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GRANTS TO TEACHERS APPLICATION
COVER PAGE

Date:	February 1, 2005
Grant Title:	Cycles of Growth
Grant Applicant:	Dennis P. Smith
School:	Holdenville Public Schools
Grade Level:	7-12
Content Area:	Science, Language Arts, Photography
Total Dollar Amount Requested:	$650.55

Dennis P. Smith
Signature of Grant Applicant

Lisa White
Signature of Building Principal

Please mail applications to: Holdenville Education Foundation
PO Box 641
Holdenville, OK 74848
Attn: Teacher Grants Committee

If you have any questions or need further assistance, please contact Shellie Gammil at 379-5484.

GRANTS TO TEACHERS APPLICATION FORM

1. What is the Major Educational need this grant addresses?

   All students need to be exposed to and learn about cycles of growth. Special needs students often do not become exposed to as many different types of lessons, experiments and detailed observations as regular students. This grant, if awarded, would provide the necessary funding to not only expose our students to these educational needs, but would, at the same time, allow them to have "hands-on experiences" with all aspects of growth and development relative to embryos and seeds.

   Not only will this have a major impact on their learning now, this will be a learning experience that will stay with these students for their entire life.

   Also, these lessons, equipment and supplies can be carried over into other special needs classes. And finally, these materials can be used for years to come, potentially impacting several hundred students.

   So what is the educational impact here? The answer is that students will be given the opportunity to observe first-hand the growth of plants and birds—from seeds to plants, from eggs to live birds, and finally to the end product of vegetables and meat.

2. Approximately how many pupils will be affected by this project, both directly and Indirect?

   Directly:

   Currently, the junior high E.D. class has 7 students; the high school class has 13. The grade school E.D. class has 7 students. This school year alone, 27 students will be exposed to, learn from, and be affected by this project. If these materials and these lessons can be used for the next 5 years, and if the number of E.D. students remains relatively constant, then approximately 135 students will be directly affected by this study.

   Indirectly:

   One hundred and thirty-five students will benefit greatly from this project. It is believed by the author that these students will leave the E.D. classroom and share their experiences and what they have learned with many other students. If we can assume that each student will communicate with at least five students, then over the course of 5 years, 675 students will become indirectly affected. If, however, our students would like to go into the classrooms and conduct "mini lessons" or give "speeches and presentations" on what they have learned, then over the course of 5 years, several thousand students could potentially be affected.

3. Describe your grant including methods, materials and objectives.

   This grant involves students learning about the various cycles of growth relative to an egg being incubated and turning into a baby chick, and a seed being sowed and turning into a green plant, which will eventually produce food.

   During different intervals, and at various stages of growth for each area, observations will be made and photographs taken of the various cycles of growth that have taken place.

   Students will be given the unique learning opportunity to not only view various cycles of growth, but to document, photograph, and later present their findings to various other students and classes across campus.

   In order to carry out these lessons, an incubator, seeds and planting devises, and a digital camera will be necessary. The incubator will be used to set and hatch the eggs. The seeds and planting devices will be used to propagate plants. A digital camera is requested because of its ability to photograph, let the photographer immediately evaluate the picture, and then possibly print it immediately using an existing computer and printer.

4. Give a time schedule of Implementation:

   When all the necessary items required for implementation are received, timelines for completion are as follows:

   1. For the seed and plant aspect—The observing of seed germination through the naked eye and through the microscope, plant growth, the experimenting, photographing, documenting and reporting of results: 12 weeks.
   2. For the Poultry aspect—The observing of embryonic stages of development through the naked eye and through the microscope, the experimenting (breaking an egg open each day at the same time to see not only how the embryo has grown but also the changes to the embryo itself), observing, photographing and documenting of scientific findings: 12 weeks.

      (Note: Pharoah quail will be used for this experiment. These egg embryos develop into a hatched chick in 17 days. The quail mature rapidly and begin to lay at 6-8 weeks of age. Using these rapidly maturing birds, the students will be better able to observe the cycles of growth.)

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DETAILED BUDGET REQUEST

ITEM	QUANTITY	TO BE PURCHASED FROM	PRICE	APPROXIMATE SHIPPING	TOTAL COST
Top-Hatch Incubator	1	Brower			
		PO Box 2000			
		Houghton, IA 52631	$136.00	$13.60	$149.60
Microscopes					
Low Powered Model 185	1	Microscope World	$68.00	$10.00	
High Powered Model109L	1	PO Box 230644	$128.00	$10.00	$216.00
		Encinitas, CA 92023			
Egg Candler	1	G.W.F. Mfg. Co.	$19.95	$4.70	$24.65
		Box 1552			
		Savannah, GA 31795			
Coturnix (Pharoah)	100	B & D Game Farm	$25.00	$12.00	$37.00
Quail Hatching Eggs		Rt. 1, Box 812		Express Mail	
		Harrah, OK 73045			
Seed Starting Kit	1	Totally Tomatoes	$6.99	$4.00	$10.99
for starting seeds		334 West Stroud St.			
		Randolph, WI 53956-1274			
Seed Starting Soil	8 Quarts	Totally Tomatoes	$7.95	$4.00	$11.95
"Beefsteak" Tomato	1 packet	Totally Tomatoes	$1.50	$0.87	$2.37
Seeds					
Canon Powershot A400		Staples			
Digital Camera	1	Shawnee, OK	$179.98	$18.00	$197.99
TOTAL AMOUNT REQUESTED					$650.55

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6. What methods will be used for measuring the stated objectives, or what definite evaluation will you make to determine whether the grant was successful? (Please be specific.)

Objectives:

A. Students will learn the various cycles of growth relative to plants by sowing the seeds, observing, and photographing the plants as they grow and mature. Documentation will be made on each observation.
B. Students will learn the various cycles of growth relative to poultry by setting the eggs, opening an egg at various intervals and observing how the embryo has grown and matured since the last observation. Days 1-3 will include observing and photographing the vascular system including the heart and various blood veins beginning to develop around the embryo itself. Each day later, students will observe the various cycles of a growing embryo and its stage of development.

Evaluation of Success:
A pre- and post-test (See Attachment A) will be given to determine specific learner outcomes. Should the majority of students score higher on the post-test, it shall be considered that the grant was successful in that the students gained specific knowledge about these two areas of study.

APPENDIX A

TEST
(Pre and Post)

1. Describe the cycles of growth involved with a plant.
2. Describe the embryonic cycles of growth involved with a fertilized egg.
3. What changes take place with a seed during days 1-5?
4. What changes take place with a fertilized egg during days 1-3?
5. What is xylem and phloem relative to a plant?
6. What is a vascular system? How does this system work and what is its purpose in a plant and an animal? What is the next step in the embryonic development of a plant and an egg?
7. What is a cotyledon? Does a tomato plant have one of these? Explain.
8. In an egg, what is the Chalaza? What is the Albumin? What part does each play in the development of an embryo?
9. When does a seed become a plant? What happens to the seed itself?
10. At what point does an egg stop being an egg and become an embryo?