as technology and management or administration and design. T-Shaped team members make the team more flexible and help group collaboration.
- Involve external and internal stakeholders such as customers, suppliers. internal business management, engineering, design, and sales
- Invite customer facing people where possible because they will have more empathy for the client/user.

2. Appoint a moderator.
    - Create handouts with clear instructions
    - Provide copies of research summaries
    - Take breaks every 90 minutes
    - Photograph the map as it is being built
3. Gather Your Data: First gather your data. Break the data down into pieces. Use only one color post-it notes at this stage. The most common color used at this phase for the raw data is yellow.
4. Find Your Space: Once you have selected your team, your moderator, and space to work, spread the ideas randomly across a wall, a whiteboard or large table. A floor in a little traffic area also can work for this stage of the process. You need plenty of space. Affinity diagrams work best with more than 100 discreet pieces of information and work effectively up to several thousand pieces of data.
5. Clustering: Hand a block of blank 2"x 3" yellow post-it notes to each team member. You can use the “Rule of 7 pm or minus 2”. The summary should have no less than 5 and more than 9 words in it, including a verb and a noun. Use also simple cartoon sketches and a combination of drawings and words. Gather your team around the place where you have placed the post-it notes. Look for ideas that seem to be related. Go for volume, suspend judgment, build on each other’s ideas and set a strict time limit. Allow 30 or 40 minutes for brainstorming ideas. The moderator then asks the team to take two ideas that seem to belong together and place them together, at least, three feet away from the other post-it notes. Keep moving post-it notes into the groups until all the post-its have been placed into groups. It is OK to replace another person’s group If it doesn’t make sense to you. Some groups may have only a small number of items. The type of relationship that you see will depend on your background, your profession, your personality and your life experience. Move related ideas into groups and continue moving the post- it notes until all notes are in groups. Some ideas may not seem to fit a group. Place those ideas into a group. If a note belongs in two groups, make a second note. It is best that no one speaks at this stage, so different perspectives are represented. Work silently. Ask the team to move the ideas into groups based on their gut instincts and without talking. This approach encourages unconventional thinking and discourages one person from steering the affinity. It is important to maintain silence at this stage, as it ensures that each member has an equal opportunity to apply their perspective without being influenced to conform to others’ thinking. Ask your team not to struggle over placing the data into groups. use gut instincts. If consensus is not reached, make a duplicate of the idea and place one copy in two groups. The idea written on each post-it should be a phrase or sentence that clearly conveys the mean- ing to people who are not on the team. Make the notes large enough to be readable from 10 feet distance.

6. HEADERS: Hand out a block of blank 2" x 3" blue post-it notes to each team member. Using the second color of post-it notes, ask each participant to assign a name to each group. Write a header above each cluster that describes what connects the data in the group. Use a different color post-it notes for the headers. Blue is a color that is often used for headers. You can use any color, but it should be the same color for all headers and a different color than the color utilized in the previous phase. The most efficient use of space is to position the post-it notes in a group vertically with the header above the group. To create headers ask for each grouping: “What key words summarize the central idea that this grouping communicates?” Sometimes a post-it from within the group can be used as a header. Create a heading for each group that captures the theme of each group. Place it above the group. A header should capture the association or affinity among the ideas contained in a group. The team develops headers by discussing and agreeing on the wording of the header post-it notes. Review each group and write down a name that best represents each cluster on the new set of sticky notes. Do not use full sentences for headers but summarize the association with just one or two words. If a group has two themes, then split the group into two groups. If two groups share the same theme combine the two groups into one or move the two groups near to each other and place a header above the headers of the two groups that defines the association of the two groups. Making a simple title involves abductive thinking, which is the best form of problem solving for complex, changing and ambiguous problems. Some notes will not fit into any group. Put these in a separate group. When people slow down it is time to break the silence, and start discussing the groups that have emerged. When consensus is reached, move on to the next step.
7. SUBHEADERS: If two groups have the same theme then place an additional header in a third color above those two groups. Leave the previous headers in place. Pink is commonly used for a combined header of two groups. This type of header is sometimes called a super header. Repeat the process until the number of groupings is between 5 and 9 groups. Ask each participant to read through the post-it notes in each group. The moderator should then say “We Will now see if we can combine some groups. Please nominate two groups that you think we can combine. Only combine groups that have the same theme but not groups that are subsets of one another”
8. VOTING DOTS: Give each participant 3 adhesive dots and ask them to place the dots next to the header of the three groups that they think are most important in relation to the design goals.
    - What are the user needs?
    - What are the needs of the business?
    - What technologies are most appropriate?

    After each person has voted, tally the number of votes for each group. This gives you a hierarchy of importance for the themes in order to address these themes in the next phase of the design process, the ideation phase. This is a way of efficiently selecting from a large number of ideas the preferred ideas to carry forward in the design process.