



Designing Education 4.0: Harnessing the power of Design Thinking

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Abstract: Education has always been an evolving field, adapting to the changing needs of society. In the era of Education 4.0, where technological advancements and digital transformation are reshaping the way we learn and teach, there is a growing recognition of the need for innovative approaches to education design. Design Thinking, a human-centered methodology, has emerged powerful for designing educational experiences that are relevant, engaging, and impactful. This research paper explores the potential of Design Thinking to revolutionize the educational landscape, especially in management domain. It proves with results that problem solving and decision making are the most sought out skills among the students. Education 4.0 for budding managers refers to the educational paradigm that prepares aspiring managers for the challenges and opportunities presented by Industry 4.0 and exploring Industry 5.0 (that is emerging) is focused on bringing societal values, human centred approaches, environmental care, increasing productivity yet humans not losing jobs, collaboration between humans and robots or smart system. It recognizes the need to equip future managers with the knowledge, skills, and mindset to navigate the rapidly in the evolving business landscape shaped by technological advancements and digital transformation.

Keywords: Decision making, Design Thinking, Education 4.0, Industry 4.0, Industry 5.0, Management, Problem Solving.

1. INTRODUCTION:

The rapid advancements in technology and the fluid demands of the 21st-century workforce have necessitated a transformative shift in education. To meet the challenges and opportunities of Education 4.0, educators must embrace innovative approaches that go beyond traditional pedagogies. Design Thinking, a human-centered problem-solving methodology, offers a promising framework to revolutionize the current education. This research paper explores the application of Design Thinking principles and strategies in designing and reimagining educational experiences that cultivate critical thinking, decision making, creative thinking, adaptability, and collaboration among learners. By harnessing the power of Design Thinking, education can evolve to prepare students effectively for a future characterized by constant change and complexity.

2. EDUCATION 4.0 & TRANSITION FROM INDUSTRY 4.0 TO 5.0

Education has been taking transformation since ages, in the current century Education 4.0 refers to the modern era of learning, driven by the integration of advanced technology and characterized by personalized, lifelong, and skill-focused education. It encompasses the extensive use of digital tools and online platforms, fostering blended learning that combines traditional classroom instruction with virtual experiences. Let us look into some definitions of the same.

To meet the challenges of our society, new technology-based teaching-learning systems have emerged in higher education, collectively known as Education 4.0^{[1][2]}.

Education 4.0 is a progressive response to the challenges posed by Industrial Revolution 4.0, seeking to harness the potential of human-machine collaboration to yield superior project results and foster innovative **problem-solving** for the betterment of society. As envisioned by Dunwill (2016), there is a strong emphasis on cultivating essential soft skills such as problem-solving, critical thinking, leadership, effective communication, and inventive learning methods. Education 4.0 acknowledges the changing needs of the modern world and adapts learning content accordingly^[3].



It combines traditional education with technology, fostering critical thinking, creativity, and collaboration. With a focus on lifelong learning and adaptability, Education 4.0 equips individuals with the skills necessary to thrive in a rapidly evolving global landscape.

2.1 Transition from Industry 4.0 to 5.0

Definition: "4.0" as a term initially used to mark the disruptive change brought about by the widespread adoption of Information and Communication Technology (ICT) in the manufacturing industry, which led to the coining of the term "Industry 4.0." However, since then, the term "4.0" has been applied to various other fields, such as Work 4.0 or Healthcare 4.0, to indicate similar transformative changes occurring in those respective domains due to the rapid changes in the modern world. Essentially, "4.0" is used to signify the convergence of advanced technologies and their impact on various industries or areas of life ^[4].

"Industry 4.0 is transforming how businesses make, innovate, and offer their goods. Producers are incorporating new innovations such as the Internet of things (IoT), cloud services and analytics, and AI and ML algorithms into their manufacturing facilities and procedures" ^[5]

In the current times technology is mandatory and is one driving force in achieving feasibility of a solution. Industry 4.0, the fourth industrial revolution, represents the integration of these advanced technologies into manufacturing and industrial processes, leading to smart, automated, and interconnected systems. Aim is to optimize efficiency, productivity, and flexibility by enabling machines to communicate with each other, analyse data in real-time, and make autonomous decisions.

Industry 5.0 Definition: "To describe in brief Industry 5.0 is about bringing societal values, human centred approaches, decreasing the wastes produced by humans, environmental care, increasing productivity yet humans not losing jobs, collaboration between humans and robots or smart system. Industry 5.0 emphasizes a higher degree of human-machine collaboration, combining the strengths of advanced technologies with human creativity, empathy, and problem-solving skills to address complex challenges and achieve sustainable and human-centric solutions."

"Industry 5.0 refers to a fresh and developing era of industrialization in which humans collaborate with modern technology and AI-powered machines to improve workplace procedures. This is accompanied by an increased human-centric orientation, better adaptability, and a stronger emphasis on achieving sustainable development" ^{[6][7][8]}

Industry 5.0 is potentially the next phase of industrial development. It might build upon the principles of Industry 4.0 but with a stronger emphasis on human-machine collaboration and coexistence. The advanced technologies such as AI, robotics, and automation could work alongside human workers to enhance productivity, creativity, and problem-solving capabilities ^[9].

2.2 The need of new Pedagogical Approaches in Management Schools

Business schools play a crucial role as influential players in the realm of management trends ^[10]. These educational institutions hold the power to shape and propagate management concepts and ideas, making them more widely accepted and integrated into mainstream thinking. By incorporating these concepts into their educational programs and encouraging research on related topics, business schools contribute to legitimizing and institutionalizing emerging management trends ^[11,12].

Interestingly, with the advent of Industry 5.0 (I5.0), researchers, particularly in the early stages, have shown more enthusiasm than commercial actors like consulting firms. This early adoption by business schools may be attributed to the alignment of I5.0 with the current focus on integrating sustainability into business school education ^[13-16]. This proactive approach by business schools can pave the way for the wider acceptance and understanding of I5.0 in the management domain.

Business schools have embraced Design Thinking as an innovative problem-solving approach, incorporating it into their curriculum and encouraging its application in real-world scenarios.

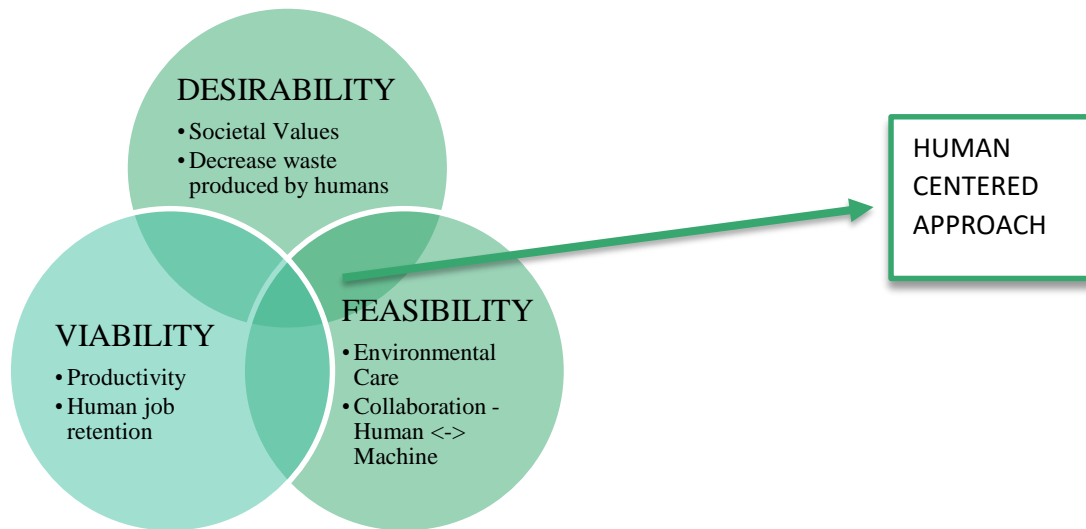


Figure 1 Design Thinking as HCA

3. DESIGN THINKING: AN OVERVIEW

Design thinking happens by learning, it is called learning by doing. Design Thinking comprises two terms, 'Design' & 'Thinking'. The reason why it is called design is that the concept was originally developed for product design, designers used this method to test their concepts, product ideas from customers, but as the concept grew and became more popular, it has been applied in other areas too ^[17]. Design thinking is a remarkable and imaginative problem-solving approach that revolutionizes communication dynamics by incorporating value-added soft skills, ultimately enhancing role clarity and performance among young managers within organizations. This novel teaching and learning pedagogy on campus places a strong emphasis on enabling budding managers to showcase their potential, talent, and team work during the selection process—a vital prerequisite for entering the corporate world (Ranger & Mantzavinou, 2018). By fostering innovation and emphasizing effective communication, design thinking equips them with the tools they need ^[18].

3.1 Key Principles of Design Thinking

Let us look into what all domains can design thinking be applied. Service design, the design of service of products, is one area where design thinking also work upon. Something that you can create, design and then test with the customers. Business design where you use design thinking into the business models. Change management courses, the customer is internal, working for the company and design team can test processes with the customers working for the company. Design thinking can also be used for creation companies' strategies. But startups that are more in the uncertain environment, act more agile, they adjust their strategies as per the change ^[19].

Design thinking as the following principles:



Figure 2 Design Thinking principles

Design thinking is for the customer where the design team finds out various perspectives of the customers and identify the patterns, leading to defining the needs, of the customers, which gets articulated in a focused manner as a problem statement. Various ideas are generated by iterations and finally the solution that best meets the users' needs and desires, and solves the core issues are converted into tangible/intangible prototypes and get delivered after testing ^[20].

3.2 Integrating Design Thinking In Education 4.0

The concepts and research behind Education 4.0 have been widely accepted by experts and educators for years. Established frameworks like OECD's Learning Compass 2030 have served as essential references. The Education 4.0 Taxonomy will complement these existing resources, facilitating more multistakeholder dialogue among experts, educators, policymakers, and employers to envision a futureproof education system [21].



Figure 3 The World Economic Forum's Education 4.0 framework

Education beyond traditional business education approaches by incorporating innovative methodologies, cutting-edge technologies, and a holistic understanding of the interconnectedness between business and technology. It emphasizes the development of critical thinking, creativity, adaptability, and entrepreneurial skills, as well as a deep understanding of emerging technologies.

3.3 Education 4.0 for Managers

Education 4.0 for budding managers recognizes the importance of soft skills, such as collaboration, social skills, leadership, problem solving, creative thinking and ethical decision-making. It seeks to develop well-rounded managers who can effectively lead diverse teams, navigate ethical challenges, and communicate persuasively in a globalized and digitalized business environment. To ensure the success of Education 4.0, it is crucial to integrate emerging educational technologies, promote lifelong learning, and establish strong industry-academia collaborations. This approach enables budding managers to stay updated with the latest industry trends, acquire practical skills through industry projects.

3.4 How Design Thinking aligns with Education 4.0 to bring out the Industry 5.0 requirement among Managers

Business schools must cultivate students capable of the following factors of Industry 5.0

- **Industry 5.0 emphasizes the importance of aligning industrial practices with societal values, including social fairness, sustainability, and well-being.** Design thinking emphasizes a human-centred approach, enabling businesses to deeply understand societal values, needs, and aspirations.
- **Industry 5.0 places humans at the centre of the production process, focusing on their well-being, safety, and job satisfaction.** Design thinking puts humans at the centre of the design process. It involves actively involving end-users and workers in the design and development of products, processes, and systems, ensuring that their well-being and experiences are considered.
- **Industry 5.0 seeks to increase productivity without causing significant job losses, ensuring that humans remain essential contributors to the production process.** Design thinking can help identify opportunities for job preservation and augmentation. Empathizing with workers helps understand their concerns, aspirations, and skills, enabling the design of solutions that preserve jobs and create new opportunities.
- **Industry 5.0 promotes collaboration and synergy between human workers and robots or smart systems, leveraging the unique strengths of each.** Design thinking facilitates the exploration of collaborative models between humans and robots or smart systems. It enables the identification of tasks where humans and machines can work together, optimizing the division of labour and maximizing the strengths of both.
- **Industry 5.0 utilizes digitalization, AI-driven technologies, and automation to enhance production efficiency and flexibility while maintaining a balance with human labour.** Design thinking promotes a user-



centred approach to improve efficiency and flexibility in industrial processes. Businesses can design processes and systems that are streamlined, intuitive, and adaptable to changing requirements.

- **Industry 5.0 emphasizes the responsible and ethical deployment of technology, ensuring that it benefits society and is aligned with human values and needs.** Design thinking encourages businesses to consider the ethical implications of technology and its impact on society.

4. ASSESSMENT AND EVALUATION OF DESIGN THINKING AMONG MANAGEMENT STUDENTS

4.1 About the Study

The author conducted a study in which students who had undergone design thinking subject in their academics were in conversation and then they were circulated with e questionnaire to be filled.

5. MATERIAL AND METHODS ^[22,23]

5.1 Participants

The students who underwent design thinking under the author came into conversation. They were asked and briefed about the need to study and how will they also realize the benefit of design thinking. These students were of the first-year management program.

5.2 Research Tool

Questions relevant to Education 4.0 have been included in this research paper.

Question related to development of skills through design thinking were asked in e Questionnaire

Each question had the following four choices

Agree Strongly Agree Disagree Strongly Disagree

The next set of questions had the following two choices

Yes No

5.3 RESULTS AND DISCUSSION FOR DEVELOPMENT OF PROBLEM SOLVING ^[24]

Graphical representation & Question-Answers given in Annexure 1

SET 1: 100% Agreement: The outcomes presented in Annexure 1, coupled with the ensuing discussion, robustly substantiate the hypothesis that design thinking cultivates proficient problem-solving abilities among managers.

- **Problem-Solving parameters:** Highlighting the recognition of rapid prototyping and the incorporation of stakeholder feedback as integral components showcases how design thinking provides pragmatic strategies for effectively addressing complex and challenging issues, often referred to as wicked problems.
- **Developing problem-solving skills:** The discovery that design thinking nurtures innovative problem-solving prowess among managers is in accordance with the original hypothesis.
- **Crucial elements of design thinking:** Underscoring the significance of observation, empathy, and precise problem articulation as fundamental elements within design thinking serves to fortify the notion that this approach fosters the enhancement of problem-solving abilities.
- **Getting adjusted to the dynamic trends:** Recognizing flexibility and agility as essential attributes that are cultivated proves vital in adapting problem-solving methodologies to the dynamic shifts in market trends.
- **Design thinking Applied:** The verification of design thinking's tangible implementation in tackling tangible business challenges affirms its worth as a valuable approach for nurturing managerial problem-solving capabilities. The ideation stage of design thinking is particularly esteemed, as it cultivates adeptness in problem-solving by generating a diverse array of concepts and solutions.

A well-structured and cohesive body of evidence convincingly establishes that design thinking plays a pivotal role in nurturing problem-solving capabilities within managerial roles.



SET 2: 70% – 85% agreement

- **Innovative Methodology:** Design thinking offers an innovative methodology that empowers managers to approach challenges from diverse angles.
- **People-Centric Focus:** Its user-centric focus encourages managers to deeply understand end-users, leading to more effective problem-solving.
- **Reiterative Process:** Design thinking's iterative process allows managers to refine solutions through continuous testing and improvement.
- **Collaborative Environment:** It creates a collaborative environment where cross-functional teams contribute diverse perspectives to problem-solving.
- **Acceptance to Doubt:** Design thinking equips managers with the ability to embrace ambiguity and find clarity within complex problem spaces.
- **Holistic Problem Framing:** Managers learn to frame problems holistically, uncovering underlying issues for more comprehensive solutions.
- **Empathetic Mindset:** Design thinking cultivates an empathetic mindset, enabling managers to deeply connect with users' needs and emotions.
- **Informed Decision-Making:** Managers leverage design thinking's insights to make informed decisions grounded in user insights and feedback.
- **Familiarizing to Change:** It equips managers with adaptable problem-solving skills, crucial for navigating rapidly changing business landscapes.
- **Complete Solutions:** Design thinking promotes the creation of inclusive solutions that cater to a diverse range of user needs and contexts.

5.4 RESULTS AND DISCUSSION FOR DEVELOPMENT OF DECISION MAKING ^[25]

Annexure 2 shows the data comprising of graphs, questions asked and the answers that were inferred.

SET 1: 100% Agreement:

- **Structured Process for Decision-Making:** The consensus among students indicates that a systematic approach, encompassing understanding, observation, empathy, problem articulation, ideation, and prototyping, enhances decision-making skills.
- **Ideation's Creative Impact:** The unanimous agreement showcases that the ideation phase, fostering divergent thinking through tools, directly enhances effective decision-making by exploring multiple alternatives.
- **Stakeholders' Perspectives Considered:** All students concur that considering all stakeholders' viewpoints is paramount, aligning with empathy and user-centric principles, vital for informed and inclusive decision-making.
- **Data-Driven Approach:** The majority acknowledges design thinking's emphasis on data gathering and analysis, notably through observation and empathy, elevating decision-making by leveraging insights.
- **Flexibility and Optimization:** The unanimous agreement underscores design thinking's facilitation of thorough evaluation and flexible exploration of choices, vital for optimization within managerial decision-making.
- **Iterative and Collaborative Essence:** Most students strongly affirm that design thinking strongly encourages iterative, collaborative decision-making, highlighting the importance of teamwork and continuous enhancement.
- **Fostering Managerial Mindset:** A notable observation is the widespread agreement that design thinking fieldwork significantly fosters learning and improvement through decision experiences, nurturing a managerial mindset.

In the range of 53% to 82%, let's explore how the findings substantiate the hypothesis:

- **Academic Project Enhancement:** A significant 92% of students acknowledge the positive influence of design thinking on their academic projects, aligning well with the hypothesis.



- **Prototyping's Role:** A substantial 53% of students strongly agree, complemented by agreement from others, underscoring prototyping's pivotal role in swift idea testing and decision facilitation, further affirming the hypothesis.
- **Data-Driven Decision-Making:** With 23% strongly agreeing and 77% in agreement, the embrace of data and research in decision-making, as influenced by design thinking, closely aligns with the hypothesis.
- **Iterative Refinement:** A combined 99% agreement (38% strongly agree and 61% agree) reinforces that iteration fosters continuous improvement, strengthening decision-making practices and supporting the hypothesis.

6. CONCLUSION:

By incorporating the principles of Education 4.0, which include technology integration, personalized learning, and skill development, educators can revolutionize traditional teaching approaches. Design thinking empowers students to create innovative, learner-centric solutions that cater to individual needs, preferences, and challenges. This approach fosters a dynamic and inclusive educational environment that prepares students for the demands of an ever-changing world. By embracing design thinking in Education 4.0, we can inspire a generation of critical thinkers, problem solvers, and lifelong learners, laying the foundation for a brighter and more progressive society.

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Annexure 1 Problem Solving [26]

GRAPHS DERIVED	IMPLICATIONS
<p>● Agree ● Strongly Agree ● Disagree ● Strongly Disagree</p>	<p>1. By providing a systematic approach does design thinking help managers develop problem-solving ability? It can be inferred from the pie chart that design thinking is a well-structured, approach which helps managers develop problem-solving skill.</p>
<p>● Agree ● Strongly Agree ● Disagree ● Strongly Disagree</p>	<p>2. Enhanced empathy and understanding of stakeholders' perspectives is a key benefit of design thinking in developing managers' problem-solving ability? In Problem solving understanding the user is very important</p>
<p>● Yes ● No</p>	<p>3. By encouraging iterative thinking and prototyping design thinking contribute to managers' problem-solving ability in complex situations? An implication arises that managers cultivate the aptitude to address intricate scenarios through the enhancement of problem-solving skills via rapid prototyping and incorporation of stakeholder feedback.</p>
<p>● Yes ● No</p>	<p>4. Can design thinking help individuals become more innovative problem solvers? Becoming adept problem solvers necessitates the utilization of design thinking, as it serves as a pathway to fostering innovation within those tackling challenges.</p>
<p>● Agree ● Strongly Agree ● Disagree ● Strongly Disagree</p>	<p>5. Observation, Empathy, Problem Articulation in design thinking? Observation, empathy and problem articulation are important as they help managers differentiating the problem.</p>
<p>● Agree ● Strongly Agree ● Disagree ● Strongly Disagree</p>	<p>6. By encouraging brainstorming and exploration of diverse ideas contribute to manager's ability to generate innovative solutions? Budding managers gain the ability to produce creative and novel solutions by employing brainstorming and exploration techniques, through ideation managers can generate solutions daily</p>
<p>● Agree ● Strongly Agree ● Disagree ● Strongly Disagree</p>	<p>7. Flexibility and agility in responding to dynamic environments impacts manager's ability to adapt to changing market trends and customer preferences? The attributes of suppleness and quickness facilitate the adjustment to evolving market trends and stakeholders' preferences. This suggests that managers must possess the capability to embrace shifting customer preferences and market dynamics to foster organizational growth.</p>



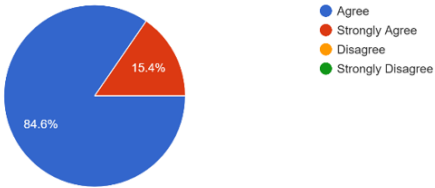
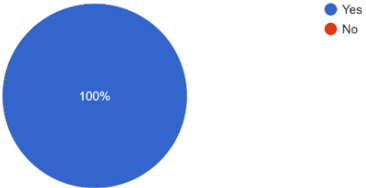
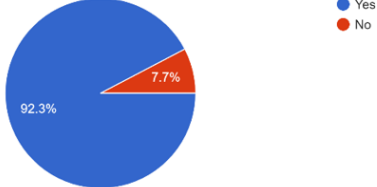
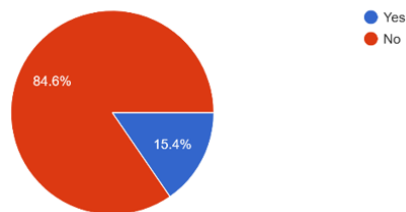
<p>100%</p> <ul style="list-style-type: none"> ● Agree ● Strongly Agree ● Disagree ● Strongly Disagree 	<p>8. By encouraging a forward-thinking mindset and promoting trend analysis in design thinking contribute to managers' ability to anticipate future trends and market demands? It can be stated that managers require a problem-solving mindset, as they are tasked with embracing and overcoming challenges. and adapt to different methods and techniques.</p>
<p>85.7% 14.3%</p> <ul style="list-style-type: none"> ● Agree ● Strongly Agree ● Disagree ● Strongly Disagree 	<p>9. By encouraging practical application of problem-solving methodologies design thinking prepare management students to address real-world business challenges? Engagement in the practical application of tools and techniques equips students to effectively tackle real-world business challenges. Thus, problem-solving methodologies necessitate hands-on implementation rather than mere conceptual understanding.</p>
<p>100%</p> <ul style="list-style-type: none"> ● Yes ● No 	<p>10. Start with a beginners' mindset helps in deeper observation in defining the wicked problems later? During the observation phase, adopting a basic mindset becomes crucial in identifying wicked problems. Hence, cultivating curiosity, a sense of eagerness in defining these challenges, and maintaining an impartial perspective are essential in the problem-finding stage.</p>
<p>85.7% 14.3%</p> <ul style="list-style-type: none"> ● Yes ● No 	<p>11. Do management students who receive training in design thinking demonstrate better problem-solving capabilities compared to those who don't? A noticeable improvement in problem-solving skills is evident in those who engage with design thinking, distinguishing them from those who do not. Consequently, one can infer that design thinking cultivates problem-solving capabilities through its multifaceted stages, a facet absent in students who do not partake in this process.</p>



Annexure 2 Decision Making [27]

GRAPHICAL REPRESENTATION	INFERENCE
<p>Legend: Yes (Blue), No (Red)</p> <p>100%</p>	<p>1. Does design thinking encourage decision making? The pie graph implies that the sequential stages of Design Thinking, encompassing understanding, observation, empathy, problem articulation, ideation, prototyping, and testing, foster the development of decision-making skills essential for managers.</p>
<p>Legend: Agree (Blue), Strongly Agree (Red), Disagree (Yellow), Strongly Disagree (Green)</p> <p>46.2% 53.8%</p>	<p>2. Being open minded and adaptive is a characteristic of decision making in design thinking. The pie graph suggests that within the framework of design thinking, cultivating an open-minded and adaptive approach contributes to the enhancement of decision-making abilities. Therefore, managers necessitate a mindset characterized by openness to problem identification and solution, coupled with adaptability to diverse situations—both pivotal elements for effective decision-making.</p>
<p>Legend: Agree (Blue), Strongly Agree (Red), Disagree (Yellow), Strongly Disagree (Green)</p> <p>84.8% 15.4%</p>	<p>3. By breaking down the problem and iterating on solutions design thinking approaches decision making in complex situations? The pie graph indicates that when addressing intricate problems and making decisions, a crucial approach involves deconstructing the problem and iteratively refining solutions. Consequently, the significance of analysis and synthesis becomes paramount in comprehending the problem, enabling effective decision-making in the resolution of complex, wicked problems.</p>
<p>Legend: Agree (Blue), Strongly Agree (Red), Disagree (Yellow), Strongly Disagree (Green)</p> <p>46.2% 53.8%</p>	<p>4. Prototyping allows quick testing and iteration of ideas and contribute to decision making in design thinking? The pie graph implies that the utilization of prototyping facilitates swift idea testing, consequently aiding in decision-making. Rapid prototyping and iterative processes provide a comprehensive assessment of the product or service's stakeholder-friendliness, enabling informed decisions that prioritize stakeholders' needs and perspectives.</p>
<p>Legend: Yes (Blue), No (Red)</p> <p>100%</p>	<p>5. Does ideation in design thinking process involve generating multiple potential solutions? Unanimously, all students acknowledge that the ideation phase of design thinking fosters the generation of numerous solutions and ideas. Therefore, this ideation phase, characterized by the proliferation of diverse concepts, plays a crucial role in decision-making processes.</p>
<p>Legend: Agree (Blue), Strongly Agree (Red), Disagree (Yellow), Strongly disagree (Green)</p> <p>76.9% 23.1%</p>	<p>6. By conducting thorough research and gathering data design thinking promotes informed decision making? Design thinking facilitates decision-making by enabling the incorporation of data and research. Consequently, the significance of primary and secondary research becomes evident in uncovering insights through understanding, observation, and empathy. These insights serve as the foundation for informed decision-making, highlighting the pivotal role of research in the process.</p>
<p>Legend: Agree (Blue), Strongly Agree (Red), Disagree (Yellow), Strongly Disagree (Green)</p> <p>61.5% 38.5%</p>	<p>7. After undergoing design thinking process, do you find Design thinking enabling managers to consider multiple perspectives and make more informed decisions. Design thinking empowers managers to embrace diverse perspectives, a critical factor in effective decision-making. Thus, throughout the design thinking process, managers are encouraged to incorporate various viewpoints and customer opinions when identifying and resolving problems.</p>



	<p>8. By providing a systematic approach to problem-solving design thinking help managers develop decision-making ability? A substantial majority of students concur that adopting a systematic, step-by-step approach to problem-solving through design thinking fosters the development of decision-making skills among managers.</p>
	<p>20. Does design thinking encourage you to consider multiple perspectives before making a decision? Universal consensus among all students affirms the importance of considering diverse stakeholder perspectives prior to making decisions.</p>
	<p>21. Does design thinking emphasize the importance of gathering and analysing relevant information before making a decision? A significant majority of students acknowledge that design thinking emphasizes data collection and analysis. Thus, it can be deduced that prior to making decisions, the process of gathering information and analysing relevant data holds paramount importance.</p>
	<p>22. Design thinking does not encourage iterative and collaborative decision-making processes? An overwhelming consensus among the majority of students, both strongly agreeing and agreeing, indicates that design thinking fosters iterative and collaborative decision-making processes. As a result, it is reasonable to infer that incorporating iterations and collaborative approaches holds significance in the decision-making context.</p>