Design Thinking

Module-1

Necessity of Design Thinking

Challenges of a Rapidly Changing Workplace

- Rapid Change: The world is experiencing rapid change with new problems emerging, including overpopulation, resource scarcity, and cyber threats. Predicting future problems is becoming increasingly challenging.
- Work Redefined: Work is shifting from routine tasks, such as bookkeeping and clerical work, to nonroutine tasks that require problem-solving, intuition, persuasion, creativity, and adaptability.
- David H. Autor's Distinction: David H. Autor, an MIT economics professor, distinguishes routine tasks as middle-skilled, cognitive, and production activities, while nonroutine tasks involve abstract activities and analytical, interpersonal, and adaptive skills.
- Decrease in Routine Tasks: Autor's research shows a decrease in routine tasks in the US workplace over the last 50 years, while nonroutine tasks that require analytical, interpersonal, and adaptive skills have increased.
- Global Trend: The World Bank's research indicates that jobs in 30 other countries are also increasingly requiring nonroutine skills.

Challenges of a Rapidly Changing Workplace

- Knowledge Economy: The current economy is described as a knowledge economy, where jobs are increasingly transformed into data and exported to countries with highly educated workers, challenging individuals with an abundance of information and complex challenges.
- Preparing Students: Educators need to prepare students for success in this knowledge economy and help them stand out in a globalized, competitive job market.
- Design Thinking Approach: One approach to prepare students is by teaching and modeling the design thinking (DT) method, which helps students develop the Seven Survival Skills and mindsets necessary for success as workers, citizens, and lifelong learners.
- Seven Survival Skills: The design thinking method helps students cultivate skills and mindsets that are crucial for their future, including problem-solving, creativity, adaptability, and effective innovation.
- Educator Responsibility: Educators have a responsibility to prepare students for success by incorporating design thinking into their classrooms, enabling students to approach problems and tasks in innovative and effective ways.

Seven Survival Skills

1. **Critical Thinking & Problem-Solving:** Analyzing information deeply to find effective solutions.

2. **Collaboration & Influence:** Working harmoniously in diverse groups and persuading others through reasoning.

3. **Agility & Adaptability:** Adapting to changes and obstacles in a continuously changing workplace.

4. **Initiative & Entrepreneurialism**: Taking self-directed actions to drive change and solve problems.

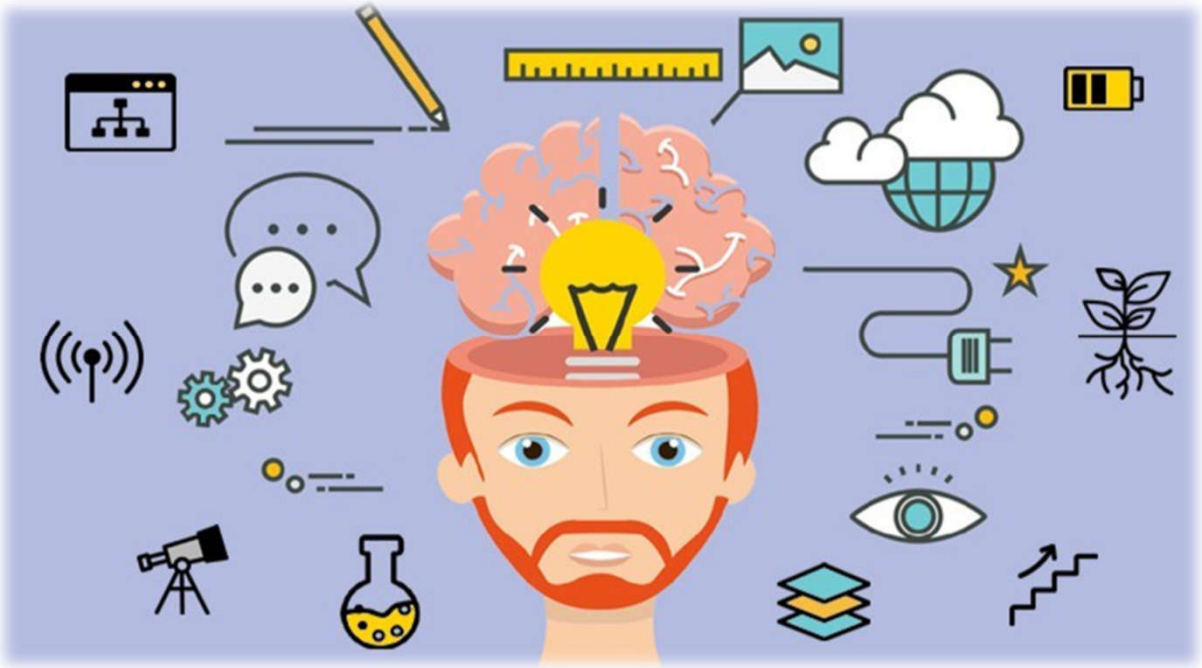
5. **Effective Communication:** Clearly conveying ideas to diverse audiences.

6. **Information Analysis:** Evaluating vast amounts of information to identify valuable knowledge.

7. **Curiosity & Imagination:** Eagerly exploring and using creativity to innovate and improve.

Design Thinking and Why It Matters

DT is a human-centered approach that empowers individuals to think and act like designers, addressing problems and improving experiences through a structured process with five phases: empathize, define, ideate, prototype, and test. This equips students to be proactive change agents in their communities and the world.



Design and Business

- **Tim Brown and IDEO**: Tim Brown, the CEO and president of IDEO, defines design thinking as a human-centered approach to innovation that integrates the needs of people, technology possibilities, and business requirements. It aims to generate new ideas and strategies to address global challenges in various fields.
- **IDEO's Work**: IDEO has been involved in designing solutions for diverse fields, including branding, energy, education, environment, and more. Notably, they designed the first mouse for Apple, among other innovative solutions.
- **Design Thinking's Emergence**: Design thinking, characterized by human-centered design and innovation, gained prominence in the business world as a way for companies to adapt to changing trends, empathize with consumer needs, and move beyond analytical thinking.
- **Companies Implementing Design Thinking**: Several companies, like Samsung, IBM, and GE Healthcare, have incorporated design thinking into their business models. This shift has enabled them to stay relevant and innovative in an ever-changing world.

Design and Business

- **Samsung's Transformation**: Samsung integrated design thinking concepts, empathy, and experimentation into its culture, moving from a manufacturing company to one that produces innovative products.
- **IBM's Evolution**: IBM shifted its focus from engineering to user needs and experiences, growing its design team to remain competitive in an innovation-driven economy.
- **GE Healthcare's Example**: GE Healthcare's Doug Dietz transformed the experience of medical procedures for children by using design thinking. He redesigned MRI scanning experiences to make them enjoyable adventures, significantly improving patient satisfaction.
- **Impact of Customer-Centric Design**: Companies practicing design thinking are gaining recognition and loyalty from customers by designing products and experiences that align with customer needs, rather than relying solely on advertising.

More Than a Process: DT Mindsets

- DT is not only a process, but a specific way of thinking (hence its name, design *thinking*).The values and mindset allow creative outcomes to emerge.
- DT is much more valuable than the actual process.
- Mindsets and beliefs that can cultivate an environment conducive to successful and authentic use of DT in the classroom.

Six Key Mindsets

- A mindset encompasses a person's attitudes and thoughts about a specific subject, influencing their behavior in corresponding situations. For instance, a fear of failure can hinder a student's willingness to take action, make decisions, or try new things within the design thinking (DT) process. Stanford's d.school, founded by David Kelley, utilizes DT to unlock students' creative potential through real-world challenges. Additionally, the d.school has introduced the K12 Lab Network, aiming to integrate DT into classrooms and schools, empowering educators to drive positive change in education.

Six Key Mindsets

According to the K12 Lab Network wiki, six key mindsets are required by designers to use DT to its fullest potential:

1. Human centered
2. Mindful of process
3. Culture of prototyping
4. Bias toward action
5. Show don’t tell
6. Radical collaboration

Six Key Mindsets

1. Human centered

Students with a human-centered mindset in design thinking can empathize with and understand the needs of the individuals they are designing solutions for. The design process focuses on these end-users, valuing their perspectives and needs. Interacting and engaging with them can lead to valuable insights and inspirations that guide designs toward successful outcomes.

Six Key Mindsets

2. Mindful of process

The mindful-of-process mindset in design thinking prompts students to consider the specific phase they're in and tailor their approach accordingly. Each phase within the design process has its distinct purpose, goals, and strategies. For instance, during ideation, fostering collaboration and generating diverse ideas necessitates traits like open-mindedness, idea expansion, and deferring judgment. Being attentive to these behaviors and objectives empowers students to optimize each phase in the design thinking process. Essential to this mindset is reflecting on methods and seeking continuous improvement in how work is executed within each phase.

Six Key Mindsets

3. Culture of prototyping

The build-to-think mindset in design thinking encourages students to continually learn and enhance their creations by applying new knowledge. This approach, advocated by David Kelley, involves viewing building and prototyping as a way of thinking, not just a manufacturing step. Students, adopting a prototyping mindset, swiftly create and test, embracing failures as learning opportunities. They employ creativity to iterate and improve their artifacts or solutions iteratively, achieving desired outcomes more efficiently through frequent trial-and-error processes.

Six Key Mindsets

4. Bias toward action

The bias-toward-action mindset encourages students to proactively initiate, make decisions, and take self-directed actions, aligning well with the action-oriented nature of design thinking (DT). Every phase in the DT process necessitates such behavior, from empathizing with users to testing and iterating solutions. Overcoming the fear of failure is key to adopting this mindset, allowing students to persist, take risks, and learn from setbacks. Embracing failure as an integral part of the process leads to creativity, a plethora of ideas, and the realization that continuous iterations transform prototypes into high-quality products or solutions.

Six Key Mindsets

5. Show don’t tell

The show-don't-tell mindset encourages students to communicate and share ideas using visual representations like sketches, prototypes, or digital visuals. Visuals simplify complex concepts, enhance understanding, and facilitate discussions. Even a simple sketch can uncover unexpected issues and align team understanding. Sharing ideas visually helps organize thoughts and improves communication clarity. Importantly, being open to constructive criticism during this process allows students to learn, iterate, and enhance their ideas through valuable feedback from stakeholders.

Six Key Mindsets

6. Radical collaboration

The radical-collaboration mindset emphasizes effective teamwork and collaboration among students, leveraging diverse perspectives and skills to achieve a common goal. Collaboration extends to stakeholders outside the design team, valuing inclusive partnerships with end-users and experts from various fields. This approach fosters a family-like atmosphere, promoting positive relationships based on trust, empathy, and appreciation. By valuing teamwork and minimizing hierarchical relationships and competition, this mindset enhances morale, relationships, and reduces discouragement, ultimately leading to innovative solutions in tackling real-world challenges.

Other Mindsets for Success

- **Improve/Learn from Failures:**
  - Overcoming the fear of failure is crucial for embracing a bias-toward-action mindset.
  - Failure should be viewed as an opportunity to learn and identify areas for improvement.
- **Creative Confidence:**
  - Creative confidence is the belief in one's ability to generate and experiment with new ideas.
  - Encouraging creative confidence is essential for fostering innovation and problem-solving skills.
- **Creative "Courage":**
  - "Creative courage" emphasizes overcoming fears and obstacles related to generating new ideas.
  - It encourages taking risks, embracing failure, and persisting in the face of challenges.

Other Mindsets for Success

- **Growth Mindset:**
  - The growth mindset entails believing in the ability to enhance skills and intelligence through effort and perseverance.
  - Embracing a growth mindset allows students to approach problems with optimism and adaptability.
- **Beginner's Mindset:**
  - Adopting a beginner's mindset involves approaching tasks with the curiosity and openness of a learner.
  - Students should avoid judgments, ask questions, and stay curious to gain deeper insights during empathy work.
- **Liberatory Design Mindsets:**
  - Liberatory Design incorporates self-awareness, focusing on human values, recognizing oppression, embracing complexity, and seeking collaboration.
  - It encourages experimentation, sharing work humbly, and building trust to design equitable and inclusive solutions.