



Implications for teaching and research

SHOULD WE, COULD WE, WOULD WE DEFINE INTERDISCIPLINARITY?

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IPSE 2010 Symposium

interdisciplinarity

auxiliary Indiscriminate pseudo linear supplementary Integrative Synthetic method Nondisciplinary composite endogenous Informed-Disciplinarity Critical border problem Unifying crossdisciplinarity Trans-specialization Transdisciplinary Transdisciplinarity Supra-disciplinary Antidisciplinary Antidisciplinary Omnidisciplinary unifying concept structural Metadisciplinary Conceptual restrictive Instrumental exogenous




Engaging in interdisciplinarity

- Diversify thinking
- Integrate knowledge across domains
- Strive for unity of knowledge
- Critique mainstream approaches/disciplinary dominance
- Innovate conceptually or produce innovations
- Problem solve




Studying Interdisciplinarity

- Define, classify, evaluate it
 - Promote and teach it
 - Understand its function
 - Explore its effects
 - Make visible the politics
- 



Classification approaches

- By degree of interaction with disciplines
 - By degree of integration of disciplines
 - By purpose
 - By what it accomplishes/produces
 - By the process/form it takes
 - By types of questions it generates
 - By types problems it addresses
- 




Classifications and Definitions Matter

Funding agencies, institutions and scholars need to be able to classify interdisciplinarity in order to appropriately fund, value and promote 'worthy' interdisciplinary activity.

(Huutoniemi, Klein, Bruun, Hukkinen, 2010)





The process of defining and classifying interdisciplinarity is inherently political – it both includes and excludes ways of thinking and doing.... In other words, all definitions and classifications have embedded assumptions about what we value.

1972 OECD Classification


Type	Definition
Discipline	A specific body of teachable knowledge with its own background of education, training, procedures, methods and content areas
Multidisciplinary	Juxtaposition of various disciplines sometimes with no apparent connection
Pluridisciplinary	Juxtaposition of disciplines assumed to be connected
Interdisciplinary	Interaction between two or more different disciplines...ranging from simple communication of ideas to the mutual integration of organizing concepts, methodology, procedures, epistemology, terminology data etc
Transdisciplinary	Establishing a common system of axioms for a set of disciplines

OECD 1982 Re-Classification

Type	Aim
Exogenous Interdisciplinarity	Knowledge-making that addresses the “real” problems of society and the demand that universities perform their full social mission
Endogenous Interdisciplinarity	Knowledge-making that aims to realize the unity of science




Popularized Interdisciplinarity


- Collaborate to Diversify
 - Diversify to Innovate
 - Innovate to make a difference
 - Make a difference by integrating innovations into practice
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“Grad Students Learn to Bust Barriers”

Twenty years ago, there was no such field as bioinformatics or neuroengineering. There were no materials to create devices smaller than the diameter of a human hair. If they existed at all, it was only in the minds of visionary scientists.





Today, these are fertile grounds that are being mined for scientific riches — more effective therapies to fight disease, answers to the mysteries surrounding the circuitry of the human brain, retinal implants for the blind, low-energy sources of light.




Discoveries are now happening in-between fields, in collaboration with others from different fields and by combining concepts.

To make these new discoveries requires a wholly new kind of scientist.

Cynthia Lee, March 2003 UCLA






Constructing the new kind of scientists
we need has proven to be very
challenging....




Collaboration is hard and time consuming

Collaboration across disciplines & sectors is even harder and even more time consuming because motivations and rationales for engaging in interdisciplinarity are different.






“within an institution people are collaborating and, if they’re thinking outside the box, they’re each thinking about their own thing.”



Their own thing being their expertise,
disciplinary values and culture, sense of rigor
and purpose for knowledge making.



Some practical issues

- Some ontological and epistemological differences are perceived to be incommensurable
 - Very few people can bridge the natural and social sciences by training
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Some practical issues

- There is stigma associated with 'being interdisciplinary'
- Institutional reward systems are still largely oriented towards rewarding individual contributions
- Excellence/success is still largely measured by outcome rather than process indicators




Implications for learners and teachers

- How do the politics of relevance impact professional identity formation?
 - We know the domain we want to study, but do we have an ideal type practitioner in mind when we are training students?
 - How can we ensure that taking on a sub specialization, delivered in an interdisciplinary context does not fragment educational experience?
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Implications for learners and teachers

- Do we need to reframe the way we think about expertise?
 - How will we document and show success?
 - How will teachers and students be rewarded?
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Implications for CREATE

- Clearly articulated objectives for research and training negotiated with all stakeholders and revisited frequently
- Equal focus on developing content expertise and teaching methodology for integrating/synthesizing information
- Attention to both process & outcomes in training



Implications for CREATE

- Reflexive about different starting points of learners
 - if we are team teaching should we also be learning and practicing in teams?
- Mindful of pervasive attitudes that can negatively affect learning
- Look for both intended and unintended outcomes