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INTEGRATING ARTIFICIAL INTELLIGENCE INDESIGN THINKINGFOR SUCCESS

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ABSTRACT

Artificial Intelligence (AI) and Design Thinking (DT) if integrated can work wonders in the landscape of innovation, problem-solving and creativity. This synopsis highlights the main findings from studies related to this intersection. The impact of this opening statement is that it tells about how AI will play a vital role in the process of Design Sense-Making. These tools can help design teams double-click on user preferences, define better, and ideate faster. For example, practitioners can use AI to glean user behavior patterns by analyzing large datasets to be able to make deeper empathetic insights and better-informed decisions. The study identifies multiple key areas in which AI enlarges the design thinking process:

Idea Generation: AI can analyze market trends & user feedback to help in generating a diverse set of ideas.

User-Centered Design: AI tools help to gain deeper insights into the experiences of users and keep solutions human-centric.

Nonetheless, the application of AI in design thinking is not without its challenges, such as concerns about bias in AI algorithms and the need to strike a stability between human creativity and machine intelligence. While AI provides powerful tools to enhance the design process, it should not act as a replacement for the fundamental human-centered principles of design thinking. hat said, as organizations seek the potential of this synergy, attention must be paid to ethical implications, ensuring human values continue to steer innovation initiatives. Design Thinking which focuses on empathy, creativity, and iteration to solve complex problems, especially in the fields of design and engineering.

INTRODUCTION

In 1969 Herbert A. Simon elaborated on the idea of employing design thinking as an approach for elegantly addressing wicked problems in 'The Sciences of the Artificial'. Robert McKim 1973 found a similar phenomena through his book 'Experiences in Visual Thinking' but targeted on design engineering. In 1987, there was "Design Thinking," by Peter Rowe, which articulated methods and approaches used by planners, designers and architects. During 1980s and 1990s, Rolf Faste brought together the work of McKim and applied design thinking for business context later by David M. Kelly. IDEO was founded in 1991 by David M. Kelly. The same goes for most industries that are out there trying to solve customers problems and needs but fail miserably just because they look at the problem from the outside in. However, if we look at it the other way, we can solve multiple problems in a better way. And being a business analyst, more than often, the visual thinking techniques used are meant at treating multi-facetted – and still a continued part ever more complex business models. The expansion of global transactions, the diversity of international partnerships, and the decentralized pool of human resources, however, are all presenting challenges that require an influx of innovative solutions.

II. Core Concept of Design Thinking

This includes the Process & the Mindset

A. MINDSET:

- Design thinking is fundamentally always **human centred** problem solving.

• Human centred approach in HR: The HR concept of this person having a problem.

• One should have to provide the best employee experience otherwise it will become necessary to lose the employees.

- Ina nutshell design thinking is **always collaboration** to solve a problem.

• Team members provide feedback, and design thinkers work together. If something goes wrong they work as a team to fix it. Design thinking is an inherently positive way to attacking problems.

- Design thinkers sees this as an **opportunity.**

o Eg: Lack of qualified teachers creates an issue

o Teacher looked up in an positive perspective having potential to grow and become better.

- Design thinking is **experimental and iterative:**

o As and when we design something, we do it in iteration which means short spells (Day/ week)

o Experimenting different type of solution in each iteration.

B. DESIGN THINKING PROCESS

It is a non-linear (we can come back to previous step) iterative process which looks outward to gain insights of different users and problems.

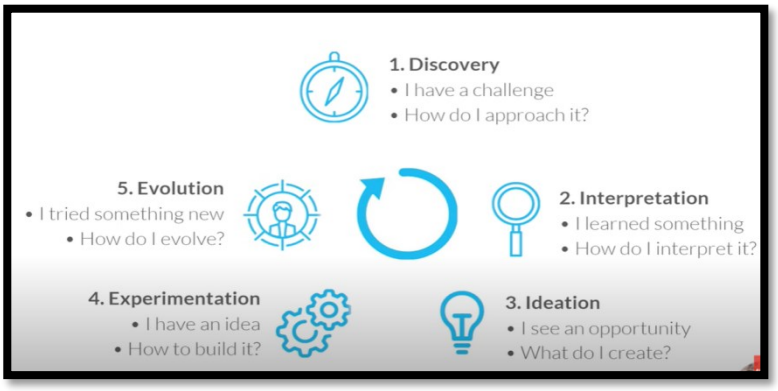


Fig 1: Design Thinking Process

Discovery Phase:

Design in an optimistic way. To know about the challenge we need to talk to various of the users involving distribution of questionnaires/ surveys.

Interpretation Phase:

How to interpret the gathered information of Discovery phase as a team. And then we need to grasp the problem as a whole that lays the ground work for possible solutions.

Ideation Phase:

It has to do with coming up with concepts. Find the opportunity and think of what you can build to fill that gap. The best options are dependent on teamwork.

Experimentation Phase:

Bridge the gap by feedback

Evolution Phase :

Everything learnt. Change for the better

In this company they gave more importance to Analytical thinking which are bases on data. UX is the user experience and UI is the User interface. This is known as intuitive thinking.

User Experience is the interaction of a user with product or services

User Interface is the looks, feel, presentation, colour scheme of a product. It is more intangible

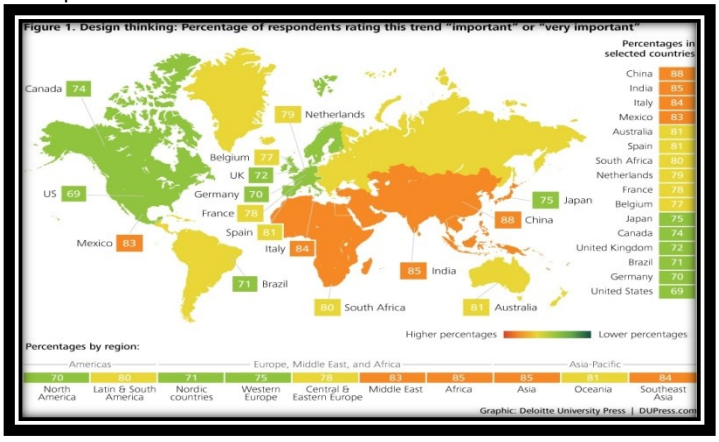


Fig 2: Design Thinking percentage of respondents rating this important or very important

Two-thirds of companies now feel that complexity is holding them back from success and limiting growth in business productivity. 5 Maybe that is part of the reason that in this year's Global Human Capital Trends survey, 79 percent of executives rated design thinking an important or very important issue. (See figure 1 for the ratings by our survey respondents of the importance of design thinking in geographical regions and selected countries around the world.)

Fig 3: Brands using Design Thinking

Evolution of Nike :

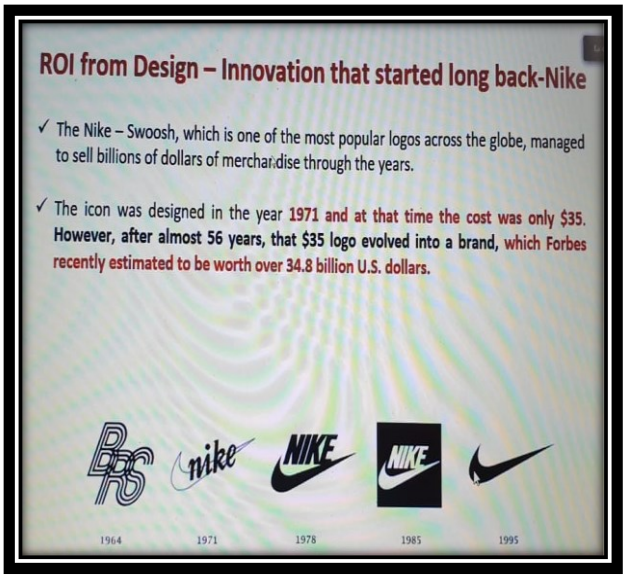


Fig 4: Nike innovation

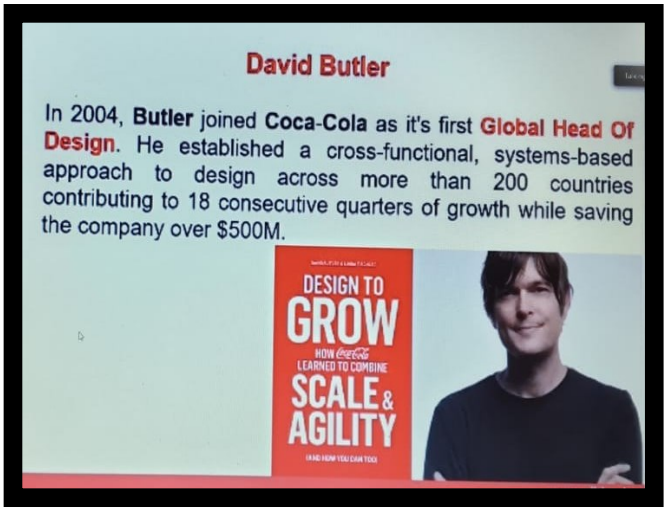


Fig 6: Coca Cola

Coca-Cola have not stopped innovating! Earlier this year Coke announced that they had developed the world's first fully plant-based bottle. The potential new design had to also be radically different from the existing bottle, and it had to be designed to be able to be mass produced with the existing manufacturing equipment. The Root Glass Company of Indiana took the contest and the name of the product to heart and decided to come out with a design based on it. While searching the dictionary for "coca" and similar words, Butler writes, Earl R. Dean, the mold shop supervisor, found a drawing of the cocoa plant that piqued his interest. "By 1920, the contour bottle, as it became known, was the company's most renowned artifact," Butler and Tischler write. Coca-Cola has toyed over the past century with the shape and size of the bottle, then concentrated production on versions that are easier to manufacture and recycle.

II. Design Thinking - Divergent Thinking & Convergent Thinking

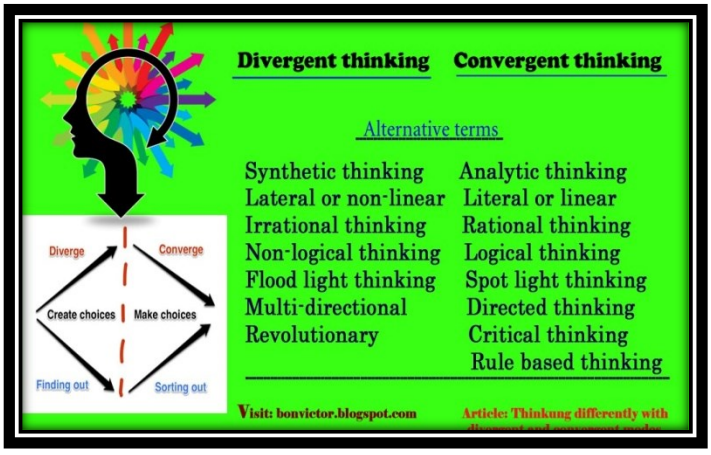


Fig 7 : Divergent Thinking vs Convergent Thinking

Design thinking involves two types of thinking, viz. **convergent thinking** and **divergent thinking**. One needs to think of many solutions to a common problem statement and then arrive at the correct and the best solution.

features of divergent thinking are:

- It is a free-flowing chain of ideas.

· It is done in a non-sequential manner, that is, without any particular order of thinking. More than one idea can come to light simultaneously, instead of one idea being present before the others.

- There will also be several solutions generated and explored simultaneously (i.e. looking in the same space in there is also non-linearity). It's with a very short period of time and how the ideas are created unexpected connections between the ideas.

Convergent Thinking:

Joy Paul Guilford gave the term 'Convergent Thinking' in 1956. Second is 'convergent thinking', in this, the design thinker has to run through the possibility of all the solutions thought in divergent thinking and find a right solution. This heading towards a single solution or limited number of solutions is the basis of convergence thinking.

Most fundamentally, convergent thinking should bring us to one best answer with no room for uncertainty. During the phase of convergent thinking, the ideas originated in divergent thinking are judged about whether they are possible or impossible.

There is another point to note about convergent thinking, which is the process includes as well judgment. Divergent thinking forces thinkers to withhold judgment. In contrast, convergent thinking is oriented toward assessing, where thinkers are able to harness the strength of judgement.

III. PROCESS OF DESIGN THINKING:

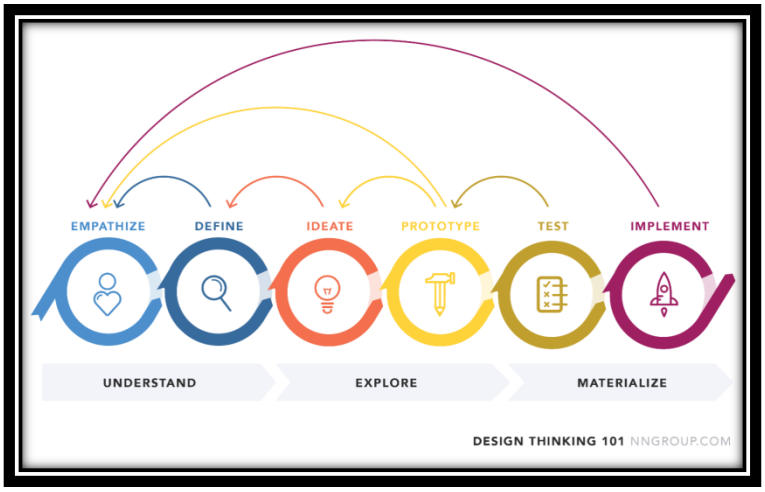


Fig 8: Design Thinking Process

Empathize :

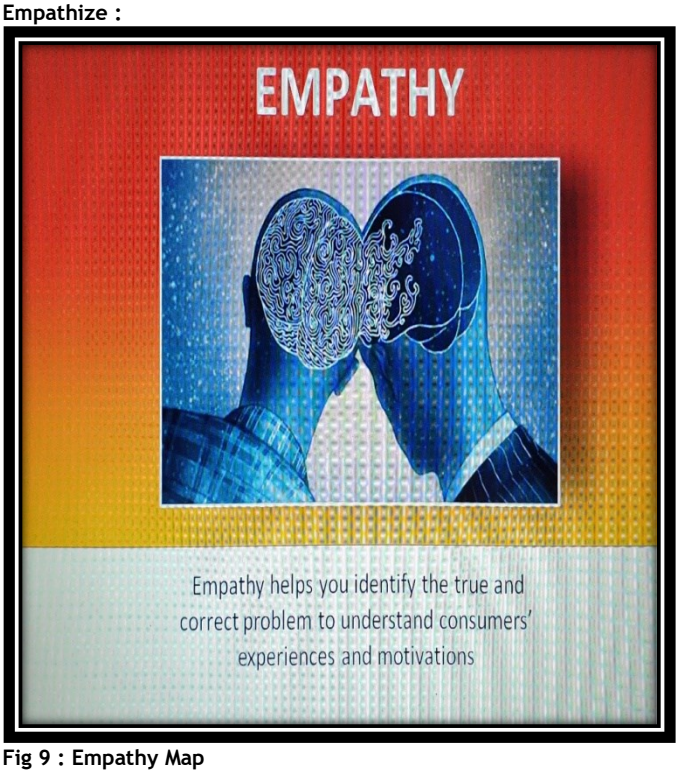


Fig 9 : Empathy Map

Regarding Motivation to Work

- WHY do you come at the workplace?
- What usually tires you out while working?
- Does the demoralization factor have anything to do with the company policies or do your peers focus more on it?

Regarding Leaving the Company

- What are your aspirations?
- How can the other company do you better?
- Is your decision about something other than motivating in the workplace?

Regarding Time of Leaving

- How does this time fit with your decision to leave the organization?
- Is your decision at all linked to an appraisal? If yes, how?

Regarding Employee Attrition

Reason for Resignation: Employee received 3 appraisal rating on last appraisal.

During what they have complained about in the past that affected the workplace of the employees?

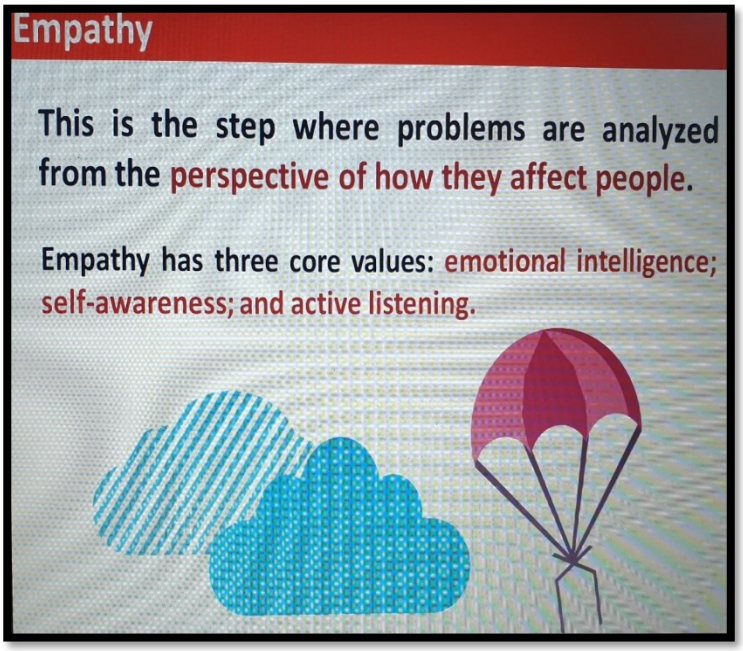


Fig 10: Empathy

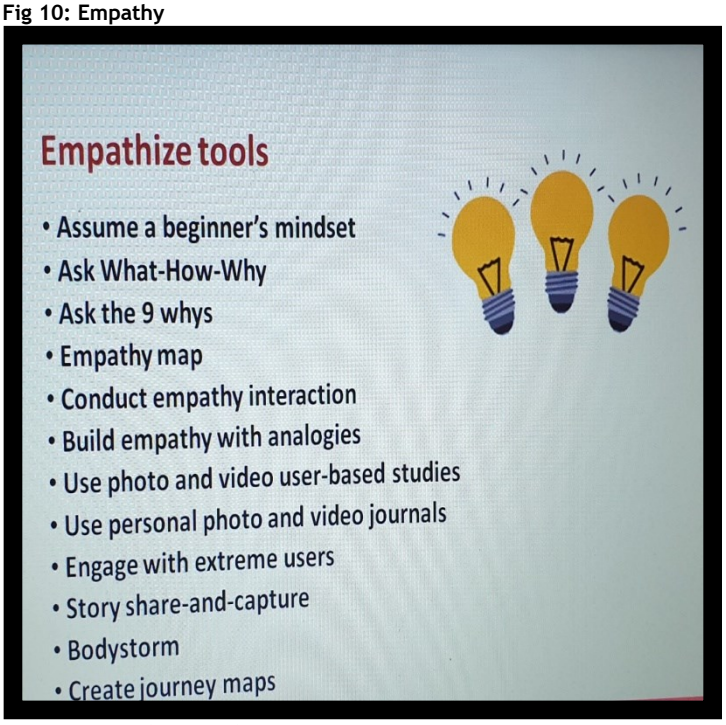


Fig 11 : Empathize Tools

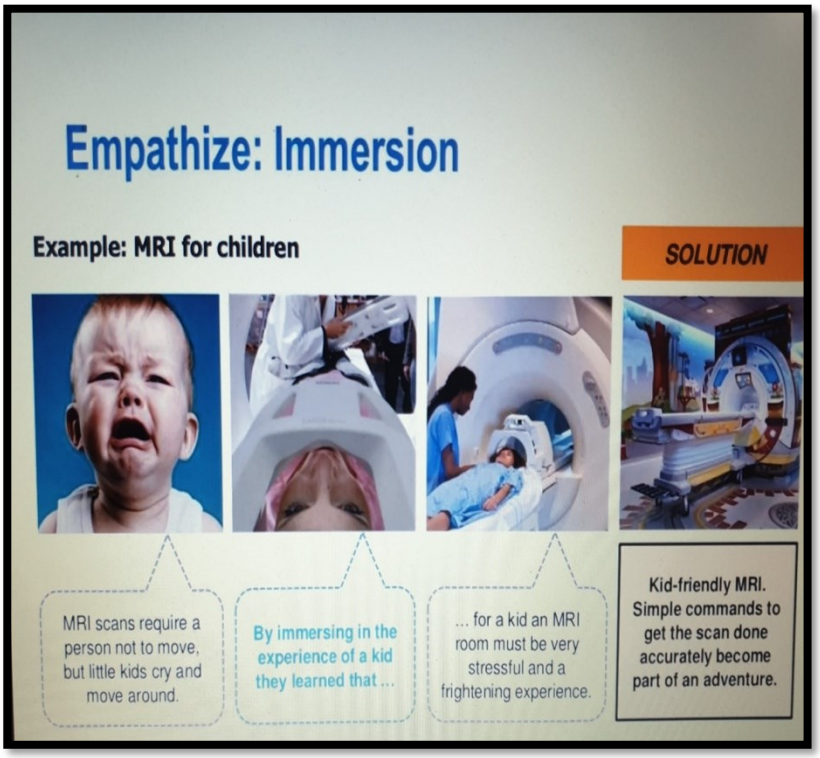


Fig 12 : Example of Immersion Techniques

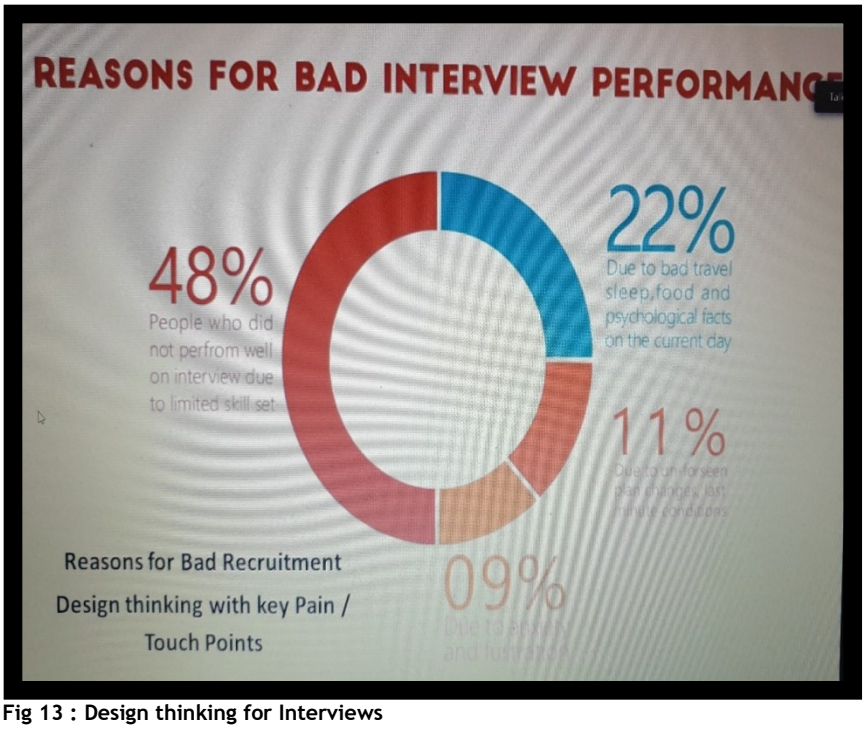


Fig 13 : Design thinking for Interviews

Define:
Identifying who a user is, their needs is the first part of defining the problem statement and developing the insights from the answers. Think of 'How might we?' questions. Say, 'how can we incentivize the employees in DT?', 'How can we tackle the issue of the link between appraisal ratings and attrition?, 'What are some ways to minimize the cost of knowledge transfer program without compromising on quality and obligatory resources and numerous other questions along the same lines.

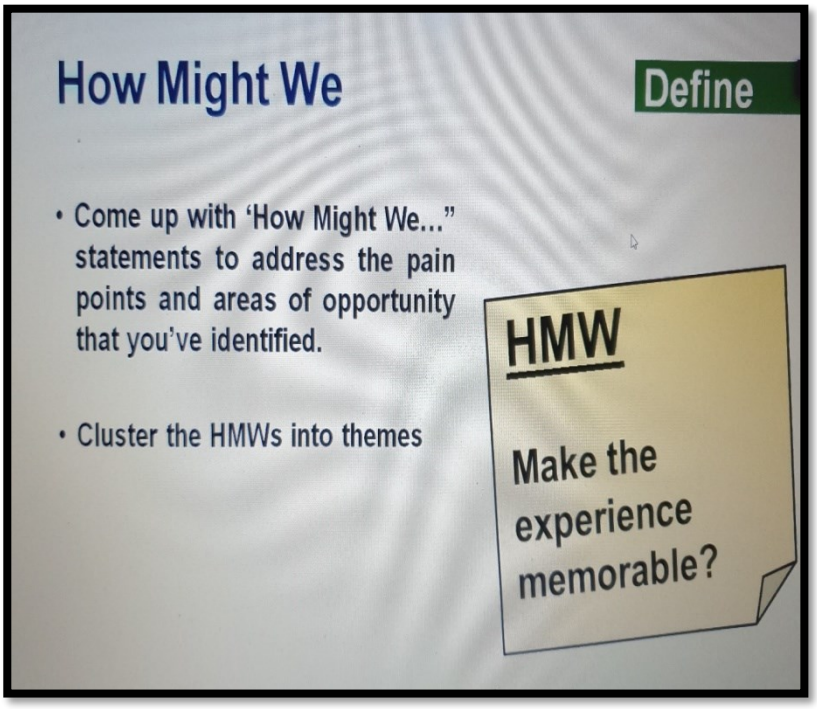
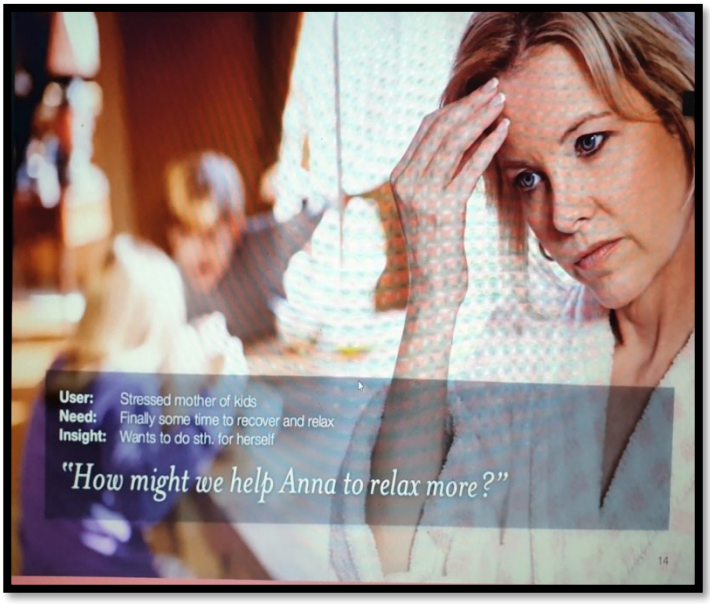


Fig 14: HMW Tool with example



Ideating:
The third step of the design thinking process is the most interesting and probably the most labor-intensive at the same time. In this phase, called Ideate, a design thinker is expected to bring as many ideas to the table as possible. It is not checked whether the idea in ideation stage is possible, feasible, viable or not while brainstorming for ideas. What thinkers do is think many ideas for them.

Rules of Brain Storming:

- Brainstorming is a creative thinking technique for coming up with new ideas and solving problems. Brainstorming encourages free thinking and allows for all ideas to be voiced without judgment, fostering an open and innovative environment. This process typically involves a group of people, although it can be done individually as well.

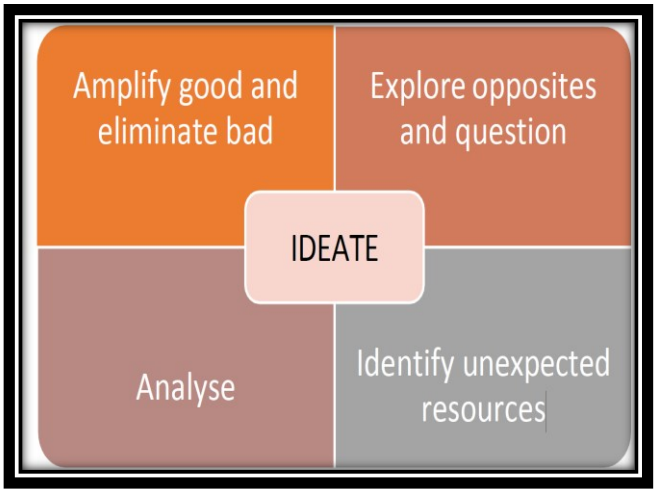


Fig.15 Ideating

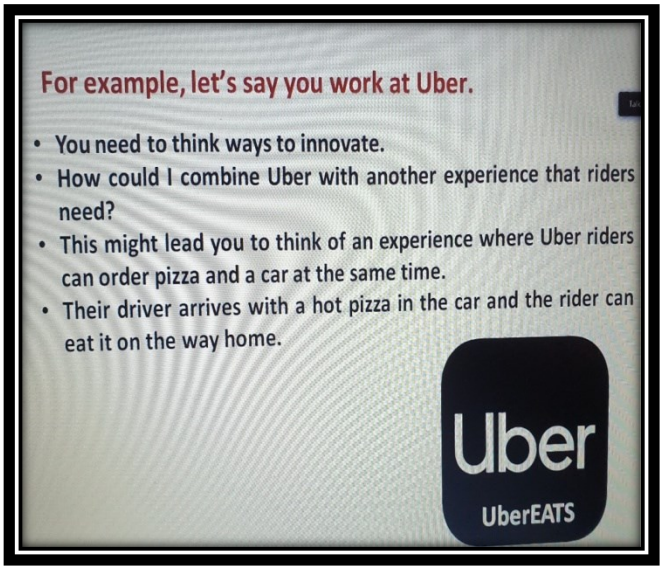
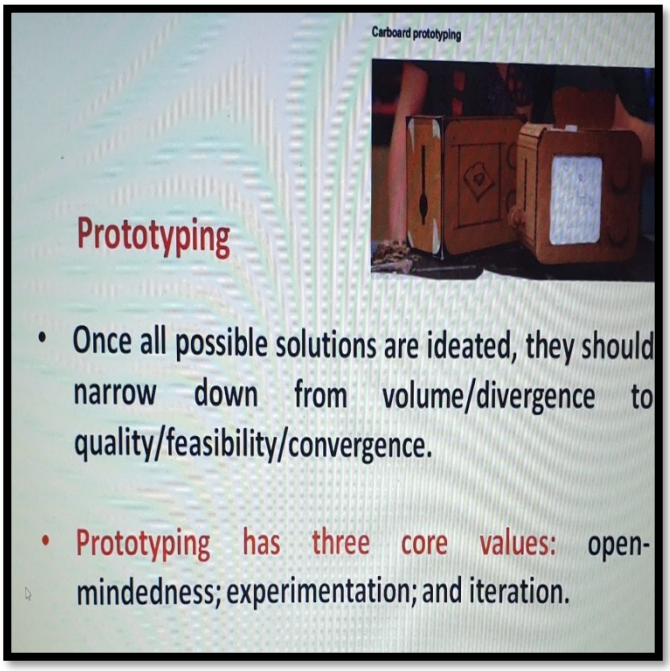


Fig 16: Example of Ideating

Prototyping:

This step deals with building the ideas and checking for their feasibility to arrive at the final solution. This is the step in which three things are mainly taken care of.

- Creation of experience
- Getting feedback
- Iteration



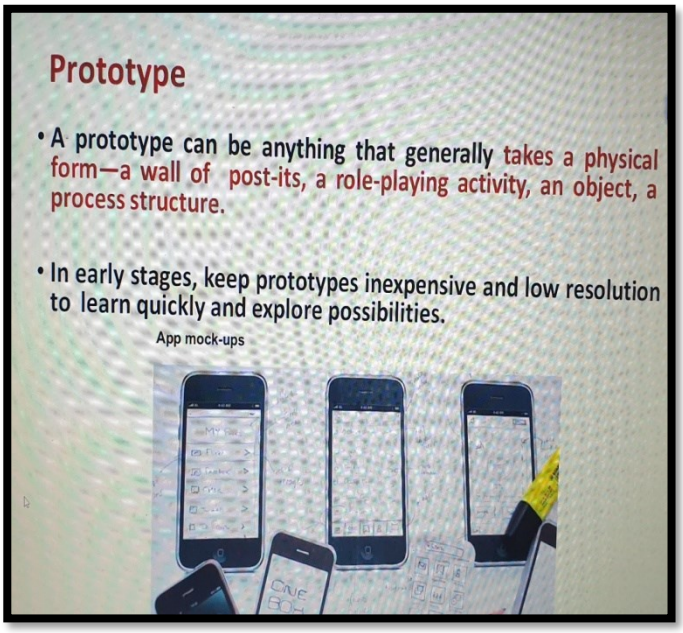
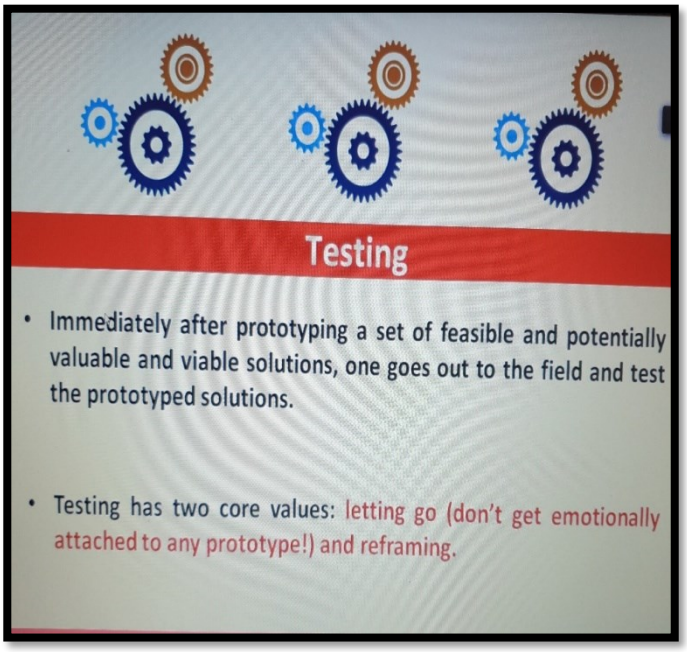


Fig 17: Ideating

Testing :



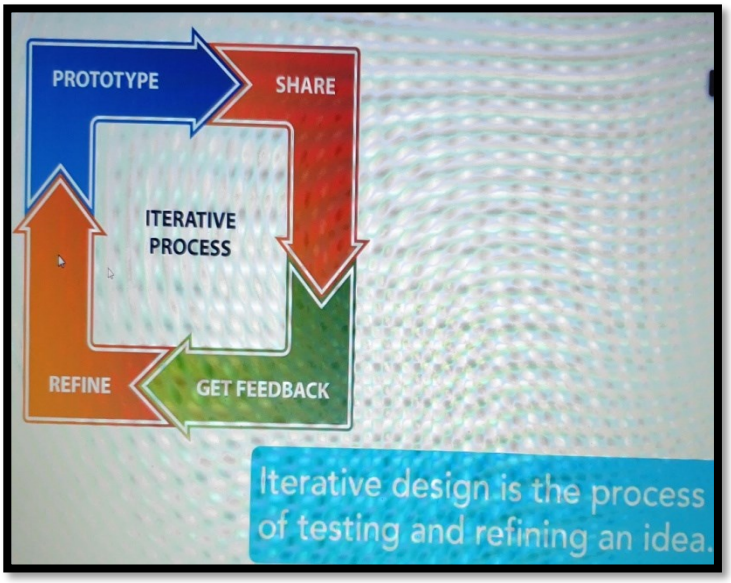


Fig 18 : Testing and its Process

Design Thinking on Godrej Protekt Mr Magic Handwash Granules

Fig 19: Design Thinking on handwash

Empathize : The average Indian consumer, particularly in lower-income and rural segments, views traditional bar soap as a more economical alternative, despite recognizing liquid handwash's superior hygiene properties. A typical bar soap costs between ₹10-₹25, while liquid handwash ranges from ₹50-₹150, making it significantly more expensive. Cultural habits, combined with limited disposable income, further reinforce the preference for bar soap.

Define: Many families consider liquid handwash a luxury item, reserved for special occasions or urban households with higher purchasing power. The perception is deeply rooted in the economic constraints of a price-conscious market, where every rupee matters in daily purchasing decisions.

The powder-to-liquid format represents a strategic approach to addressing consumer challenges related to convenience, affordability, and environmental consciousness.

Ideate: Godrej Protekt Mr. Magic has demonstrated significant success in the market since its launch, particularly in terms of adoption and sales. The product has been well-received, especially during the COVID-19 pandemic, where Godrej committed to distributing 1 million packets of Mr. Magic for free to promote hand hygiene among municipal staff and workers in Maharashtra. This initiative not only raised awareness but also positioned the product as a vital hygiene solution during a critical time. Godrej Consumer Products Limited (GCPL) anticipates that Mr. Magic will generate sales of approximately ₹200 crore (around $26 million) within the next two years. This projection reflects

Ideate : (a) How can I make my product affordable and convenient to all income groups?

b) How can I make a liquid hand wash affordable matching the price range of soap bars?

Prototype : Godrej Protekt Mr. Magic revolutionzed the handwash market by introducing a unique powder-to-liquid format, which was a groundbreaking innovation in personal hygiene products. The product's innovative design allows users to:

- Convert a small 9g powder packet into 200ml of liquid handwash
- Price Point: Extremely affordable at approximately ₹10 per refill
- Sustainability: Significantly reduces plastic consumption compared to traditional liquid handwash bottles

strong confidence in the product's market potential and consumer acceptance

IV. Does AI Enhance Design Thinking?

AI is used to turbo-charge every step of your design process:

During the **Empathize phase**, AI can help in sift through enormous amounts of user data and surface connections you might not have seen.

If we are in the beginning stages of an idea in **ideation phase,** AI can work based on parameters one set to generate many of ideas, requiring you to think in new directions during Ideation.

In **Prototyping,** AI tools can create many iterations of a design quickly, making it easier to test more ideas.

AI can even analyze user behavior in the **Test phase** so that we can tweak your designs more rapidly

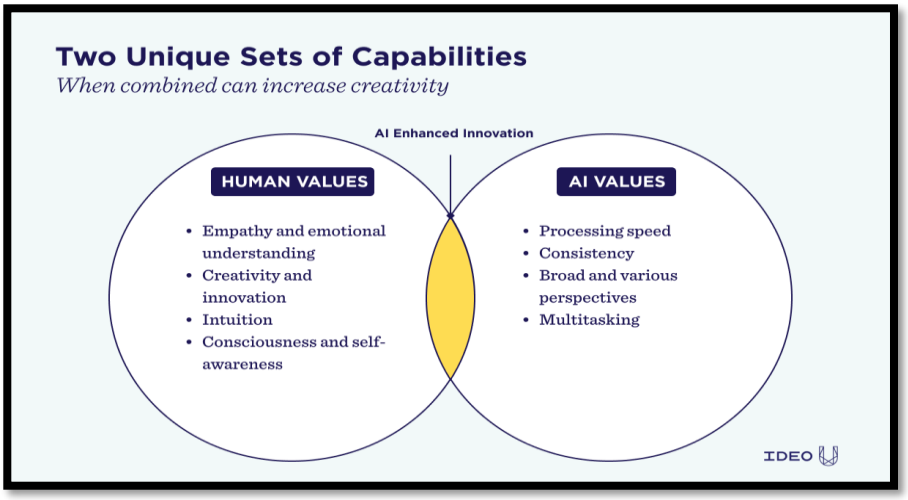
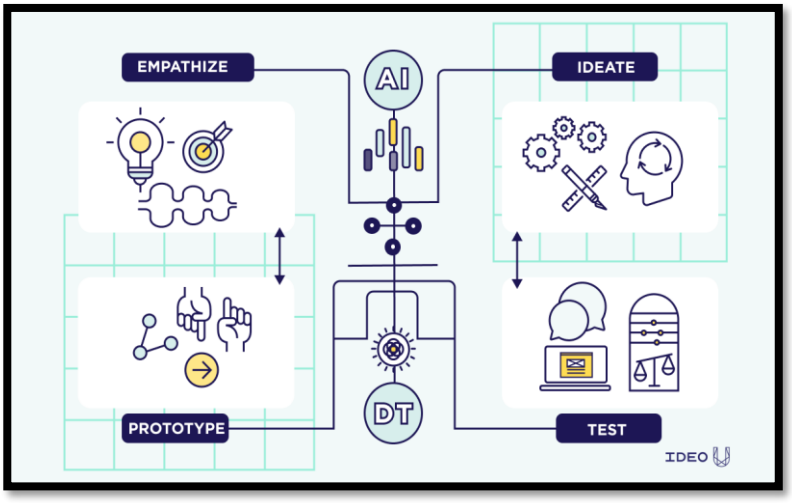


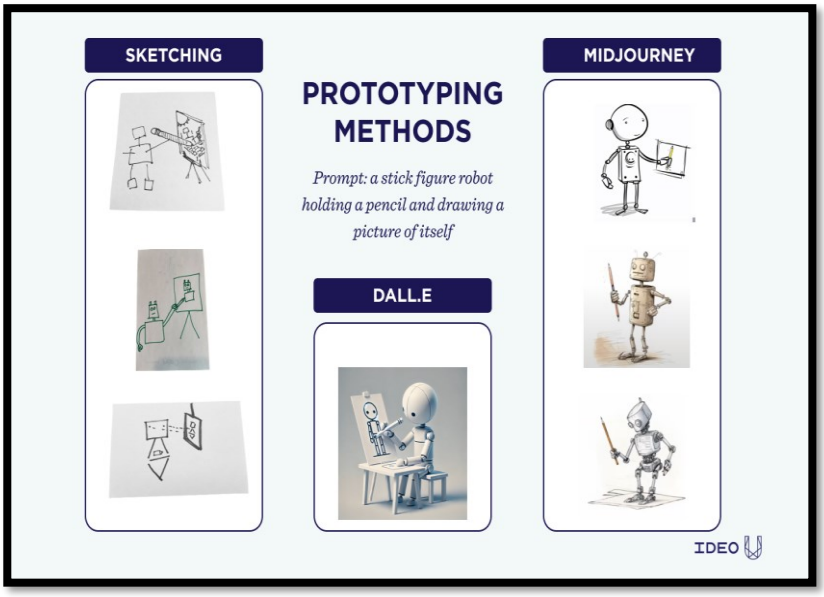
Fig 20 : AI usuage on Design thinking



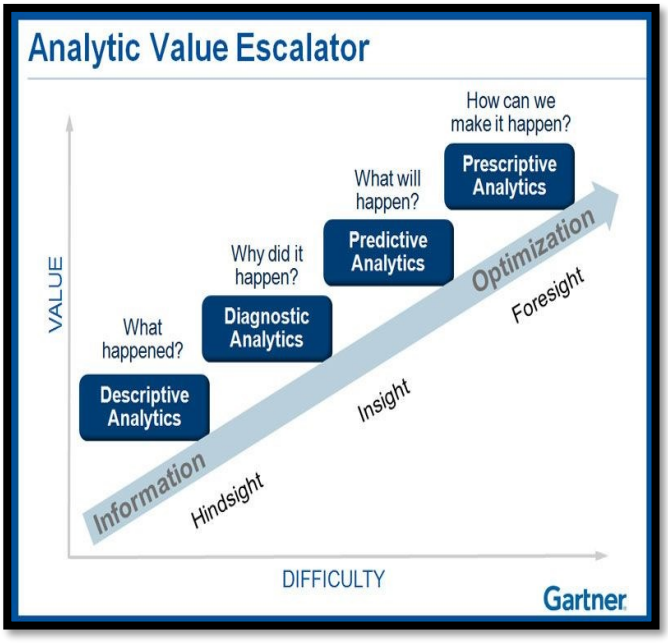
AI in Empathy

Empathy is about comprehending the end users.

Sentiment Analysis — With help of AI, it can monitor social media posts, reviews, and other verbal interactions to determine how people perceive a product or experience.
Recognizing Behavioral Patterns: Machine learning algorithms are capable of identifying patterns in user behavior that may not be as easily detected by human observers. On a healthcare project, for example, AI allowed us to detect nuanced behaviors in the movement of patients that led us to a more efficient, user-friendly hospital layout.
AI in Definition: Crystalising the Right Problem
AI in Ideation and Prototyping :



AI-Based Brainstorming: Technology like GPT-3 can provide hundreds of preliminary ideas based on prompts.
AI in Testing and Iteration:
Automated Testing: Based on your prototype, AI can mimic how a user interacts with it, discovering usability issues such as buttons , stressors in voice, and suggestiveness and can offer instant insights.



Prescriptive Analytics:
Prescriptive Analytics suggest the proposed assignment to be done next. It is necessary to devise new strategies to streamline the system or the business processes. The decision to be taken shall be completely based on reliable and authentic data. In case of sales representatives tendering resignation, prescriptive analytics may suggest a training program to be administered to them to prevent productivity from decline. HRM will have to migrate from fundamentals of people science (resources) to Strategic HR (Decision taken based on data/ information)

This is where AI helps us sort of and organizes all of the data we have gathered: to make sure that we are solving the right problem.
Data visualization: AI can breathe new life into complex datasets and provide visuals that are easier to comprehend. This made it possible to quickly get to the heart of a complex supply chain problem.
Developing Predictive Analytics: AI can analyze past data and make predictions about future trends or probable issues.

not working or crashes creating roadblocks before you get to actual users. We used this within a complex app interface, which reduced our testing time (inferring user responses) by 50%.
Quick Insights: During live user tests, AI may observe facial features

CONCLUSION

Artificial Intelligence (AI) is transforming the landscape of innovation and problem-solving when integrated into the Design Thinking framework. By gathering this research together we have recognised the symbiosis with AI as a tool, that enhances the process as it governs the five stages of design — Empathise, Define, Ideate, Prototype and Test. Not just about efficiency, AI can empower designers with deep learning about user patterns, automating menial tasks and creating a wider range of solutions. The AI tools enable better understanding of user needs with advanced data analytics and predictive modeling, complementing the human-centred design approach of the Design Thinking. AI speeds up the process of analyzing user feedback and refining prototypes, further accelerating the iterative process of Design Thinking and allowing teams to react swiftly to user needs and marketplace change.

The most effective approach will be for organizations to leverage AI gentle a success-and-trial system to allow more unexpected outcomes quicker whilst supplementing Design Thinking skills with a potentially transformative force in enterprise: artificial intelligence. This fusion enables designers to develop solutions that are both practical and user-centric, aligning products and services with real-life requirements.

But the ethical implications of AI tech and the biases that may stem from that tech are important to tackle as well. It will be crucial to ensure transparency and accountability in the AI applications, for reliability in the design process.

Ultimately, the evolution of Design Thinking is one that serves to root the methodology deeper into a world of AI, building upon the strength of each innovation while remaining faithful to the fundamentals of empathy and user-centricity that have always defined design. Adopting this integrated way of thinking opens up new possibilities for creativity and innovation, and lays the foundation for transformative solutions that adapt to the changing requirements of users and society as a whole. Both design and innovation stand on the cusp of a revolution, driven by the unique combination of human intuition and the computational prowess of machine intelligence.

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