

Unification of Teacher Preparatory Programs

Mini grant Program to Support Collaborative Efforts
to Promote the Unification of Teacher Preparatory Programs
and to Meet the Needs of Diverse Learners

Proposal Cover Sheet

Name (Primary Contact): Jack Tessier

College or University: Central Connecticut State University

Department/Address: Biology Department
332 Copernicus Hall
1615 Stanley St.
New Britain, CT 06053

Project Title: News and Inquiry: Exploring Ways to Help Future
Elementary Teachers Appreciate Science

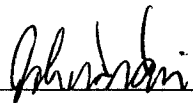
If joint proposal, please list additional faculty and departmental affiliations:

Please provide a brief (40 word) summary of the project and the total amount requested:

This project will develop the use of news stories and inquiry-based laboratories to improve the preparation of pre-service elementary teachers in a general biology class. The total amount requested is \$8758.

Signatures

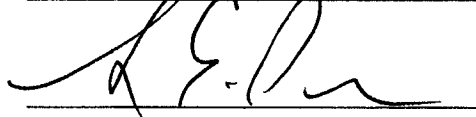
Principal Investigator



Department Chair



Dean



Please use this template as a guide for the completion of the proposal. Each of the following tasks should be addressed. Submit the completed template along with a completed and signed cover page.

Description of the Activity: What is being proposed? What is the rationale for the activity? Present a brief timeline for the proposed activity. (Two pages text maximum)

Please see attached document.

UTPP Goals Addressed: (Identify the goals of the UTPP program addressed by your proposed activity and specifically how anticipated outcomes of your work align with these goals)

Please see attached document.

Proposed Budget, Rationale and Timeline: Please provide an estimate of the funding required to support the proposed activity (Allowable expenses include salary, supplies, honorarium, and travel expenses). Please provide a rationale for the funds requested in each budget category. Also provide a brief timeline for the completion of the proposed activity. All projects must be completed by September 15, 2006

Please see attached document.

Curriculum Vitae: The principal investigator should submit a two page CV highlighting educational background, professional experiences, and scholarly accomplishments.

Please see attached document.

Please use this template as a guide for the completion of the proposal. Each of the following tasks should be addressed. Submit the completed template along with a completed and signed cover page.

Description of the Activity: What is being proposed? What is the rationale for the activity? Present a brief timeline for the proposed activity. (Two pages text maximum)

There is great concern across the United States regarding the science and math skills of our school children. The ability to promote the development of these skills will have an important influence on the continued development of our nation. In order to increase interest and skill in these areas, it is important to infuse science and math in the early education of Americans.

An impediment to this infusion is the fear and misunderstanding of science that is common in elementary teachers and pre-service teachers. These educators need to be helped to see that science is more observation, tinkering, and experimenting than it is memorization of endless facts. They also need to be shown that science plays a critical role in their lives and can be an exciting world of discovery for their students.

Each semester, I teach BIO 211 Concepts in Biology. This is a general biology course designed for pre-service elementary teachers. Approximately 75 students take this course each semester and they consistently enter with fear and disinterest regarding biology. One of my main goals for the course is to help these students appreciate biology and its importance to their lives. In that vain, I have started using news stories in class and requiring two, short news story reports from each student. Additionally, the laboratory for this course is designed with the use of simple materials and procedures in the hope that these students will be able to take what they learn in the laboratory and use it almost directly in their future classrooms.

My current goal, in accordance with this proposal, is to expand the use of news and current events in the classroom and to transform the laboratory into an entirely inquiry-based experience for the students. To meet this goal, I will revise the design of the lecture component to increase students' exposure to and use of current events in their learning. Also, I will seek out inquiry-based laboratory experiences that co-ordinate with each unit in the lecture and design and develop them for use in the laboratory component of the course. Finally, I will develop an assessment tool that will measure the change in student attitudes about biology as a result of the experience they have in the course. The results of these changes will be submitted for publication to a peer-reviewed journal such as *The American Biology Teacher*, *the Journal of College Science Teaching*, or *the Journal of Excellence in College Teaching*.

Currently, my students spend one day per unit examining a piece of recent biology news. They must also choose two of the four units on which to complete a news story report. The rubric for this report requires students to explain the biology in the news, relate those topics to other biology topics, explain the relevance of the news to their lives, indicate why they do or do not trust the source of the news, and indicate what

topics were left out of the news story and therefore limited their understanding of the story. In this research project, I will explore new ways to incorporate news into student learning. This increase might include daily use of news or additional required submissions of pieces of biology news. I will spend the month of June 2006 looking for ways in which other teachers use news in their teaching and concentrating on this revision.

The laboratory currently contains two experiences in inquiry. One is a fast-plant lab regarding environmental factors related to plant growth and the second is an animal behavior lab using pill bugs. While these two are a nice start, students don't get enough experience with the approach and are often still confused about the purpose of the research at the end of the semester. I will expand the use of inquiry in this lab to provide one project for each of the four units in the course. Additionally, I will look for examples of inquiry-based labs for elementary school to serve as templates for the lab experience for these pre-service teachers and seek the guidance of a professor in the School of Education and Professional Studies at CCSU in working on these labs. I will spend the month of July 2006 choosing labs, acquiring materials, testing the labs, and developing rubrics to be used with each project that will require students to see the science process as valuable and to see how their students will learn about biology and its facts through experimentation.

Finally, I will develop an assessment tool that will be administered at the start and at the end of the Fall 2006 semester asking students in various ways about the regard that they hold for biology and science in general. This tool (likely to be based in Likert scale questions) will allow me to determine how much the course is able to help these future teachers to see science as a process that can lead to developments that are relevant to their lives and to the lives of their future students. I will develop a manuscript based on these data and submit it for publication during the Spring of 2007 at an appropriate teaching journal.

UTPP Goals Addressed: (Identify the goals of the UTPP program addressed by your proposed activity and specifically how anticipated outcomes of your work align with these goals)

This research will seek to integrate an effective research-based teaching strategy into a course with the School of Arts and Sciences that is designed for students who will enter the School of Education and Professional Studies. Additionally, it will serve to develop a relationship between a faculty member in Arts and Sciences and at least one faculty member from Education as we work to improve the inquiry-based laboratory segment of the course.

The goal of this research is a course redesign that will result in data identifying the effectiveness of the strategy in improving attitudes about science within future elementary teachers.

Proposed Budget, Rationale and Timeline: Please provide an estimate of the funding required to support the proposed activity (Allowable expenses include salary, supplies, honorarium, and travel expenses). Please provide a rationale for the funds requested in each budget category. Also provide a brief timeline for the completion of the proposed activity. All projects must be completed by September 15, 2006

Category	Amount	Justification
Salary	\$5727	This amount represents one month of summer salary for the work that will occur during the summer in pursuit of the goals of this proposal.
Fringe Benefit	\$1031	18% of salary
Supplies	\$2000	This amount is an estimate of supplies needed to run trials of all new laboratory activities.
Total	\$8758	

Month and Year	Activity
June 2006	Redesign lecture portion of course to increase use of news stories.
July 2006	Form relationship with Education faculty member; Survey and choose new inquiry-based laboratories procedures; Test procedures.
August 2006	Finalize lab testing; Create lab handouts; Develop assessment tool.
September 2006	Begin course; conduct pre-semester assessment; submit report on course redesign to UTPP administrators.
October 2006	Continue course; Collect mid-semester feedback from students (no funds requested)
November 2006	Continue course (no funds requested)
December 2006	Complete course; conduct post-semester assessment (no funds requested).
January 2007	Compile and analyze data (no funds requested).
February 2007	Write and submit manuscript for publication (no funds requested).

CURRICULUM VITAE

Jack T. Tessier

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office (860) 832-1651, home (860) 232-5896, fax (860) 832-2594
email TessierJ@ccsu.edu

EDUCATION

Ph.D. Environmental and Forest Biology (2002)

SUNY College of Environmental Science and Forestry, Syracuse, NY. (SUNY-CESF)

Concentration: Plant Ecology, Biogeochemistry

Dissertation: Vernal ecophysiology of understory vegetation and soil microbes in a second-growth northern hardwood forest of the Catskill Mountains, New York.

Major Professor: Dudley J. Raynal

M.A. Biology (1996)

SUNY College of Arts and Science at Geneseo, Geneseo, NY. (SUNY Geneseo)

Concentration: Plant Ecology

Project: Effects of grazing and plowing on herbaceous understory communities of deciduous forests in western New York.

Major Professor: George M. Briggs

B.A. Biology (1994)

SUNY College of Arts and Science at Geneseo, Geneseo, NY.

NYS Certificate of Qualification for teaching Secondary Biology and General Science

TEACHING EXPERIENCE

Assistant Professor Courses in general biology, ecology, and environmental science for biology majors and non-majors. These courses include Bio101 Search in Biology with Laboratory: Environment, 132 Introductory Ecology, 133 Introductory Ecology Lab, 202 Principles of Ecology and Evolution, 211 Concepts in Biology, 315 Microbial Ecology, 390 Special Problems in Biology (undergraduate research), 405 Ecology, 490/540 Terrestrial Vegetation Survey, 491 Advanced Studies in Biology (advanced undergraduate research), 500 Seminar in Biology, 515 Foundations of Ecology, 520 Plant Ecology, 590 Focused Study in Advanced Biology, and 599 Thesis. Central Connecticut State University (CCSU) (2002 - present).

University Supervisor of Student Teachers (EDSC 435) Guide and assist biology students during their student teaching semester in local secondary schools. CCSU (2003 – present).

Teaching Faculty (300 level course) Co-developed and taught a short-term, intensive summer field course in plant identification and vegetation sampling as well as a second component on sampling and statistics. Also, as part of a team, guided students in the development of group research projects. Cranberry Lake Biological Station (Summers 2001 – 2003 and 2005).

RECOGNITION FOR TEACHING

2005 Who's Who Among America's Teachers

2004 – 2005 CCSU Excellence in Teaching Award finalist

2003 – 2004 CCSU Excellence in Teaching Award finalist

PEER-REVIEWED PUBLICATIONS

Tessier, J.T. 2006. Writing assignments in a non-major introductory ecology class. *Journal of College Science Teaching* 35:25-29.

Tessier, J.T. 2004. Leaf longevity of *Oxalis acetosella* in the Catskill Mountains, New York, USA. *American Journal of Botany* 91:1371-1377.

Tessier, J.T. 2004. Ecological problem-based learning: an environmental consulting task. *American Biology Teacher* 66:477-484.

Tessier, J.T. 2004. Use of peer-teaching to promote learning in biology. *Journal of College Science Teaching* 33:16-19.

Tessier, J.T. and D.J. Raynal. 2003. Vernal nitrogen and phosphorus retention by forest understory vegetation and soil microbes. *Plant and Soil* 256:443-453.

Tessier, J.T., and D.J. Raynal. 2003. Use of nitrogen to phosphorus ratios in plant tissues as an indicator of nutrient limitation and nitrogen saturation. *Journal of Applied Ecology* 40:523-534.

Tessier, J.T. 2003. Applying plant identification skills to actively learn the scientific method. *American Biology Teacher* 65:25-29.

Tessier, J.T., R.D. Masters, and D.J. Raynal. 2002. Changes in base cation deposition across New York State and adjacent New England following implementation of the 1990 Clean Air Act Amendments. *Atmospheric Environment* 36:1645-1648.

Tessier, J.T. 2001. Vernal photosynthesis and nutrient retranslocation in *Dryopteris intermedia*. *American Fern Journal* 91:187-196.

Tessier, J.T., S.J. McNaughton, and D.J. Raynal. 2001. Influence of nutrient availability and tree wildling density on nutrient uptake by *Oxalis acetosella* and *Acer saccharum*. *Environmental and Experimental Botany*. 45:11-20.