

Faculty Development Grant Proposal

The Environment: Seeing is Believing

David Anderson, Centre College

Introduction

I thank the ACS CFD Alliance kindly for granting partial support after the first submission of this faculty development proposal. In the event that funds remain for faculty development projects at year end, I would like to request support for the balance of \$734 in outstanding expenditures for this project. In this revised proposal I have made an effort to address the initial reservations of the committee, which related to the value of this project to environmental courses.

Perceptual Modalities: Catering to Visual Learners

At present, up to 65 percent of our students can be classified as “visual learners.” Visual learners assimilate information better when they can see images and motion pictures of what they are trying to learn. A time-lapse representation of ozone depletion, deforestation, the hydrologic cycle, or the workings of a fuel cell may help these students more than a discussion or reading on the same topic. In essence, an image is worth 1000 words. Although reading is a visual action, most students process the information from text by hearing themselves say the words. Thus, people who best process information by reading are categorized as auditory learners. Course improvements with the software in question assists auditory learners too, by providing new avenues for inserting audio (noise pollution, the sound of wind turbines, whale songs) into digital educational materials.

Fourteen years ago I wrote an article for the *Social Science Computer Review* saying that computers would make their way into the classroom, and that digital image-delivery systems that go beyond chalk and slides would be a boon to visual learners.¹ Instructors now have the ability to use computers in virtually any classroom, and I find more and more evidence that visual aids are critical to effective learning for the majority of students. In research specific to environmental economics, I found that visual representations of environmental assets and liabilities (the Arctic National Wildlife Refuge, wild flowers, power plants, and oil refineries) influence assessed values for environmental benefits and costs by as much as 100 percent.² These and related studies suggest that the effectiveness with which we present visual images in the classroom affects perception and retention, not to mention the attention given to these materials. Visual aids improve on the education value of plain text, visual aids that are in-color are more effective than those in black and white, and motion pictures are more effective still, conveying environmental concepts in a more realistic, attention-getting, and memorable way. It is for all of these purposes that I seek to improve the visual components of my environmental courses.

I will use the multimedia authoring training for my courses in Environmental Economics and Natural Resource Management, Sustainability, Economics in an Ethical World, and the Law and Economics of American Colonialism: Rights and Resources of Native Cultures. I very seldom use digital presentations in my Intro to Economics, Intermediate Economics, or Senior Seminar courses, although if benefits from this professional development bled into other courses, I would see that as a positive externality, especially because the materials that I develop and would be tempted to share in these courses would most likely be about the environment.

¹ "Can Computers Replace the Classroom Chalkboard? The Case of Economic Education," 12:1 *Social Science Computer Review* (1994), 100-113.

² "Evaluating Policies for Sustainability: The Neglected Influence of Visual Images," *International Journal of Environmental, Cultural, Economic and Social Sustainability* (2005).

Project Description

Macromedia Flash is a multimedia authoring program that facilitates the use of video, sound, animation, and dynamic interfaces in almost any form of digital presentation. With this proposal I seek support for participation in an intensive course on Macromedia Flash. I pursue this training with the goal of using advanced techniques to deliver content to students in new and existing environmental courses and to share information with students in other ACS schools and elsewhere.

My training in Macromedia Flash took place at AcademyX in San Francisco. Somewhat closer programs in New York and other cities offer similar courses, but I looked into these possibilities and they were actually more expensive and did not offer programs at times when I could attend. The course covered topics including bitmap and vector graphics, the Flash interface, web animation principals, website interactivity, and web publishing using Flash.

In addition to use for my four courses on the environment, the acquired skills will be applied to the Environmental Education Station (EES, www.ees.cc). The EES was developed as an ACS-led collaboration of students and faculty at Sewanee and Centre College. When developed in 1999, the EES represented a state-of-the-art website with much to offer and it received thousands of hits from students and instructors all over. Seven years later, it is no longer a web resource that would catch the eye or meet the needs of students and faculty, and I would like to update this educational resource to make it a more effective tool to assist learning about the environment.

Budget

Flight	317
Lodging	308
Airport parking and ground transportation	<u>109</u>
Total Requested amount:	\$734

I am not requesting compensation for any meals.

Timing

I took the Flash course during Centre spring break (March 20-22), and will complete the revamping of environmental course and website materials during the summer of 2006.

Dissemination

The web resources developed with this technology will be available to all faculty and students with Internet access.

Evaluation

The usefulness of these projects can be evaluated with targeted questions on course evaluations (we are able to insert a customized question) and using hit counters on the websites.

Institutional Approval

Centre College Dean John Ward has sent his enthusiastic endorsement to Barry Allen.

Disclosure Statement

I have no conflicting projects, and I am receiving no grant support from any source.

David A. Anderson

Education

- B.A. University of Michigan, Economics, May 1986
- M.A. Duke University, Economics, May 1990
- Ph.D. Duke University, Economics, September 1992

Teaching Positions

- Duke University, 1990-92, Teaching Assistant
- Davidson College, 1999, Adjunct Associate Professor
- Centre College, 1992 – present, currently Blazer Associate Professor

Selected Honors and Awards

- Class Honors, University of Michigan, 1984-86
- High Honors in Economics, University of Michigan, 1986
- Academic Scholarship, Duke University, 1988-92
- Duke University Research Grant with Thomas D. Rowe, Jr., 1991
- Kentucky Real Estate Commission Research Grants; 1994, 1995
- 3M Foundation Vision Grant, Principal Investigator, 1995-97
- Ephraim McDowell Regional Medical Center Grant, 1995
- Andrew Mellon Foundation Technology Grant (co-PI), 1995-98
- BellSouth Teaching Grants (co-PI); 1995, 1996
- Centre Professional Development Grants, 1993-2001
- NEH Distinguished Professorship, 1996-98
- 3M Foundation Vision Grant, Principal Investigator, 1997-2000
- ACS / Rasmussen Foundation Grants, 1999, 2003, 2004
- Permaculture Design Certificate, Ecological Solutions of Australia, 2005
- Stodghill Research Professorship, 2005

Publications - Articles and Chapters:

- "Pricing Protection: Understanding the Environmental Economics of Biodiversity Protection," in S. Spray and K. McGlothlin (eds.), *Loss of Biodiversity* (2003, Rowman & Littlefield).
- "Fairness in the Face of Conflict: Dividing Environmental Assets and Obligations," forthcoming, *International Journal of Global Economic Issues* (2003) 116-32.
- "A Picture is Worth \$10 Million: Adult Object Permanence and the Neglected Power of Sight," 23: 1 *Association of Environmental and Resource Economists Newsletter* (2003).
- "Improving Settlement Devices: Rule 68 and Beyond," 23:1 *Journal of Legal Studies* (1994), 225-246.
- "Compensating Wage Differentials and the Optimal Provision of Unemployment Insurance," 60:3 *Southern Economic Journal* (1994), 644-656.
- "Can Computers Replace the Classroom Chalkboard? The Case of Economic Education," 12:1 *Social Science Computer Review* (1994), 100-113.
- "Estimating the Adequacy of Workers' Compensation Benefits," *Kentucky Journal of Economics and Business* (1994), 33-51.
- "Empirical Evidence on Settlement Devices: Does Rule 68 Encourage Settlement?" with Thomas D. Rowe, Jr., 71:2 *Chicago-Kent Law Review* (1995), 519-545.
- "One-Way Fee Shifting Statutes and Offer of Judgment Rules: An Empirical Experiment," with T.D. Rowe, 36 *Jurimetrics Journal of Law, Science, and Technology* (1996), 255-273.

- "An Introduction to Dispute Resolution," in David A. Anderson (ed.), *Dispute Resolution: Bridging the Settlement Gap* (1996, Elsevier/JAI Press) 1-16.
- "Empirical Evidence on the Success of Settlement Devices," with Thomas D. Rowe, Jr., in David A. Anderson (ed.), *Dispute Resolution: Bridging the Sett. Gap* (1996, JAI Press) 131-144.
- "The Accelerator Principle," in Thomas Cate, David Colander, and Geoff Harcourt (eds.), *Encyclopedia of Keynesian Economics* (1997, Elgar Publishing) 3-6.
- "The Multiplier Effect," in Thomas Cate, David Colander, and Geoff Harcourt (eds.), *Encyclopedia of Keynesian Economics* (1997, Elgar Publishing) 450-453.
- "Characteristics of an Ideal Teacher Evaluation Mechanism," with Harry Landreth, 7:4 *The National Teaching and Learning Forum* (1998) 5-7.
- "The Cost Effectiveness of Home Birth," with Rondi Anderson, 44:1 *Journal of Nurse-Midwifery* (1999) 30-35.
- "Government's Role in Property Ownership: Hobbes meets Gulligan," in Nicholas Mercuro and Warren J. Samuels (eds.), *Fundamental Interrelationships between Government and Property* (1999, Policy Studies Organization/JAI Press).
- "The Aggregate Burden of Crime," 42:2 *Journal of Law and Economics* (1999) 611-642.
- "A Theory of Quality Signaling in the Marriage Market," with Shigeyuki Hamori, 12:3 *Japan and the World Economy* (2000) 229-242.
- "An Empirical Analysis of the Osaka Rice Market during Japan's Tokugawa Era" with Shigeyuki and Naoko Hamori, 21:9 *Journal of Futures Markets* (2001) 861-74.
- "The Deterrence Hypothesis and Picking Pockets at the Pickpocket's Hanging," 4:2 *American Law and Economics Review* (Fall, 2002) 295-313.
- "Real Wage Behavior in the United States, Britain, and Japan: An ARCH Approach," with Shigeyuki Hamori, 4 *European Economic and Political Issues* (2002) 13-24.
- "Stock Returns and Real Activity: New Evidence from the United States and Japan," with S. and N. Hamori, 41:3&4 *Quarterly Journal of Business and Economics* (2002).
- "Gender Role Stereotyping of Parents in Children's Picture Books: The Invisible Father," with Mykol Hamilton, 52:3/4 *Sex Roles: A Journal of Research* (2005).
- "Evaluating Policies for Sustainability: The Neglected Influence of Visual Images," *International Journal of Environmental, Cultural, Economic and Social Sustainability* (forthcoming).
- "The Determinants of Municipal Solid Waste," 24(2) *Journal of Applied Economics and Policy* (forthcoming).

Books and Volumes:

- Environmental Economics and Natural Resource Management* (2004, 2006 S-W / Pensive).
- Dispute Resolution: Bridging the Settlement Gap*, contributing editor, (1996, Elsevier Press).
- Cracking the AP: Economics*, (2000, 2002, Random House).
- Favorite Ways to Learn Economics*, with James Chasey (2001, South-Western).
- Economics by Example* (forthcoming, 2006, Worth Publishers)

Organizational Affiliations

- Society for Ecological Economics
- Association of Environmental and Resource Economists
- American Economic Association
- Southern Economic Association
- American Law and Economics Association