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| **Science Skill** | **Beginning** | **Developing** | **Skilled (Goal)** | **Expert/Exemplary** | **Scientific Inquiry** |
| **Observations** | -observations are vague and not specific  -student does not use any academic vocabulary  -lab reports contain few observations and diagram are indistinguishable  -student rarely offers any new observations during demonstrations | -observations are somewhat specific with some details (use 2-3 senses)  -student tends to use only qualitative or quantitative observations  -student uses some higher-end vocabulary  -lab reports contain some observations and diagrams contain few details  -student offers some new observations during demonstrations | -observations are usually detailed and descriptive (3-4 senses)  -student attempts to use both quantitative and qualitative observations  -student attempts to use academic vocabulary always  -lab reports contain observations and most diagrams are detailed  -student offers new observations during demonstrations | -all observations are descriptive and detailed (all senses)  -student uses mix of qualitative and quantitative observations when appropriate  -student successfully uses higher-order vocabulary always  -lab reports contain detailed diagrams of phenomenon and specific observations  -student always offers new and interesting observations during demonstrations | **1.Observe a phenomenon**  2. Form questions/ Research  3. Form a hypothesis  4. Design an experiment  **5. Gather Data**  6. Analyze Data  7. Conclusion  8.Communicate Results |
| **Active Questioning** | -student asks questions not based on observations  -student’s questions are usually unrelated to the study  -student asks questions that are not testable  -student does not think deeply about the answers to the questions | -student sometimes asks questions based on observations  -student’s questions are somewhat related to study  -some of student questions are testable  -student sometimes thinks about how the answers to questions affects others | -student asks questions based on observations  -student question related to topic or study  -student questions are testable  -student question lead to deep thought by themselves and others | -student asks questions that are highly thoughtful, testable and based on observations  -student restates questions without teacher guidance  -student distinguished between and great questions on their own  -student asks questions to seek more information willingly  -student shows high level of critical thinking | 1.Observe a phenomenon  **2. Form questions/ Research**  **3. Form a hypothesis**  4. Design an experiment  5. Gather Data  6. Analyze Data  7. Conclusion  8.Communicate Results |
| **Investigation** | -student research plans are not detailed and vague  -student never makes a research plan  -students takes none or very few research notes  -student researches topic not related to class or based on observations.  -student does not consistently show interest and perseverance while researching  -makes observations not directly related to the investigation | -student plans out some parts of research  -student sometimes makes plans  -student takes a few notes while researching  -student researches topic somewhat related to class  -student shows some interest in research topic  -student observations are related to investigation | -student plans out research before starting  -student always makes a plan  -student takes detailed notes during research  -student research is directly related to class topic  -student is interested in what they are researching  -student perseveres even when struggling with research | -student creates detailed plans before conducting research  -all research is done thoroughly addressing all parts of the question  -student always takes detailed notes during research  -student uses a variety of resources effectively (web, print, first hand accounts, class notes)  -student always connects research back to the broader picture  -student shows consistent perseverance while researching | 1.Observe a phenomenon  **2. Form questions/ Research**  3. Form a hypothesis  **4. Design an experiment**  5. Gather Data  6. Analyze Data  7. Conclusion  8.Communicate Results |
| **Experimental Design** | -student designs are limited and not related to research topic  -student does not consider controls or variables in experiment design  -student designs cannot be repeated because they are not specific or contain enough details | -student experiment designs are somewhat related to research  -student considers only controls or variables  -student designs are difficult to follow | -student experiments are well planned  -student identifies control and variable groups  -student creates experiment that can be replicated  -student procedures are always detailed | -student shows detailed design before beginning experiments  -student makes detailed procedures that are reproducible for others  -student always selects appropriate measurement tools for experimental design  -student identifies variables and controls before beginning experiment  -student experiment limits bias | 1.Observe a phenomenon  2. Form questions/ Research  3. Form a hypothesis  **4. Design an experiment**  5. Gather Data  6. Analyze Data  7. Conclusion  8.Communicate Results |
| **Drawing Inferences** | -student cannot make conclusions, inferences, or hypotheses without explicit instruction from the teacher  -student conclusions do not include data and are not specific to study  -student cannot connect observations to make a reasonable predictions | -student can only make one of the following on their own: hypothesis, conclusions, or inferences  -student conclusions sometimes based on data  -student can connect some observations with predictions | -student can make hypotheses, inferences, and conclusions with only some teacher guidance  -student conclusions are based on data  -student connect observations to specific, reasonable predictions | -student conclusions are based observations and are detailed  -student always uses data to back-up reasoning  -student can make inferences in the form of hypotheses, theories, or conclusions without teacher guidance  -student examines and edits inferences when new data becomes available  -student analyzes experimental design to find flaws/areas of improvement | 1.Observe a phenomenon  2. Form questions/ Research  **3. Form a hypothesis**  4. Design an experiment  5. Gather Data  **6. Analyze Data**  **7. Conclusion**  8.Communicate Results |
| **Scientific Writing/Communicating Results** | -student writing is inconsistent with scientific writing styles  -student writing lack important components and details  -student writing is not concise and is usually off topic  -student does not portray information that the public can understand  -student does not interpret results for audience | -student switches back and forth between scientific and everyday writing  -student includes some details in writing  -student is on topic some of the time but may use too many words  -student sometimes uses graphs, charts and data to explain ideas  -student sometimes interprets data (explains what it means) | -student uses scientific writing style when necessary  -student includes all important details when writing  -student is on topic and does not repeat ideas  -student uses visual media to communicate results  -student always explain what data means | -student considers audience when portraying information to public  -Describes things in terms of characteristics  -Communication about investigation lacks key components, clarity, and detail. | 1.Observe a phenomenon  2. Form questions/ Research  3. Form a hypothesis  4. Design an experiment  5. Gather Data  6. Analyze Data  **7. Conclusion**  **8.Communicate Results** |

\*This rubric will track how your science skills are growing this class. It is more important to see how you are growing instead of where you start. Keep in mind that at the end of each quarter, you will evaluate yourself on your scientific skills. We will have a small conference where we will look at this together to see where you are and where you need to improve.

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| WARM FEEDBACK | COOL FEEDBACK |
| * lots of work put into rubric - well thought out and articulated * formating of skills, rubric, etc. very appealing - allows to be applied to other areas * idea of pulling specific parts of rubric to be used for activities and skills focused activities * allows teachers to evaluate what skills have been developed and which skills need to be improved upon * baseline to be built off * beautiful amount of information - could be truly great | * attempted by other teachers - can be very difficult to use * better picture of what skills are expected from students to write-ups and how much skills is needed * instead of using “cannot” language, use “not present”   + allow for more hope and avoid deficit thinking * what is higher order vocabulary? Grade level? above grade level?   + more specificity * provide more examples of certain components like higher order thinking - Blooms? DOK 3-4 * Writing/Communicating Results - is this a taught process or just implied? how and what skills are being explicitly taught to science students in terms of writing   + technical writing not being taught - how do we address this if it stay on rubric * alignment in vocabulary and technical writing * use the language of rubric in everyday classroom language * usually vs. somewhat? descriptive words ambiguous in rubric language * NexGen Science and Engineering practices incorporated - keep where does it stand in the lab report or NexGen standards format * greater emphasis on data analysis component - correlating to a skills and included in language * included data in drawing inference and writing results criteria * could be broken up and allow teachers to focus specifically on skills → monthly or quarterly focus * create clearer and more concise rubric so students can identify growth → more correlation in increasing growth * included source citing in rubric for investigation * IEP students may not have access - need simplification |
| NEXT STEPS/ACTION STEPS - *to be completed by 8/27* | |