SCHOOLYARD BIODIVERSITY: A CITIZEN SCIENCE PROJECT

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ACTION RESEARCH QUESTIONS

How does participation in a citizen science project in their local community change student critical thinking and decision-making?

- **How does student data collection and analysis skills change through participation in a citizen science project?**
- **How do student attitudes towards science or science self-efficacy change throughout the citizen science project?**
- **How does this impact me as a teacher in improving student engagement and student questioning skills?**
- **How does student interest in science tasks change throughout the citizen science project?**

METHODOLOGY

Develop Expertise
- Select Project Focus
- Learn field sampling techniques
- Practice field observation skills

Contribute & Interpret Data
- Design & Plan Field Investigation
- Collect Data (field)
- Analyze Data (classroom)

Communicate Results
- Interpret data
- Reflect on experiences
- Share findings (Posters & Website)

STUDENT SAMPLE PROPOSALS

Schoolyard Poster

What type of Native Plants attract Butterflies?

The biodiversity in our schoolyard is very low
- Adding Aster and Milkweed would increase our bio diversity by attracting Monarch butterflies
- utilizing the rectangular green space by the 300 bldg would give us enough space to plant these native flowers and increase our biodiversity

Milkweed

Aster

TREE DIVERSITY

NATIVE SPECIES WE CAN ADD:
- *Oak Trees (Quercus)*
- *Pine trees (Pinus)*
- *Sitka Spruce (Picea sitchensis)*

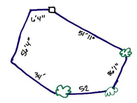
SPECIES AT SPANAWAY LAKE HIGH:
- *Douglas Firs (DescriptionPseudotsuga menziesii)*

INVASIVE SPECIES:
- *Scotch broom (DescriptionCytisus scoparius)*

AREA PROPOSED:

Site B:

SCHEMATIC:



PROPOSAL:

ONE OF OUR BIGGEST PROBLEMS AT SPANAWAY IS THE LACK OF BIODIVERSITY. BRINGING IN MORE NATIVE TREE AND BUSH SPECIES WILL INCREASE THIS, WHICH WILL OVERALLAL EXPAND THE DIVERSITY AT SPANAWAY LAKE HIGH SCHOOL. IN DOING SO, WE WILL ALSO BE INCREASING NATIVE SPECIE POPULATION AS WELL, WHICH BENEFITS THE OVERALL ECOSYSTEM.BRINGING IN MORE POLLINATORS WILL HELP KEEP THE ECOSYSTEM ALIVE.

Greenhouse Restoration Project:

Could be maintained partially by the APES and environmental science classes (and

Flower beds to increase biodiversity, make diversity field studies easier, and add color and make the school a little brighter

—Create an rain irrigation system that both increases infiltration and utilization of rain water

Benefits:
-Cheap materials (corrugated steel or recycled/ scrap aluminum or pvc)
-Lessens impact of hard rainfall on drainage systems

Primary Goal: Increase number of native pollinators by introducing higher counts of native biodiversity. These include species like;

Lupine

Goldenrod

Lewisia

CONCLUSIONS

- **STUDENTS DECISIONS ON SCIENTIFIC INVESTIGATION DESIGN, DATA COLLECTION AND INTERPRETATION IMPROVED BY 36% (N=22)**
- **STUDENTS SELF-EFFICACY DROPPED BY 3% WITH STUDENTS REFLECTING THAT FIELD WORK IS MORE CHALLENGING THAN CLASSROOM LABS**
- **STUDENTS REFLECTED THAT THE ABILITY TO MAKE THEIR OWN DECISIONS, DESIGN AND PLAN INVESTIGATIONS CORRELATED WITH STUDENT IMPROVEMENT IN DATA COLLECTION AND ANALYSIS SKILLS**
- **STUDENTS INCREASED THEIR INTEREST IN MICROSCOPE USAGE, FIELD WORK WITH CLASSROOM ANALYSIS, AND HELPING A SCIENTIST COLLECT DATA.**

VALUE

- **MORE ENGAGED, CRITICAL THINKERS AND ACTIVE STUDENT LEARNERS IN DATA COLLECTION AND ANALYSIS THROUGH PROJECT**
- **STUDENTS BENEFIT MOST FROM FIELD LABS INTEGRATED WITH CLASSROOM DATA ANALYSIS & WHEN THEY GET TO PROPOSE SOLUTION**
- **FUTURE PROJECTS – KEEP SIMPLE – LICHEN AIR POLLUTION STUDY & SOIL COLLECTION FOR NEW DRUGS**

RESULTS