SUGGESTIONS FOR TEACHER PREPARATION
2019 UNMC / AHEC Regional Science Meets

Stage I: ***Design your science research curriculum.***

- Which teachers will collaborate in designing and implementing this curriculum?
- Which State Standards will be emphasized? (*See attached sample*)
- Which students will participate? Is participation mandatory?
- Will students work independently or in partner teams?
  (*NOTE: UNMC will only invite students who work individually on their projects. Team projects might be allowed at the regional meets. Contact the sponsoring AHEC for further information.*)
- Choose a format for citing sources: MLA , APA, Other

Stage 2: ***Determine how students will share their research with others.***

- Display Board (*See attached sample*)
- Oral Presentation
- Research Paper
- Will you have a school science fair?
  - Will projects be judged?
  - If yes, you will need to create a rubric/scoring sheet.
  - Will awards be given?
- How many other regional science fairs will you attend?
  - UNMC / AHEC Regional Science Meets
  - Nebraska Junior Academy of Science (NJAS) Regional and State Science Fair
  - Greater Nebraska Science and Engineering Fair (GNSEF)
  - Central Nebraska Science and Engineering Fair (CNSEF)

  NOTE: *Each fair has guidelines for safety and forms that need to be completed. Check with appropriate organization prior to students conducting experiments.*

Stage 3: ***Set the Timeline***

- Plan on 8 to 10 weeks for students to complete their science research.
- Deciding on a project idea takes time. The earlier students start thinking about their project ideas the better. The most successful projects are those in which students have a personal interest.
- Determine how much class time will be allotted for working on projects.

Stage 4: ***Get Started***

- Develop a research project approval plan. Do not allow experiments to begin prior to approval.
  - Parental approval
  - Teacher approval
  - Safety guidelines
- Inform parents
- Have students complete registration form and get form signed by parent/guardian.
- Have student write abstract for page 2 of the registration form. (*See attached sample*)

Nebraska Science Standards

SC 8.1 Scientific Inquiry – SC 8.2 Physical Science – SC 8.3 Life Science – SC 8.4 Earth and Space Sciences

Standard	By the end, students will:
SC 8.1.1	Design and conduct investigations that will lead to descriptions of relationships between evidence and explanations.
SC 8.1.2	Apply the nature of science to their own investigations.
SC 8.1.3	Solve a design problem which involves one or two science concepts.
SC 8.2*	Physical Science
SC 8.3*	Life Science
SC 8.4*	Earth and Space Sciences

**Specific to the student's research project, standards from the following areas of science will be met.*

Nebraska English Language Arts Standards

LA 8.1 Reading – LA 8.2 Writing Process – LA 8.3 Speaking and Listening – LA 8.4 Multiple Literacies

Standard	By the end, students will:
LA 8.1.1	Demonstrate knowledge of the concepts of print.
LA 8.1.3	Use knowledge of phonetic and structural analysis to read and write grade-level text across all disciplines.
LA 8.1.5	Build and use conversational, academic, and content-specific grade-level vocabulary.
LA 8.1.6	Construct meaning by applying prior knowledge, using text information, and monitoring comprehension while reading increasingly complex grade-level literary and informational text.
LA 8.2.1	Apply the writing process to plan, draft, revise, edit, and publish writing using correct spelling, grammar, punctuation, and other conventions of standard English appropriate for grade-level.
LA 8.2.2	Write in multiple modes for a variety of purposes and audiences across disciplines.
LA 8.3.1	Develop, apply, and refine speaking skills and strategies to communicate key ideas in a variety of situations.
LA 8.4.1	Evaluate, create, and communicate information in a variety of media and formats (textural, visual, and digital).
LA 8.4.2	Practice the norms of appropriate and responsible technology use.

Nebraska Mathematics Standards

MA 8.2 Measurement Concepts –MA 8.3 Algebraic Concepts -- MA 8.4 Data Analysis/Probability

Standard	By the end, students will:
MA 8.2.4	Select and apply appropriate procedures, tools, and formulas to determine measurements.
MA 8.4.1	Formulate questions that can be addressed with data, and then organize, display, and analyze relevant data to answer their questions.
MA 8.3.1	Represent and analyze relationships using algebraic symbols.
MA 8.4.2	Evaluate predictions (hypotheses) and make inferences (conclusions) based on data.

HOW TO WRITE AN ABSTRACT

Follow this format for your abstract.

1. ***purpose***
2. ***hypothesis***
3. ***procedures***
4. ***results***
5. ***conclusion***

This is a sample abstract if you DO NOT have results and a conclusion.

The purpose of my experiment was to determine the effects of an increase of carbon dioxide on Wisconsin Fast Plants.

It was hypothesized that the plants with extra carbon dioxide would have more starch, leaves, and mass.

In order to conduct my experiment I created two chambers out of two-liter bottles. In each of the chambers I had a film can and a pipette to measure the amount of air put in the container. On days four, eight, 12, and 16 for one of my chambers I would blow into the pipette until the film can was full to give the plants extra carbon dioxide. For my control chamber I would use a plastic bag to squeeze air into the chamber. On day 17 I weighed each plant individually for their mass. After that I would test each plant for starch using ethanol and iodine-potassium-iodide solution.

My experiment is still in progress. At this time I do not have enough data to report the results obtained and the conclusion.

This is a sample abstract if you have results and a conclusion.

The purpose of my experiment was to determine the effects of an increase of carbon dioxide on Wisconsin Fast Plants.

It was hypothesized that the plants with extra carbon dioxide would have more starch, leaves, and mass.

In order to conduct my experiment I created two chambers out of two-liter bottles. In each of the chambers I had a film can and a pipette to measure the amount of air put in the container. On days four, eight, 12, and 16 for one of my chambers I would blow into the pipette until the film can was full to give the plants extra carbon dioxide. For my control chamber I would use a plastic bag to squeeze air into the chamber. On day 17 I weighed each plant individually for their mass. After that I would test each plant for starch using ethanol and iodine-potassium-iodide solution.

My results showed that the plants with extra carbon dioxide had a large amount of starch, about two to three leaves each, and an average one tenth of a gram for mass. The plants without extra carbon dioxide had a small amount of starch, two leaves each, and an average five tenths of a gram for mass.

Based on my experiment I rejected my hypothesis that the plants with extra carbon dioxide would have more starch, leaves, and mass. I might have gotten different results if my experiment had lasted longer or if I had given the plants more carbon dioxide and air.

QUESTION

HYPOTHESIS

VARIABLES

TITLE

Data Tables and Graphs

Conclusions

Pictures

Pictures

MATERIALS

PROCEDURES

FUTURE PLANS