2000-2001 EDUCATIONAL GRANT APPLICATION

PROJECT TITLE: Experimentation in Hydroponics

APPLICANT(S):

Name Scott Michael Ward

Home Address 101 B Hastings Way, Mt Laurel, NJ 08054

Home Phone 856-787-1919

School Name Riverside High School

School Address 112 E Washington Street, Riverside, NJ 08075

School Phone 856-461-1255

County Burlington County

Social Security Number

PROJECT SUMMARY: See attached page

CURRICULUM STANDARDS: List core curriculum standards being taught or met.

TARGET AUDIENCE: Junior/Senior

GRANT PERIOD: Month/Year 10/2000 to Month/Year May/2001

EVALUATION CRITERIA: Describe how will you evaluate your project.

See attached page

BUDGET: Attach an itemized budget indicating how the grant money would be spent.

RECOMMENDATIONS: Attach the names and addresses of three persons supplying letters of professional recommendation. (Letters to be included by applicant.)

(add additional sheets if necessary)

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Project Title: Experimentation in Hydroponics

Project Summary:

Although hydroponics has been around for centuries, it is still a young science. The future of hydroponics in modem agriculture is a bright one. Hydroponics may be used in underdeveloped countries for food production or used to grow crops in poor soil conditions. Therefore, an education in the principles of hydroponics will be beneficial for future generations of horticulturists,

Experimentation in Hydroponics will introduce students to hydroponics and provide an opportunity for students to conduct experiments with hydroponic systems. Students will be assigned to cooperative groups and they will begin the project by researching the history, design, and present uses of hydroponic systems. Students will be provided with a design and materials in order to assemble their hydroponic systems. After assembling their hydroponic systems, students will test their hydroponic systems to meet established project criteria. During this time, students will rear lettuce seedlings in propagation trays and monitor seedling growth until they are ready to be transplanted into the students' hydroponic systems.

In the first four months of the project, lettuce plants will be reared under various nutrient levels. Students will track weekly growth rates and record their data in spreadsheets for subsequent analysis. Members of each group will be responsible for the daily rearing of lettuce plants. Each group will conduct daily water quality and water flow measurements, nutrient solution preparation and plant feeding, and conduct daily system maintenance. At the end of the e month, students will compare the growth of their lettuce plants to determine the relationship between nutrient levels and lettuce growth. Each group will prepare a different section of a scientific report to communicate our findings in a scientific research paper format.

In the final four months of the project, nutrient solutions will be replaced by natural fertilizers contained in waste water from fish tanks. Students will reconfigure their systems to receive water from tanks containing channel catfish fingerlings. Students will practice the principles of aquaculture and reproduce their previous rearing methods to monitor lettuce growth in their hydroponic systems. At the end of the 4h month, students will compare the growth of their lettuce plants from the first phase of the experiment to the second phase of their experiment to determine the relationship between fertilizer type and lettuce growth. Students will also estimate the economic advantages and disadvantages of rearing lettuce in fish waste water.

Student groups will report their conclusions in a scientific research paper and in a PowerPoint presentation.

Curriculum Standards:

Experimentation in Hydroponics will meet Science Core Curriculum Standards: 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.9, and 5. 1 0.

Evaluation Criteria:

The student objectives of this project will be clearly defined to the students before the project begins. Students will be given a copy of the evaluation form at the onset of the activities so that they are aware of the criteria for evaluation. Individual student performance of the objectives within a groups' laboratory investigations will be evaluated through rubric scoring.

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Students will be required to discuss the results of their investigations in a written report and

present these results orally to the class. Evaluation of the written report and oral presentation will based on student performance outlined in a rubric developed for each assessment area. The tasks and knowledge that the students are expected to learn and master, that have been outlined above, will be evaluated through their daily performance in the in the laboratory. The success of this

project will be evaluated by individual student performance and group performance towards the objectives of the project.

Budget:

Item Description Quanity Total Cost Brief Description of Item use

Mni Hydro Harvest Kit 5 300.00 4" hydroponics kit that rears 8 plants Hom Inc.

Dutch Nutrient Formula 2 60.00 Commercially prepared hydroponic nutrients Catfish Fingerlings 100 50.00 3" farm raised channel catfish fingerlings

Catfish Feed I pk 40.00 25 lb commercially prepared channel catfish feed .35 mm Film lpk 10.00 35 mm film

Film Development double 20.00 Pictures from student work prints

$480. 00 Total Budget Cost

Recommendations:

J. Alan Femer, Ed.D.

Superintendent of Schools 112 E. Washington Street Riverside, NJ 08075

(856) 461-1255 ext. III

Mary Jane Chipowsky

Middle School Principal

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