Objective	Description		Basic	Proficient	Advanced
Students will be able to combine, align, and group geometric shapes in TinkerCAD to create a functional and 3D printable prototype.	The part resulting from the design phase of the lesson is a singular asset composed of regular geometric shapes which can be downloaded out of the CAD program, and successfully imported into the CAM program.		Places and can adjust shapes; requires repeated guidance to complete enough of a part to export	combines and aligns shapes mostly independently; is able to export a printable STL; some intentional choices may be missing or distorted in CAM import (features missing or scale mismatch, etc.)	constructs a thorough part which applies intentional design choice like rotor-blade shape, count or angle; exports a successful STL where design choices are preserved in next phase (CAM import).
Students will be able to produce a rotor for a wind turbine, which can mount securely on the generator shaft and rotate with airflow, with a maximum clearance of 5 inches or 127mm.	The rotor printed can be installed snugly upon the generator shaft with enough grip that so that the shaft can be rotate by force applied to the rotor-blades, and does not impede such rotation at any point around said movement.		Rotor can be printed, but does not fit within clearance, cannot be installed, or impedes its own rotation without substantial modification.	Rotor prints as designed, and fits on generator shaft with ablity to rotate under airflow, with only minor modification.	Rotor prints cleanly, meets physical criteria, and can be described by its creator in terms of at least one design choice which affected the printed part.
Students will be able assemble a functional turbine system that features components which are laser-cut, 3D printed, and electrical, joined with both press fit and hardware connections.	Student uses all provided parts without needing any replaced due to preventable breakage, combining them into a turbine which is ready to be tested in the next phase.		Assembly is partially complete; components broken, missing, or incorrectly joined.	All components used; joints used mostly correctly; turbine stands on its own and can rotate.	Fully realized assembly meeting all criteria; student can identify joints and explain choices they made in the build.
Students will be able to explain at least one way that wind turbines convert kinetic energy from airflow into electrical energy, and in doing so contribute to sustainable energy access (SDG-7).	Explanation includes connection between wind and energy and identifies the wind turbine in that conversion, and connects the construction of wind turbines to the goal of sustainable energy access.		Can identify wind as a power source, but cannot explain conversion.	Can trace conversion from wind through rotation to electricity, and names at least one benefit of wind power toward sustainability.	Can use their own model to illustrate the energy chain through turbine components; connects wind energy to a specific global energy access challenge.
Students will be able to Identify phases of the engineering design process as defined by NASA's JPL, and describe at least one decision made during this project reflects that process.	Identification of phases corresponds to those defined in course activity, and connection between tasks performed during class identifies how choices were made in alignment of the process.		Names some phases, but does not connect them to activities.	Names major phases of engineering design, and at least one moment where their project corresponded to a phase.	Explains multiple project choices through engineering design process, and can propose a future iteration that results from their observed test data.