Secondary Science Curricular Competencies Learning Map
Standards-Based Assessment for Science Fair

	Emerging	Developing	Proficient	Extending
Questioning and Predicting	Student is curious; asks a few simple questions about familiar objects and events, and makes a few predictions.	Student is curious; asks many simple questions about familiar objects and events, and makes many predictions based on prior knowledge.	Student has sustained curiosity; asks increasing complex questions, and is able to generate realistic and testable hypothesis with guidance.	Student has sustained curiosity with large-scale applications from vast prior knowledge; they ask sophisticated questions, synthesizing many sources of prior learning. Able to generate many realistic and testable hypotheses independently.
Planning and Conducting	Student needs ongoing prompts to plan steps and collect simple data; tools are used correctly and safely with guidance and / or collaboration. Assistance is needed to address ethical considerations and control variables.	Student is largely independent in planning steps and collecting simple data; may require some guidance using tools correctly / safely initially. Student has a few ideas about ethical considerations, and controlling variables, but needs some help.	Student is able to independently plan their steps and collect several different data sets in an organized manner, controlling most variables. They have prior skills in using tools safely and correctly, and embrace suggestions for more devices or solutions. Student has thought out some ethical considerations and / or potential sources of error.	Student is able to independently plan their steps and collect several different data sets in an organized manner, cohesively addressing the hypothesis. They have prior skills in using tools safely and correctly, and embrace suggestions for more sophisticated devices or solutions. Student has a thorough understanding of controlling variables ethical considerations and anticipated sources of error.
Processing and Analyzing Data and Information	Student can sort or classify data on provided data tables; use simple bar, line or pie graphs; with guidance can interpret results and display patterns; compare results with predictions when prompted.	Student can construct and use a variety of methods, including tables, graphs, digital technologies, as appropriate, with some guidance, to interpret results and display patterns. Student can compare results with predictions and draw conclusions.	With suggestions, the student can construct and display data efficiently, interpret results and clearly highlight patterns, connections, and anomalies between variables. Student can draw conclusions to hypothesis based on data, and consider alternatives.	Student can independently construct a comprehensive data display, to interpret results and clearly highlight patterns, connections, and anomalies. They can draw conclusions to hypothesis based on relationships between dependent and independent variables, consider alternatives and next steps.

Evaluating	Students can make simple inferences based on their results, and prior knowledge. With guidance, students may be able to identify sources of error or realistic improvements to methods to improve accuracy or repeatability.	Students can evaluate conclusions based on results, and reflect on some potential sources of error in their method. They can make some suggestions about changes to methods to improve accuracy or repeatability, with prompting.	Students understand and appreciate the quantity and quality of evidence, and reflect subjectively on their methods. They may be able to comment on their own bias in their design, with prompting, and have clear revisions in mind to improve upon their methods in the future to improve accuracy and repeatability. Environmental implications of their actions may be considered with prompting.	Students understand and appreciate the quantity and quality of evidence, and reflect subjectively on their methods. They account for their own bias in their design, by seeking secondary sources of information. These students have clear revisions in mind to improve upon their methods in the future to improve accuracy, repeatability and environmental impact.
Applying and Innovating	Student has been able to generate a new idea to them, or refine an existing idea; they have built upon their own problem-solving skills. Learning may be transferred to new situations with guidance.	Student has been able to generate a new idea to them, or refine an existing idea; they have built upon their own problem-solving skills and perseverance. Learning can be transferred to new situations with some prompting.	Student has been able to generate a new idea to them, or refine an existing idea; they have built upon their own problem-solving skills and perseverance. Students can independently or collaboratively transfer learning to a few applications of local or global issue.	Student has been able to generate a new idea to them, or refine an existing idea; they have built upon their own problem-solving skills and perseverance; Students can independently and collaboratively transfer learning to many applications, that are beneficial at multiple levels of society (school, community, national and / or international). Benefits may be environmental, economical, health/ social issues etc.
Communicating	Student can communicate ideas, explanations, and processes in a variety of ways, including diagrams and simplified written reports clearly and effectively with feedback.	Student can communicate ideas, explanations, and processes in a variety of ways, including diagrams and written reports with supporting detail, clearly and efficiently with feedback.	Student can communicate ideas and findings using scientific language in a variety of ways, including diagrams, digital technologies and written reports clearly and accurately with minimal guidance.	Student is able to communicate scientific ideas and information confidently, using evidence to back up claims and scientifically sound language. Student is able to formulate clear and accurate physical and mental models to describe their phenomena with minimal guidance.