|  |
| --- |
| Mission to Mars 3-5-ETS1-2 Engineering Design |
|  | Limited Progress  | Progressing  | Exemplary  |
| *Assessment for**Phase 3***Constructing Explanations and Designing Solutions.** Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. | **Phase 3: Landing Site Selection*** The student does not use criteria to select their landing site.
* The student does not provide a criteria-driven justification for their preferred landing site.
 | **Phase 3: Landing Site Selection*** The student uses criteria to select their landing site.
* The student justifies their landing site but with little or no reference to criteria.
 | **Phase 3: Landing Site Selection*** The student uses criteria to select their landing site.
* The student justifies their landing site based on the criteria.
 |
| *Assessment for**Phases 1 and 2*  **3-5-ETS1-2**. Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. | **Phase 1: Pre-Mission Planning*** The student does not consult non-fiction sources to develop background knowledge about Mars.

**Phase 2: Packing Challenge*** The student does not justify their crew member selections. based on the non-fiction texts.
* The student doesn’t revise their crew list and try again.
 | **Phase 1: Pre-Mission Planning*** The student consults some sources to develop background knowledge about Mars but doesn’t take sufficient notes.

**Phase 2: Packing Challenge*** The student selects crew members based on the non-fiction texts but doesn’t provide sufficient rationale.
* The student revises their crew list and tries again.
 | **Phase 1: Pre-Mission Planning*** The student consults sources to develop background knowledge about Mars and documents their learning through notes which are used in later phases of the project.

**Phase 2: Packing Challenge*** The student selects crew members based on the non-fiction texts and provides sufficient rationale.
* The student revises their crew list and tries again.
 |
| *Assessment for Phase 4***3-5-ETS1-2.** At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. | **Phase 4: Route Planning and Roving*** The student did not follow the criteria for avoiding hazards or collecting a diverse set of geologic samples and therefore had little to contribute to the group’s understanding.
 | **Phase 4: Route Planning and Roving*** The student followed the criteria for avoiding hazards and collecting a diverse set of geologic samples and contributed to the oral discussion about improving route designs.
 | **Phase 4: Route Planning and Roving*** The student followed the criteria for avoiding hazards and collecting a diverse set of geologic samples and contributed to the oral discussion about improving route designs by referring to quantitative abstractions and mathematical approaches to solving the route problems.
 |
| *Assessment for Phase 5***Influence of Science, Engineering, and Technology on Society and the Natural World**Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. | **Phase 5: Post Mission - Assessment, Reflections, and Reasoning*** The student did not incorporate specific examples of appropriate crewmates, scientific data collection criteria for landing sites, and sufficient risk mitigation while route planning and roving.
* The student did not use insights from any of the mission phases to critique the fictitious mission plan.
 | **Phase 5: Post Mission - Assessment, Reflections, and Reasoning*** The student incorporated some examples of appropriate crewmates, scientific data collection criteria for landing sites, and sufficient risk mitigation while route planning and roving.
* The student used insights from one or two phases to critique the fictitious mission plan.
 | **Phase 5: Post Mission - Assessment, Reflections, and Reasoning*** The student incorporated specific examples of appropriate crewmates, scientific data collection criteria for landing sites, and sufficient risk mitigation while route planning and roving.
* The student used insights from all phases to critique the fictitious mission plan.
 |