Generalized assessment rubric for student learning outcomes. As a formative assessment, students may gauge their learning using this rubric and discuss goals for knowledge, skill and experience based outcomes.

***Knowledge Outcomes***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Emerging** | | **Proficient** | | **Advanced Proficient** | |
| **1** | **2** | **3** | **4** | **5** | **6** |
| Little to no synthesis, analysis, or conclusions developed on the use of diatoms as biological indicators of water quality. | | Some synthesis, analysis, and conclusions developed by discussing specific data and inferences about water quality. | | Detailed synthesis, mathematical analysis, and contextualized conclusions that integrate key findings, primary literature, and data collection. | |

***Skill Outcomes***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Emerging** | | **Proficient** | | **Advanced Proficient** | |
| **1** | **2** | **3** | **4** | **5** | **6** |
| Minimal understanding of the methodology for lab and fieldwork, and the scientific explanations behind them. | | Some understanding communicated verbally and in writing of procedural steps. | | Robust understanding of procedural steps in the lab and field to analyze data. Students present open-ended critical thinking questions and evaluate the support for scientific explanations. | |

***Experience Outcomes***

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| --- | --- | --- | --- | --- | --- |
| **Emerging** | | **Proficient** | | **Advanced Proficient** | |
| **1** | **2** | **3** | **4** | **5** | **6** |
| Unable to follow instructions for lab activities or produce sketches outlining protocols. | | Able to work collaboratively to follow most instructions for labs. | | Able to work independently and demonstrate a leadership role in the lab and field. Collects diatom data independently from inventive sites. | |