Dear Students and Parents/Guardian,

For the 2018 – 2019 school year, all $(MS)^2TC$ 7th grade students will complete a Science Fair project in Life Science class and will present their findings in ELA class. The projects will be based on a study of the soil collected from the school grounds. Students, working in lab groups of 3 – 4, will design and conduct experiments using the soil. Time permitting, the best projects will be chosen by the Science department at Butcher Educational Center to compete in the ~~61st~~ 62nd Annual Science and Engineering Fair of Metropolitan Detroit (SEFMD).

A completed Science Fair project consists of four things: an abstract, a display board, an oral presentation and a project log notebook. We will review all of the components of the project in class at the appropriate times and students will be given designated class periods to work on their projects. Be advised that all components will be graded by rubric. Additionally, project rubrics and handouts given to students will be available online at my classroom webpage as well as other helpful resources: http://duddlesms2tc.weebly.com/

While the majority of the work will be done in class, students will need to do some of the work at home, specifically in cases of absences or off-task behavior causing groups to fall behind. Also, materials and special equipment that are NOT readily available in the science lab due to budget, resources, or time constraints will have to be provided by the students. This is a **major** project and may reflect in your child's grade in Life Science 7. The primary objective of this project is to have students approach a problem scientifically. This includes:

1. Asking questions and forming hypotheses
2. Creating experiments to test those hypotheses
3. Organizing data and drawing conclusions
4. Writing about scientific research

The work that the students complete for this project and the data that they collect will provide primary source information for other projects such as the School Site Investigation Project.

Sincerely,
Mrs. Duddles

Possible Project Ideas

(or come up with your own with approval from teacher)

- What methods of preventing soil erosion work best? For example, what is effective at preventing erosion in your yard?
- Seed viability - Is there a test you can perform to predict whether or not a seed will germinate? What factors can you measure that might be used to construct a test?
- How does the concentration of chlorine in water affect the rate or percentage of seed germination?
- What is the effect of watering schedules on the germination (or growth rate) of seeds from a certain plant?
- How much plant food is too much?
- What soils are best for specific plant species?
- Does the presence of detergent in water affect plant growth?
- Does magnetism affect the growth of plants?
- How do different factors affect seed germination? Factors that you could test include the intensity, duration, or type of light, the temperature, the amount of water, the presence/absence of certain chemicals, or the presence/absence of soil. You can look at the percentage of seeds that germinate or the rate at which seeds germinate.
- Is a seed affected by its size? Do different size seeds have different germination rates or percentages? Does seed size affect the growth rate or final size of a plant?
- How does cold storage affect the germination of seeds? Factors you can control include the type of seeds, length of storage, temperature of storage, and other variables, such as light and humidity.
- How are soils affected by plants growing in them? Can you measure the rate of nutrient depletion? How?
- How does the pH of soil relate to the pH of the water around the soil? You can test the pH of the soil, add water, then test the pH of the water. Are the two values the same? If not, is there a relationship between them?
- How close does a plant have to be to a pesticide for it to work? What factors influence the effectiveness of a pesticide (rain? light? wind?)? How much can you dilute a pesticide while retaining its effectiveness? How effective are natural pest deterrents?
- Examine the effect of growing one plant species near another.
- Find out the effect of different concentrations of hydrogen peroxide (H_2O_2) on the roots of plant cuttings, and on seed germination.
- Study how growing rootlets respond to gravity.
- Leaves grow in a different pattern than stems and shoots. They do not elongate along one axis, but instead spread out over time. Do all regions of the leaf grow equally?
- Plants move—not very quickly compared to animals, but they do move. Their roots grow downward in response to gravity, and their stems grow upward toward the Sun. In this plant biology science fair project, you will investigate how young plants respond through movement to light.

Specific Requirements for All Projects

(as dictated by SEFMD rules & guidelines)

- The main theme for all projects must be a Life Science topic/concept related to soil, plants, abiotic/biotic factors, and other topics discussed in class.

- The project **MUST be an experiment** in **Life Science**– something that can be tested repeatedly, and has MEASURABLE RESULTS that can be recorded and analyzed.

- **NO** biological specimens, human and animal testing/subjects/tissue, pathogenic agents, recombinant DNA, or controlled substances.

- **All work** completed on the project must be **recorded in the log notebook** provided by Mrs. Duddles.

- All measurements MUST be in METRIC units.

- The proposal **must be approved before any work begins**.

- You cannot use the words "better" or "best" in your problem because they are not measurable.

- The Science project has 4 major parts: the display board showing the experimental proof (photos with captions or actual apparatus), the log notebook, the abstract, and the oral presentation.
- A grading rubric will be provided for each of the parts.

- STUDENTS WILL WORK IN LAB GROUPS of 3 – 4. However, student partnerships of 2 must turn in their own project (display board, abstract, log notebook & oral presentation).

- Students will need to provide project display board for their groups.
- Project display board must stand on its own (tri-fold project boards only).
- Project display board must **NOT** exceed size restrictions set by the SEFMD. Junior Division display boards must **NOT** exceed these dimensions: 36" wide x 108" high x 24" depth.
- Display boards **CANNOT** include:
  - live material
  - cultures, fungi
  - chemicals, dry ice
  - food (human or animal)
  - valuable equipment (make use of photographs instead)
  - no electricity will be available
  - anything potentially hazardous to the public is prohibited

PARENT ACKNOWLEDGEMENT

I have read the notice regarding the Life Science 7 Science Fair project and will assist my child in meeting the requirements for the project.

My Child,

_____

Parent Name_____ Initial_____

Student Name_____ Initial_____

Contact Number_____

Contact E-mail_____

7th Grade SCIENCE FAIR PRELIMINARY PROPOSAL:
Initial DRAFT

GROUP MEMBER NAMES: _____

DUE DATE: _____

☐ APPROVED ☐ REJECTED _____
(TEACHER INITIALS)

Problem: (Written in the form of a question. Do not use the words better or best!)

_____

_____

Abiotic/Biotic factors:

_____

Variables:

_____

Hypothesis: (May begin with "If… then" statement – an educated guess about what you think the outcome/results will be)

_____

_____

What will I measure & units of measurements: (Grams (g), liters (l), centimeters (cm), number of leaves, number of blooms, etc.)

_____

_____

_____

7th Grade SCIENCE FAIR PROPOSAL:
FINAL DRAFT

GROUP MEMBER NAMES: _____

DUE DATE: _____

☐ APPROVED ☐ REJECTED _____
(TEACHER INITIALS)

Problem: (Written in the form of a question. Do not use the words better or best!)

_____

_____

Abiotic/Biotic factors:

_____

Variables:

_____

Hypothesis: (May begin with "If… then" statement – an educated guess about what you think the outcome/results will be)

_____

_____

What will I measure & units of measurements: (Grams (g), liters (l), centimeters (cm), number of leaves, number of blooms, etc.)

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