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SUBJECT - Problem Identification and Design Thinking

Assignment 12
Open Ended Experiment

Ideate the potential ideas and design the prototypes for industry based problem.

Generating new ideas that create substantial value is at the very core of entrepreneurship. The IDEATE Method is an ideation method empirically proven to help students identify problems, develop creative solutions, and select the most innovate entrepreneurial idea. Authors Daniel Cohen, Gregory Pool, and Heidi Neck emphasize the importance of deliberate practice and repetition as they guide students through each phase of the method: Identify, Discover, Enhance, Anticipate, Target, and Evaluate. Goal-directed activities and self-reflection questions help students develop their entrepreneurial mindset and skillset.

Iterative Prototyping

Iterative prototyping involves creating a prototype from the product design, testing it for usability and functionality, and then revising what didn't work. After testing has concluded, the research team will design a new iteration and manufacture it for testing. The old iteration is then thrown out or set aside. Iterative prototyping is practical and allows for quick identification of challenging design problems but can be expensive and wasteful depending on the number of iterations required.

There is a version of iterative prototyping — evolutionary prototyping — that removes the need for more than one iteration. The idea behind evolutionary prototyping is to gradually refine the first iteration as improvements are identified based on incoming feedback. Eventually, the first and only prototype becomes the final product after extensive machining and revising.

Parallel Prototyping

On the other hand, parallel prototyping is a concept-based method where several design concepts are compared concurrently. Multiple designs are drafted and then compared to find the best versions before a physical prototype is manufactured. This method promotes creativity and conceptual ideation. Parallel prototyping can be expensive due to a large number of contributing factors.

Subsequently, there is a parallel prototyping version — competitive prototyping — where multiple design teams develop concepts independently. Competitive prototyping is useful for larger projects that have the potential for higher risk factors.

Rapid Prototyping

Rapid prototyping is a more recent product design testing method that incorporates some aspects of the iterative process. This method is fast and accessible for product designers who can access CAD software and 3D printing technology in-house. Rapid prototyping utilizes innovative technologies—CAD software and 3D printing—to create seamless data transfer from computer to printer. This method is an affordable way to run usability and functionality tests on newly printed mockups.

Previous methods might take a few days to manufacture and compare iterations of the product depending on fabrication technology and communication requirements. Rapid prototyping is a process that could be minimized to a daily cycle where the new product iteration is designed/revised during the day and then printed overnight.