3D Design & Printing Rubrics

	Beginning	Developing	Proficient	Mastery
Empathize	Asks the user provided questions and records responses.	Suggests and asks questions of the user and records responses.	Makes observations and asks questions to gain insights into user needs.	Uses observations, questioning and other methods to gain insights into user needs that they hadn't previously considered.
Define	Shares information about the user without identifying a problem.	Suggests problems that the user may have.	Clearly articulates a problem the user needs solved.	Clearly articulates a user need by forming an actionable problem statement.
Ideate	Explains an idea suggested by someone else.	Suggests an idea for solving the problem.	Generates at least 5 possible ideas including some original ideas for solving the problem.	Generates at least 10 creative, original and innovative ideas for solving the problem.
Prototype	Creates a model.	Creates a model related to the problem.	Produces a model or prototype that represents a proposed solution.	Produces a working model or prototype that can be used to fully test the proposed solution.
Test	Shows the user their model.	Asks the user what they think of their model.	Tests prototype and seeks feedback from user.	Designs tests to determine how well specific aspects of the solution meets user needs.
Collaboration	Completes tasks with direction that contribute towards the group solving the problem.	Completes task to contribute towards the group solving the problem.	Works collaboratively with a group to solve the problem.	Acts as a leader in a group to collaboratively solve the problem.

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Better Learning by DESIGN

3D Design & Printing Rubrics

	Beginning	Developing	Proficient	Mastery
Creativity	Follows a set of instructions to complete a design without making original changes.	Creates an original design but mostly based on existing ideas.	Design is based on mostly original ideas.	Design is original and unique.
Spatial	Names and selects geometric shapes to include in design.	Selects shapes and matches faces to create a new design.	Elements including shapes rotated and resized to create a successful model.	Manipulates elements of the model across x,y and z axes.
Design	Makes a model using basic tools.	Makes a model using at least one design tool not used before.	A range of design tools used to create a well-structured, model with all parts connected.	Model includes complex combinations of shapes and uses advanced design tools.
Iterate	Creates a design but doesn't make any changes or improvements.	Makes one change to initial design.	Articulates changes made to improve initial design.	Plans and carries out a series of intentional iterations to improve a design.
Print	3D model printed for student by an adult.	Checks that model is ready for with an adult before sending it to the 3D printer.	Makes changes or suggestions to ensure model can be successfully 3D printed.	Independently uses slicing software to successfully 3D print the model (with supervision for safety)
Evaluate	Describes their completed design.	Describes how successful their design is giving reasons and examples.	Evaluates model by how well it meets agreed criteria	Identifies evaluation criteria and assesses model including plans for improvement.

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