Innovation et interdisciplinarité

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Acfas
Montréal, 18 May 2006
The Need for Interdisciplinary Research & Teaching
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Complexity of social and cultural phenomena (SSHRC)

Comparative cultural work & real intercultural contacts (SSHRC)
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Intensified specialization of disciplines and the concurrent explosion of new hybrid areas of research (SSHRC)
Degrees of Interdisciplinarity*

Multi-disciplinary
Tag Teaching

Pluridisciplinary:
Conscious Tolerance

Cross-Disciplinary
Filtered Access

Interdisciplinary
Fully Integrated Experience

* Julie Thompson Klein http://www2.ac.edu/faculty/gened/Exploring.htm
Degrees of Interdisciplinarity

Multi-disciplinary: Tag Teaching

• Disciplines and presenters remain separate
• Data is shared, but viewed only in terms of the difference between the 2 disciplines
• Students are expected to manage integration
• Disciplinary methods and epistemologies are not critically examined
Degrees of Interdisciplinarity

Multi-disciplinary: Tag Teaching

Pluridisciplinary: Conscious Tolerance

- Faculty have private talks about integration of material

- Faculty gain insight into the other discipline, but maintain their disciplinary filters

- Similarities/differences in interpretation, methods, and assumptions are explored

- Course discussions of methods and epistemology are implicit by end of course
Degrees of Interdisciplinarity

Multi-disciplinary: Tag Teaching

Pluridisciplinary: Conscious Tolerance

Cross-Disciplinary: Filtered Access

- Dominant and subordinate roles of disciplines; not a partnership
- Practice in one discipline is examined through the filter of the other discipline
- Insights are gained, but the perspective of one viewpoint is emphasized
Degrees of Interdisciplinarity

Multi-disciplinary: Tag Teaching

Pluridisciplinary: Conscious Tolerance

Cross-Disciplinary: Filtered Access

Interdisciplinary: Fully Integrated Experience

- Faculty have regular interaction inside/outside of course
- Students and faculty collaborate in synthesis/integration; direction of course shifts as course evolves
- Disciplinary perspectives are acknowledged and made explicit; points of synthesis developed & areas of conflict explored
# Degrees of Interdisciplinarity

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Examples
Special Individualized Programs
M.A. / M.Sc. / Ph.D.
Special Individualized Programs
M.A. / M.Sc. / Ph.D.

Université Concordia, Montréal
Special Individualized Programs
M.A. / M.Sc. / Ph.D.

Université Concordia, Montréal

Designed by applicant and faculty, Supervised by Program Committee
Crossfire: Gender, Cyberfeminism and World Wide Web
Visual Culture
Cynthia Roblin, M.A., 2005
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Archiving the Self: George Legrady's Immigration Story in
"An Anecdoted Archive from the Cold War"
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Ethics in Translation: An Exploration Through Art, Dramatization, Literary and Political Texts
Noga Barokass-Emanuel, M.A., 2001

An Intricate Web(b): American Influences on Professional Craft in Canada 1964-1974
Sandra Alfoldy, Ph.D., 2001
2001

Winners of the CAGS-UMI Award
(Canadian Association for Graduate Studies & University Microforms International)

Linda Marie Arsenault (University of Toronto)
An introduction to Iannis Xenakis's Stochastic music: Four algorithmic analyses

Eldon Emberly (Simon Fraser University)
Electron transport in molecular wires
2002

Winners of the CAGS-UMI Award

William Bain (University of British Columbia)
The idea of trusteeship in international society: Unity, progress, and the perfection of humankind

Rees Kassen (McGill University)
Experimental studies on the fate of diversity in heterogeneous environments
2003

Winners of the CAGS-UMI Award

David L. Bryce (Dalhousie University)
Insights from across the periodic table into NMR chemical shift, electric field gradient, and spin-spin coupling tensors: New information from solid-state NMR and computational chemistry
2004

Winners of the CAGS-UMI Award

Karim S. Karim (University of Waterloo)
Pixel architectures for digital imaging using amorphous silicon technology

Caroline Pukall (McGill University)
Understanding vulvar vestibulitis syndrome through pain measurement: Applications of multidimensional pain methodologies and development of novel assessment techniques
2005

Winners of the CAGS-UMI Award

Dubois, Paul-André  (Laval University)
Chant et mission en Nouvelle-France, espace et rencontre des cultures
Advocates

CRSH /SSHRC

Conseil de recherches en sciences humaines
du Canada
Advocates

CRSH / SSHRC
Conseil de recherches en sciences humaines du Canada

CRSNG / NSERC
Conseil de recherches en sciences naturelles et en génie du Canada
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NSF
National Science Foundation aux États-Unis
“Current traditions in graduate training make it extremely difficult for students to acquire a formal education in cross-disciplinary research. The tendency is for students to focus on the specific techniques and narrow research goals of the laboratory in which they work.”
Oregon State University
nearshore oceanography, ecological interactions, physiology, population replenishment (recruitment), diversity and structure of ecological communities

Stanford University
population genetics, ecological physiology, biomechanics

University of California Santa Barbara
nearshore oceanography, ecological interactions, population replenishment (recruitment), community diversity and structure

University of California Santa Cruz
nearshore oceanography, ecological interactions, population replenishment (recruitment), population genetics, the effects of marine reserves
Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO)
The Science of Marine Reserves

In September 2002, PISCO released "The Science of Marine Reserves" video (15 minutes) and booklet. These resources provide the latest scientific information about reserves in an understandable and accessible format. They are designed to be used by natural resource managers, government officials, scientists and the interested public. To view the video by segment or a PDF version of the booklet by section, please click on the files below.

To receive your own hard copy of The Science of Marine Reserves booklet, please contact Satie Airame or Lydia Bergen.
The Science of Marine Reserves video

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The Science of Marine Reserves booklet

Complete Booklet, 2,843 KB
Front Cover, 613 KB
Introduction, 488 KB
Marine Reserves Studied Around the World, 406 KB
Reserves Benefits Inside Their Boundaries, 770 KB
Reserves Benefits Outside Their Boundaries?, 698 KB
Design Considerations, 723 KB
Locating Reserves, 210 KB
How Do Marine Reserves Fit Into the Big Picture?, 232 KB
Selected References, 62 KB
Back Cover, 612 KB
Image files by section

All figures included in the booklet available for dissemination can be downloaded by clicking the links below. Photographs included in the booklet are not available for public distribution. While we encourage its use for educational purposes, the material is copyrighted by PISCO so we ask that you provide full credit when presenting these images.

Around the world

Reserves around the world

Benefits inside reserve boundaries

Reserve effects worldwide, Halpern 2003
Web of life
Anacapa inset
Reserve effects in Anacapa, Lafferty 2000
San Juan Islands inset
Reproduction potential of lingcod, Eisenhardt 2001

Benefits outside reserve boundaries

Spillover of adult fish in Merritt Island
Dispersal distance estimates, Kinlan and Gaines, 2003
Merritt Island inset
Record fish caught off Merritt Island
Georges Bank inset
NMFS scallop survey, 1998
Potential scallop settlement in closed area I
Potential scallop settlement in closed area II

Reserve design

Age at maturity for selected species
Life cycle of marine fishes
Santa Barbara Channel eddy, Nishimoto and Washburn
1999  David and Lucile Packard Foundation ~ $24m over 6 years

   Complementary funding from the A.W. Mellon Foundation, National Science Foundation (NSF), Department of Interior's Minerals Management Service, other federal & state agencies

   Complementary & leveraged funding totaled > $29 million

2005, core funding David & Lucile Packard Foundation, Gordon & Betty Moore Foundation, > $24.5m over 5 years
Obstacles to Interdisciplinarity
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Pedagogy

Disciplinary training with limited methodologies
Focus on specific techniques
Narrow research goals of students’ labs (PISCO)
Lack of integrative thinking
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University structure & funding

“Most academics are still evaluated for tenure and promotion within their departments” (Lesner)
Opinions on What Interdisciplinarity Requires

Effective administration includes
Centralized leadership
Faculty input & joint appointments of full-time faculty

“Responsibility is in the hands of an appropriate leader(s), rather than being dispersed across units whose primary loyalties are to their disciplines”
(Association for Integrative Studies for AUCC)

“Well-funded, well-respected organizations, which have an independent physical and intellectual center outside of and different from a traditional university department” (NSF)
More Opinions on Interdisciplinarity . . .

Deep, “truly paradigmatic shift” among newer scholars (NSF)

“A moment of academic redefinition and university reform, at the center of which – if implemented correctly – could and should sit interdisciplinary research centers.” (NSF)
“Never, ever, think outside the box.”

Leo Cullum, 1998

New Yorker
Merci !