Project Title

The Economics of Energy and the Environment:
Teacher Training, Classroom Strategies and Online Learning

Principal Investigators:

Roger B. Butters, Ph.D., President
Nebraska Council on Economic Education
Assistant Professor of Economics
Department of Economics
University of Nebraska – Lincoln
339 College of Business Administration
Lincoln, NE 68588-0404
Phone: 402.472.2333
Fax: 402.472.9700
E-mail: rbutters3@unl.edu

Tammie J. Fischer, Ph.D., Director
UNL Center for Economic Education
University of Nebraska – Lincoln
339 College of Business Administration
Lincoln, NE 68588-082
Phone: 402.472.2333
Fax: 402.472.9700
E-mail: tfischer1@unl.edu

Roger B. Butters

Tammie J. Fischer

Department Chair:

Dr. Scott M. Fuess, Jr.
Professor of Economics,
Acting Chair, Department of Economics,
Research Fellow Institute for the Study of
Labor (IZA) Bonn, Germany
Department of Economics
CBA 370
P.O. Box 880489
University of Nebraska-Lincoln
Lincoln, NE 68588-0489, USA
Phone: (402) 472-6281 or 472-0336
Fax: (402) 472-9700
E-mail: sfuessl@unl.edu

Dean:

Dr. John A. Anderson
Associate Dean and
Baird Family Professor of Economics
CBA 214
P.O. Box 880489
University of Nebraska-Lincoln
Lincoln, NE 68588-0489, USA
Phone: (402) 472-1190
Fax: (402) 472-9700
E-mail: janderson4@unl.edu

Scott M. Fuess, Jr.
Application for Grant Funding

Nebraska Council on Economic Education

Abstract

It is a well known fact that **teachers cannot teach what they don’t know**. When funded, this grant will support an extensive menu of in-service and post-graduate educational opportunities that focuses on the economics of energy supply, production and distribution, the role of alternative and renewable energy resources, environment issues and how these concepts may be integrated into existing classroom curricula for teachers throughout the state of Nebraska. Combined with funds from the Council’s Guffey Memorial Scholarship Fund and other supporters, this broad-based approach to teacher education focuses on several high-quality educational opportunities across the entire spectrum of grade levels and disciplines. Training and materials will be delivered through a combination of in-service workshops, post-graduate classes and online training opportunities. These activities will serve a geographically diverse group of educators that have unique needs and interests. The Council expects to train up to 100 teachers as a part of this grant, representing an impact of up to 10,000 students per year. Workshops will be conducted at regional Centers for Economic Education, local educational institutions and online. The Nebraska Council on Economic Education has both the resources and expertise necessary to successfully implement the activities proposed in this grant. Indeed, the Council’s long tradition of innovation and achievement makes it uniquely qualified to create and deliver *Excellence in Economic Education*. 

Economic Education Grant Proposal                                                                                           Pg. 2 / 10
Project Description

Goals and Objectives:

The Primary Goal of this activity is provide primary and secondary school teachers with the materials, knowledge, training and support necessary to integrate the economics of energy science education into existing classroom materials and curricula. Consistent with the objectives of this grant, this training will develop the “linkages among energy supply, costs, and economic development at state, national, and global levels, [the] opportunities for development of renewable energy and energy conservation, [and] trade-offs between energy use, environmental quality, and conservation of natural resources.” 1 This goal will be achieved through a combination of resident post-graduate education classes, teacher in-service extension workshops, and online virtual workshops.

Extensive research has shown that teacher knowledge and understanding of classroom materials is essential for student learning and positive educational outcomes. 2 Research also shows that obtaining a functional understanding of economics and its application to specific sciences, such as energy production, requires exposure to several courses in economics and ongoing support and education. 3 This grant addresses both these issues by supporting a broad-based set of activities that build on the Nebraska Council on Economic Education’s commitment to ongoing teacher education. The diversity of programs and program delivery supported by this grant ensure educational opportunities will be available to all teachers regardless of location, resources or time constraints.

The Nebraska Council on Economic Education is a national leader in the development and integration of discipline-specific economic issues into the K-12 classroom. This grant will support the distribution of the “Energy, Economics, and the Environment” classroom case studies and teaching activities curriculum to teachers throughout the state. 4 The grant also funds extensive teacher training in the economics of energy through in-service workshops, post-graduate classes and online education. Partnered with additional funds from outside sources, this grant will make a permanent capital improvement to the quality of energy sciences education in the K-12 classroom. Since participating teacher will each reach hundreds of students every year for the duration of their careers, this grant has a true multiplier effect on energy science education throughout the state.

The dates and locations for the funded activities will span the 2006-2007 school year. In-service training and workshops will begin immediately and extend throughout the summer of 2007. Graduate courses in economics, whether online or in live-presentation formats, will be offered in June, July or August of 2007. Online “Virtual Workshops” will be offered on an ongoing basis throughout the year. Locations will be determined by local Centers for Economic Education and will be chosen to best serve our teacher clients.

We expect to enroll up to one hundred teachers in the various offerings supported by this grant. In addition to social studies, economics, and business teachers, the Council will also recruit science teachers in an effort to improve their understanding of the economics driving energy and environmental concerns. In the event that post-graduate and workshop events are under-enrolled, resources will be allocated to online training.
to ensure that 100 teachers are able to receive the materials funded by this grant. To the extent that demand for this training exceeds grant funding, the Nebraska Council on Economic Education will continue to offer seminars in future years. As a result, the workshops and materials created by this grant will have a multiple-year impact on teacher training opportunities.

**Project Justification:**

Many of the key issues and debates currently facing our country and the world are centered on issues of energy, natural resources and the environment and how to balance the need for increased energy production against environmental and social concerns. Unfortunately, many of these debates and discussions lack the vital economic underpinnings that make informed and productive debate possible. The K-12 public and private school system in Nebraska is a natural venue for providing the education and training necessary for the future citizens of our state to deal with these issues.

Unfortunately, opportunities of teacher training in the energy education science are rare and those that exist are not widely available throughout the state. As a result, one of the great challenges facing educators is to teach students how to understand the complex issues and economic implications of energy and resource policy. Existing curricula for both business and social studies educators makes good use of the science of economics to help students understand allocative and productive decision making as well as form a solid intellectual foundation for further study and investigation. Topics such as international trade, labor markets, and macroeconomic policy are well taught and understood. Unfortunately, current curriculum materials only tangentially develop the economic foundations of energy and environmental issues. Providing students with a better economic understanding of energy sciences, and the fundamental issues behind energy production, distribution and its contribution to economic growth as well as concerns for the costs associated with energy development will help inform and direct the contentious debates currently surrounding this issue. A more informed debate will make our state better equipped to meet the environmental and energy challenges of the future.

The combination of post-graduate, in-service and online education envisioned by this grant is necessitated by the large size and broad diversity of the state of Nebraska. By developing several formats and by providing multiple training opportunities, this grant makes it possible for the Council to deliver both classroom materials and economic training to a broad cross-section of educators regardless of location, availability or financial constraints.

The Nebraska Council on Economic Education has extensive experience in both developing and delivering nationally recognized classroom training and content to the teachers and students of Nebraska. The activities proposed by this grant are well within the Council’s ability to fully develop and execute.

**Development:**

This grant has four developmental components: workshop content development, web development, internet module development, and teacher workshop manual writing.

Under the direction of Tammie Fischer, the UNL Center for Economic Education will contract with area educators and research experts to develop the content for the in-
service, post-graduate and online educational workshops as well as the accompanying teachers’ workshop guide. Workshop content will target K-12 educators and will be designed to integrate into existing business, social studies or science education curricula.

Web design and development along with the online workshop module writing will be done by Roger Butters and the Nebraska Council on Economic Education. The online workshop will mirror the content created for the in-service and post-graduate classes. Digital video of a traditional workshop will be filmed and included in the online component.

**Expected Educational Outcomes:**

We expect to provide training and materials for up to 100 K-12 business, science and social studies teachers in the state of Nebraska. We expect that teachers participating in workshops funded by this grant will master the principles and tools of economics related to understanding and teaching about the “linkages among energy supply, costs, and economic development at state, national, and global levels, [the] opportunities for development of renewable energy and energy conservation, [and] trade-offs between energy use, environmental quality, and conservation of natural resources.”

We expect that the resources delivered by this grant will improve the quality and rigor of education in Nebraska’s classrooms. As students gain a solid practical and theoretical understanding of the issues driving energy production, usage and development, they will better be able to respond as consumers, workers and voting citizens.

This grant will promote and improve the connection between secondary and university educators by drawing teachers from throughout the state to our Centers for Economic Education and other partners. These include:

- UNL Center for Economic Education, College of Business Administration
- UNO Center for Economic Education, College of Business Administration
- UNK Center for Economic Education, College of Business Administration
- Chadron State College Center for Economic Education, College of Business Administration
- Wayne State College Center for Economic Education, College of Business Administration
- Nebraska State Department of Education
- Federal Reserve Bank of Kansas City – Omaha Branch

**Timeline:**

2006
- December – Grant Submission.

2007
- January to March – Curriculum and materials are purchased and developed.
- April to June – Workshops, class and online training components are developed.
- June to August – Online, in-service and post-graduate training is provided.
- September – Grant Summary and report are submitted.
ROGER B. BUTTERS, Ph.D.

Department of Economics
University of Nebraska - Lincoln
339 College of Business Administration
Lincoln, NE 68588-0404
402.472.2333

6911 S 51st Street
Lincoln, NE 68516
402.420.0309
rbutters3@unl.edu
rbutters@teachecon.com

EDUCATION
Ph.D. Economics, University of California, Davis, 2003
M.A. Economics, University of California, Davis, 2000
M.S. Managerial Economics, Marriott School of Management, Brigham Young
University, 1996
B.A. Economics / Portuguese, Brigham Young University, 1994

TEACHING INTERESTS
Economic Education, International Finance, Trade, Macroeconomics and Monetary
Economics, Econometrics

EMPLOYMENT HISTORY
President, Nebraska Council on Economic Education, University of Nebraska - Lincoln,
8/2005 – Present
Assistant Professor of Economics, University of Nebraska - Lincoln, 8/2005 – Present
Assistant Professor of Economics, University of Texas at Arlington, 8/2003 – 8/2005
Arlington, Texas Campus, Beijing and Suzhou, China - Extension Campuses
Visiting Professor, Jiao Da University, Xian, China, 10/2003.
Adjunct Faculty, E-Learning Instruction, Solano College, Fairfield, CA, 8/2000 – 12/2004
Professor, Foundation for Teaching Economics, Davis, CA, 6/2000 – Present
Graduate Instructor, University of California, Davis, 9/1996 – 6/2003

RESEARCH INTERESTS
Economic Education, Balance of Payments and Currency Crises, International Capital
Flows, Financial Markets and Development, Monetary Policy, Exchange Rate Markets and
Dynamics

RELEVANT PUBLICATIONS
“Virtual Economics 3.0 Virtual Workshop,” Nebraska Council on Economic Education,
2006

RECENT GRANTS
Excellence in Economic Education, Teacher Training, U.S. Department of Education, 2005-
2006, Grant Director.
Provided pre-service, in-service, post-graduate training for K-12 teachers in Nebraska
Excellence in Economic Education, Replication of Best Practices, U.S. Department of
Education, 2005-2006, Grant Director.
Funded development of an online economic literacy competition for students in grades
9-12.
  Partially funded the distribution of $39,000 worth of economics and financial literacy curriculum materials along with directed training for teachers throughout Nebraska.
Community Directed Grant, McCook National Bank, April 2006, Grant Director.
  Provided funding for a teacher workshop on the fundamentals of economics and financial literacy to teachers in McCook, Nebraska.

HONORS, FELLOWSHIPS, AND SCHOLARSHIPS

- Summer Fellow, Foundation for Teaching Economics, Summer 2000
- Tuition Scholarship, UC Davis Department of Economics, Fall 1996, Winter, Spring 1997
- Dean’s List at Graduation, Marriott School of Management, Brigham Young University, April 1996
- Cum Laude and University Honors, Brigham Young University, December 1994
- Thomas and Dorothy Leavey Foundation Scholarship, August 1988 to April 1994

Bio

Dr. Roger B. Butters, the President of the Nebraska Council on Economic Education, is a dynamic leader, lecturer and advocate for economic and financial literacy education. As an Assistant Professor of Economics at the University of Nebraska-Lincoln and a Professor for the Foundation for Teaching Economics, Dr. Butters has over ten years’ teaching experience in both the public and private sectors. His qualifications include a background in financial markets and international trade, traditional classroom teaching and extensive experience in online teaching and coursework development. Dr. Butters has been invited to teach seminars on economics and international finance at universities around the United States, Europe, and China. Dr. Butters recently lectured in São Paulo, Brazil as part of the Goldman Sachs Leadership Institute. His primary research interests are in the fields of Economic Education, International Finance and Growth. He is a contributor and lead evaluator of a new curriculum entitled “Is Capitalism Good for the Poor?”
BIOGRAPHY

Tammie J. Fischer, Ph.D.
Director, Center for Economic Education
University of Nebraska-Lincoln

Dr. Fischer received her Ph.D. from the University of Nebraska-Lincoln in 2000. Her areas of academic interest include: Economic Education, Curriculum and Instruction, and Educational Administration. She also holds a Master of Arts degree in economics (1991) and a Bachelor of Science degree in economics (1988), both from the University of Nebraska-Lincoln.

Dr. Fischer has been the Director of the Center for Economic Education at the University Of Nebraska-Lincoln since 1995; she was the Associate Director from 1992-1995. The Center for Economic Education is accredited by the National Council on Economic Education. It achieves its goal of increased economic literacy through instruction, curriculum development, and research. At the undergraduate level, Dr. Fischer teaches courses on the principles of macroeconomics, microeconomics, and an introduction to money and banking. She also provides economics instruction to primary and secondary teachers in the form of graduate-credit courses and non-credit workshops. Her teaching career began in 1989 as a graduate teaching assistant at the University of Nebraska-Lincoln.

Dr. Fischer has authored many curriculum guides for educators consisting of classroom-ready lessons to assist in the teaching of economics to students of all ages. Titles include: *Preservice Syllabus in Macro and Microeconomics* (2004); *Nebraska Entrepreneurs* (with Derry Trampe, Chuck Parker, Mary Lynn Reiser, and Kim Sosin) (2002); *Nebraska and the World: A Resource Guide for Teachers* (2000); *The Economics of Our Diverse Society: An Educator’s Guide* (with William Walstad) (1996); and *American Health Care: A Resource Guide* (with Mary Sue Carter) (1992). Dr. Fischer continues to make presentations on her work at the Center for Economic Education at local, state, national, and international conferences.

As an economic education consultant at the local, state and national levels on issues such as economics course development and instruction, Dr. Fischer provides her content expertise on the development and assessment on the state and national voluntary standards in economics. Locally, she has assisted school districts with the improvement of economics instruction including course development and the creation of student banks within the building.

Dr. Fischer maintains an active grant funding agenda. Over the last 5 years, Dr. Fischer has secured over $84,000 in grants through partners including the National Council on Economic Education, The Kauffman Foundation, the Nebraska Department of Banking and Finance, UNL Extended Education and Outreach, Education Quest Foundation, and the Downtown Optimist Club. These grants funded Center programs for K-12 students and teachers, including the development of traditional and online courses.
### VI. Expenses

<table>
<thead>
<tr>
<th>Item</th>
<th>Total Cost</th>
<th>Grant Funding Requested</th>
<th>Matching Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Salaries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Instructor</td>
<td>$600.00</td>
<td>$400.00</td>
<td>$200.00</td>
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<tr>
<td>2 Workshop Content Development</td>
<td>$1,000.00</td>
<td>$500.00</td>
<td>$500.00</td>
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<tr>
<td>3 Online Module Writing and Development</td>
<td>$3,000.00</td>
<td>$900.00</td>
<td>$2,100.00</td>
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<td>4 Workbook Writing</td>
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<td>$500.00</td>
<td>$1,500.00</td>
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<tr>
<td><strong>Supplies</strong></td>
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<tr>
<td>5 Lunch/Refreshments</td>
<td>$630.00</td>
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<td><strong>Equipment</strong></td>
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<tr>
<td>6 Web Development</td>
<td>$2,500.00</td>
<td>$500.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>7 Digital Filming</td>
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<td>$1,000.00</td>
<td>$600.00</td>
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<tr>
<td><strong>Travel</strong></td>
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</tr>
<tr>
<td>8 Mileage/Hotel/PerDiem</td>
<td>$570.00</td>
<td>$300.00</td>
<td>$270.00</td>
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<tr>
<td>9 Travel Support</td>
<td>$1,080.00</td>
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<td>$270.00</td>
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<tr>
<td><strong>Publications</strong></td>
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<tr>
<td>10 Curriculum Materials</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
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<tr>
<td>11 Workshop Guides</td>
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<tr>
<td><strong>Misc</strong></td>
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<td></td>
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</tr>
<tr>
<td>12 Teacher Tuition Support</td>
<td>$4,230.00</td>
<td>$3,172.50</td>
<td>$1,057.50</td>
</tr>
</tbody>
</table>

**Project Total**  
$20,710.00  
$11,912.50  
$8,797.50

**Budget Justification:**

1. Payment for workshop instructor contracted at 6hrs @ $50/hr for two workshops.
2. Payment for secondary education and higher education specialists contracted to develop workshop content.
3. Payment for online educational specialists contracted to develop online workshop content.
4. Payment for secondary education and higher education specialists contracted to develop teacher workbooks and materials for online, in-service and post-graduate classes.
5. Cost of food for two workshops with 21 attendees at $15/person.
6. Cost of developing and hosting the virtual workshop to deliver training to teachers via the internet.
7. Video equipment and lights to film a live workshop presentation for integrating into online virtual workshop.
8. Mileage for workshop presenters and instructors calculated at 300 miles @ $.45, Hotel $100, PerDiem - $50 for two workshops.
9. Travel support and assistance for up to twenty teachers calculated at 120 miles round trip at $.45/mile.
10. Cost of “Energy, Economics and the Environment – Case Studies and Teaching Activities for Elementary and High School.” 100 Copies @ $25/Copy
11. Printing costs for teacher workbooks calculated at 100 Copies @ $10/Copy
12. Tuition costs for twenty teachers for a one credit hour class at $211.50 per credit hour.
VII. References


