

TABLE 3: Grading rubric.

Criteria	Advanced (4)	Proficient (3)	Developing (2)	Beginning (1)
Design	Student sketched the design construction and shows good craftsmanship.	Student sketched the construction and the filter is constructed well.	Student did not sketch the construction and/or the filter does not work.	Student did not sketch the construction and the filter is not constructed.
Effectiveness	Filter can remove both particulate and dissolved particles.	Filter can remove all particulate and some dissolved particles.	Filter can remove particulate matter but not dissolved particles.	Filter allows both particulate and dissolved particles through.
Speed of Filtration	Filter can process 8 oz. of water in <30 seconds.	Filter can process 8 oz. of water in 30–60 seconds.	Filter can process 8 oz. of water in 1–2 minutes.	Filter takes >2 minutes to process 8 oz. of water.
Redesign	Student creates a second prototype filter that filters more quickly AND removes a greater proportion of contaminants than the first.	Student creates a second prototype filter that filters more quickly OR removes a greater proportion of contaminants than the first.	Student is unsuccessful in improving their original design.	Student does not attempt to improve their original design.
Justification	Student’s justification is clearly reasoned and based on data.	Student’s justification is based on data.	Student’s justification is not clear or is not based on data.	Student does not write a justification.
Results of Agar Plate Photos	Student has recorded data from the agar plate photos and described how they analyzed the evidence to evaluate the effectiveness of each method. The explanation uses the data gathered.	Student has recorded data and uses evidence from the agar plate photos to explain the effectiveness of each method.	Student’s explanation is not based on evidence from the agar plate photos, and/or the recorded data is incomplete.	Student did not record data and/or provide an explanation.
Teacher Comments				