

Embedding Interdisciplinarity: developing a generic EBL team project module for undergraduates

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Centre for Excellence in Enquiry Based Learning

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Structure of presentation

- Overview and Part 1(JM)
- Part 2 (IB)
- WebCT module (SL)
- Evaluative reserach (CW)
- Questions.....

Aim of our project

To refine and embed a generic interdisciplinary EBL team project module for undergraduates

Objectives

- ☺ To re-evaluate a pilot module based on blended learning
- ☹ To devise an extended one-semester, credit-bearing module to run University-wide
- ☹ To address institutional issues in embedding the module into the cross-university curriculum

Learning outcomes of the module

To develop EBL-based interdisciplinary team skills, e.g.

- negotiating a topic and the process of enquiry
- communicating material to non-specialists
- developing an appreciation of other disciplines' ways of working

To develop individual skills and abilities, including:

- independent learning
- bibliographic research
- oral presentation and Q&A skills
- creativity (poster design)
- self and peer evaluation
- online learning

Reflective practice: our own EBL....

Building on 2 UG and 1 PG pilot project, funded with Curriculum Innovation awards:

‘Interdisciplinarity in the undergraduate curriculum’

2003-04, 3 Faculties, 3 disciplines

Report + oral presentation

‘Rolling out interdisciplinarity in the undergraduate curriculum’

2004-05, 4 Faculties, 5 disciplines

Poster symposium

- Both trans-university projects using EBL
- CEEBL project looked at how to **embed** interdisciplinary EBL-based work across the University

Changes for the 2004/05 project

Based on feedback from 2003/04 project :

- Included other disciplines: Geography, Medicine and Education joined by Spanish and Biological Sciences
- EBL retained; a self-selected team project based on bibliographic research
- Changed to delivery, assessment strategy and format to encourage more interdisciplinary dialogue
 - WebCT to support face-to-face meetings
 - Report + oral presentation replaced by Symposium with poster, short oral presentation and 'Question-time' session.
 - Structured tasks via WebCT, with a worked example of AIDS to illustrate postings required
 - Further development of reflective and other lifelong learning skills

Changes for the current project

As a result of feedback from 2004/05 project:

- Extension to other disciplines and staff desirable, but short lead time, so same 5 disciplines and staff (Geography, Medicine, Education, Spanish, Biological Sciences)
- More students recruited; up from 16 to 21
- Poster symposium format worked well so very few changes, most to cope with larger numbers:
 - Two sub-groups for some sessions
 - Shorter time per team at Symposium
 - Revised assessment sheet
 - Emphasis on 'Recommendations' panel of poster

Student teams

- 7 Interdisciplinary teams of 3, from 5 disciplines, mixed levels:
- Geography; Year 2, B.A/B.Sc.
 - Medicine, Year 4, Intercalated degree, Special Study module [compulsory]
 - Education; Year 3, BA Language, Literacy & Communication
 - Life Sciences; Year 3, Biological Sciences
 - Spanish; Year 3 BA Spanish, Year 4 Spanish and Journalism (Erasmus)

Two part structure

Part 1 (6 weeks, 5 credits)

- Enquiry-based learning on topic of own choice, culminating in a poster symposium
- Completed by all students in interdisciplinary teams of 3
- Blended learning: weekly tutor-facilitated meetings + WebCT

Part 2 (5 weeks, 5 credits)

- Medicine, Education and Spanish only
- Tutor-led in discipline groups
- Reflection on interdisciplinary experience; format and assessment varied with discipline, e.g. Learning journal, individual presentation

Part 1 programme

- Week 1: Icebreaker
 - Introduction to the course, each other and WebCT
- Week 2: Topic statement
- Week 3: Key problems and questions
- Week 4: Poster preparation
- Week 5: Symposium
 - Posters with oral presentations
 - Peer and tutor assessment
- Week 6: Question Time and Plenary
 - Seen questions based on cross-briefing

WebCT posting and feedback each week

Worked 'AIDS' example provided for each

Topics chosen

- Minimal restrictions on choice of topic
 - of societal or environmental concern
 - all disciplines could contribute
 - focus on interdisciplinary solutions
- Topics chosen anticipated issues now in the press
 - Bird flu pandemic
 - Street children; Sport Relief
 - Road safety in developing countries; Radio 4

Meninos da Rua: The Lost Children of Brazil

The risks faced by Brazilian children on the streets, especially HIV

meninos da rua in Brazilian Children

Demographics

- Total population of Brazil 186m
- Number of children <18 33% or 62m
- Number of children on the streets: estimates from 30 000 (Juiz de Fora) to seven million (Rio de Janeiro)
- Gender balance ratio (M/F) 9:1

Age Structure of Brazil

Location

Where in the world?

Children suffered in past wars whose suffering is by the memory of the literature we studied (at right).

Causes

- Economic Level Causes
 - strong urban economic performance
 - rural - urban migration
 - lack of jobs resulting in unemployment
 - poverty and family disintegration
- Social Causes
 - children prefer the street to life in favelas
 - children get used to street life over time
- Sustaining Causes
 - cycle of violence / 'revolta' / more violence
 - negative attitudes toward street children

Way of life

- Families cannot meet their basic needs
- School attendance is not constant or has been very fragmented
- Children begin to work in the streets around five years old
- They become integrated in gang's criminal organizations: evolution from robberies to drugs, prison and killings
- A violent death is a common end to their miserable lives

Public opinion

- They are seen as vagabonds by a majority of the Brazilians
- 'Death squads' are believed to have official support
- Social organizations are working to counter this perception
- Government actions have done little to solve the problem
- It is important to make the population aware of street children's situation

Transmission of HIV

- Unprotected sexual contact
 - Leading cause in North-East Brazil. Commonly/sexually transmitted
- Sharing of needles during IV drug abuse
 - Small contribution in North-East, large in South
- Vertical transmission from mother to fetus*
- Transfusions of blood products*

* Infection from HIV, acquired virus, blood donor to blood recipient

HIV - The Basics

- A retrovirus termed the 'Human Immunodeficiency Virus'
- Lives in white blood cells, particularly CD4⁺ T_H Cells. Gradual loss of these cells is the hallmark of HIV infection
- Loss of white blood cells leaves the body open to opportunistic infection
- AIDS is defined as:
 - A positive test for HIV &
 - The presence of one or more AIDS defining illnesses
 - OR a CD4⁺ count below 200ml

Tackling HIV - The Solutions

- Non-uniform pattern of development. Solutions must be tailored geographically
- Integration of HIV diagnosis into routine STI diagnosis seems a real possibility in Fortaleza
- Homosexual encounters: 79% use condoms 42% HIV +ve

Solutions

- Coordination between NGOs, government departments and international groups is essential
- Implementation of infrastructure (such as half-way houses) and specially trained workers to help the children on a national scale

How to win The Battle against HIV

- 'Forum of consultation' between interested groups such as NGOs, the police, the children and the community (De Moura)
- An essential element is the need to build up relationships with the children to discover their needs before implementing solutions

Sao Paulo: 10,000 child prostitutes as young as 10. Prostitution is overlooked and protected by police in return for favours.

Solution: Identification and disposal of corrupt police. A 1991 crackdown in Sao Paulo state saw 517 members of the police force acquitted from the national force.

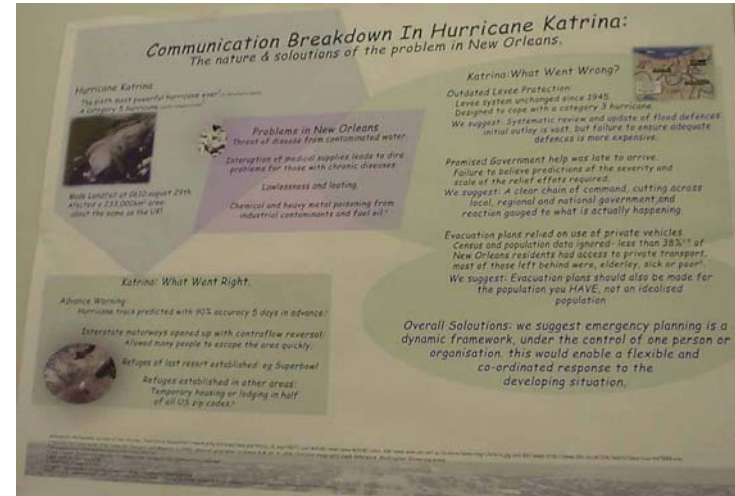
Brazil has been praised for the distribution of anti-viral drugs in all of those who are infected with HIV. These drugs are not preventative but do prolong the lives of those with HIV. This is very different to the situation in other developing countries.

Some health officials in Brazil are asking for PEP to be available to high risk groups, and while this is preventative, it is neither cheap nor practical.

David Knott Maria Martinez Jordan Goodchild



Road traffic accidents in the developing world; Mexico City



Communication breakdown in Hurricane Katrina

**The Global Challenge of TB:
effects of TB on the immigrant
population in Spain**

**El Día del Niño por Nacer:
legal and socio-political
situation of women in
Argentina in relation to
abortion**



Part 2 for Medics 2nd half of semester

**Choose 1 topic
based on inter-
disciplinary
experience**

**Develop as
research
project**

- **Hypothesis**
- **Research questions**
- **Methods**



- Clinical implications of El Nino
- Peer-led learning in AIDs affected Africa
- Teenage pregnancy; failure of sex education
- Honey in clinical practice
- Retroviral medication compliance in UK immigrants
- Comparison of treatments for TB
- **Toxicity of nanoparticles**

Part 2 for Education & Spanish: learning journal

Guidance notes provided on WebCT

Why a learning journal?

As part of the assessment for this unit, you are asked to keep a journal of your experiences of learning on the course and to submit an edited version of this to your tutors for assessment.

Your journal entries should not simply record events. Most of your entries should consist of reflection on what these events mean (e.g. how you interpret their significance in terms of your own learning) and what actions you might take as a result of this understanding. It is through a process of reflection and adapting our ideas and behaviours that we continue to develop (i.e. learn) in our chosen professional fields and in life more generally. Much of this learning takes place continuously without us being fully aware of it. However, increasingly, in our working lives, we are expected to do this formally as part of our professional development. The reflective journal you undertake for this unit is an example of such formal reflection.

What should I write about?

Rosie Turner-Bisset (2004) has developed a helpful framework for conceptualising the content of reflective journal entries, upon which this guidance is based. You should include information of three types as follows:

What?

What happened?

What did I do?

What did other people do? etc.

So what?

What does this mean in terms of my own learning?


What was effective and what was counter-productive? etc.

Now what?

What will I do as I result?

What might I do differently next time? etc.

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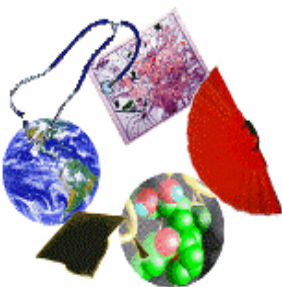
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Interdisciplinary Undergraduate Team Project







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Evaluation



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Image database




Archive

Welcome to the **Interdisciplinary Undergraduate Team Project**, a pilot course funded by the Centre for Excellence in Enquiry- based Learning, University of Manchester

The course offers the opportunity for undergraduates from five subject areas to participate in and contribute

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 Internet

▼ Course information[Course Overview](#)[What happens in Part 1?](#)[What Happens in Part 2?](#)[Assessment](#)[Skills self-assessment form](#)**▼ Learning Journal**[Learning Journal Examples](#)[Poster Guidelines](#)[Poster Assessment Form](#)[Choosing a topic](#)[WebCT Tasks Summary](#)**▼ Some examples**[Not on the Label starter article](#)[Deprivation-Regeneration starter article](#)[AIDS in S Africa Starter Article](#)[AIDS Topic Statement](#)[AIDS Poster Plan](#)[AIDS Poster Abstract](#)

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Click on a topic name to see its messages.

Topic	Unread	Total	Status
Main	0	7	public, unlocked
Notes	0	0	public, unlocked
Team 1	0	0	private , unlocked
Team 2	0	0	private , unlocked
Team 3	0	0	private , unlocked
Team 4	0	0	private , unlocked
Team 5	0	0	private , unlocked
Team 6	0	0	private , unlocked
Team 7	0	0	private , unlocked
Group area tasks	0	70	public, unlocked
Spanish	1	2	public, unlocked
Medicine	0	8	public, unlocked
Education	0	0	public, unlocked
Biological Sciences	0	0	public, unlocked
Geography	0	9	public, unlocked
Archive 2004-05	0	300	private , locked
Archive 2005-06	27	252	private , locked
All	28	648	---

Table of Contents**▼ 1. Group allocations**[1.1. 2004 Teams](#)[1.2. 2005 Teams](#)**▼ 2. Posters Text (2004-2005)****▼ 2.1. Team 1: Recycling: It's Rubbish!**[2.1.1. Abstract](#)[2.1.2. Aims](#)[2.1.3. Landfills and health](#)[2.1.4. Household waste recycling: 2002-2003 England \(map\)](#)[2.1.5. Map \(2\)](#)[2.1.6. The problem](#)[2.1.7. Reasons](#)[2.1.8. Solutions](#)[2.1.9. Table](#)[2.1.10. Why Do Things Need to Change?](#)**► 2.2. Team 2: Shallow Graves: Deep Wounds (Political Violence in Perú)****► 2.3. Team 3: When Nectar Turns Poison****► 2.4. Team 4: Influenza: the Next Global Health Threat?****▼ 3. Posters text (2005-2006)**[3.1. Team 2: Malaria in Zimbabwe](#)[3.2. Team 4: Brazil street children](#)**► 3.3. Team 5: Air quality in Santiago**[3.4. Team 7: Abortion in Argentina](#)

Image database



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Database: 2005

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Show all	All images ▼	Keywords ▼	Contains ▼	<input type="text"/>	Search



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Keywords: [Air pollution, causes \(political & geographical\), health implications, respiratory disease, government policy, heavy industries](#)

Creator: [Team 5: Laura Smith, Russell Kelton, Stephen Hull](#)

Filename: [images/2005_06/Team 5.jpg](#)

Title: [Air Pollution in Santiago de Chile: Causes, Associated Problems and Analysis of Solutions](#)

Description: [This poster focuses on air pollution in Santiago de Chile and examines its causes and effects as well as the solutions already in place to which it adds new ones.](#)



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Keywords: [Argentina, illegal abortions, eugenic & therapeutic abortion, legislation, religion, politics](#)

Creator: [Team 7: Katie Shaw, Patrick White, Amar Javaid](#)

Filename: [images/2005_06/Team 7.jpg](#)

Title: ["El Día del Niño por Nacer": A Lesson to Learn or an Opportunity to Teach?](#)

Description: [This project examines the legal and socio-political situation of women in Argentina in relation to abortion.](#)



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Keywords: [Brazil, HIV, children on the streets, forum of conciliation, prevention](#)

Creator: [Team 4: David Knott, Jordan Goodchild, María Martínez](#)

Filename: [images/2005_06/Team 4.jpg](#)

Title: [Meninos da Rua: The Lost Children of Brazil](#)

Description: [This project examines the risks faced by Brazilian children on the streets and, more specifically, the threat of HIV infection.](#)

DROPPING LIKE FLIES – THE MALARIA PROBLEM IN ZIMBABWE

TEAM 2

Andreas Chapman
Colin Matheson
Elizabeth Byrne

What Is Malaria?

- Parasitic parasite
- Spread by a bite from the female anopheline mosquito
- Stagnant water provides a breeding ground for the anopheline mosquito
- Once inside the body the malarial parasite invades liver cells then blood cells
- Causes cycles of fever, chills and sweating
- Can be fatal if left untreated
- When a non-infected mosquito bites an infected person it then becomes a carrier of infection



Zimbabwe

- Malaria is a serious health problem in Zimbabwe
- 4% of total deaths are due to malaria, and it occupies 10% of hospital beds
- 58% of population live in malaria endemic areas
- Life expectancy is a low 41 years
- However literacy rates are relatively high at 61%



Gokwe region;

- 80% of population depend upon subsistence farming
- 30% have had little schooling, up to 7 years in primary education
- Main malaria treatment is DDT or equivalent spraying programmes



"If 7 Boeing 747s full of children crashed into a mountain everyday, would the world take measures to prevent it?"

Wan Kizuna (Zimbabwe expert on Malaria problem)

Solutions:

1. Education on avoidance and treatment

- Problematic due to high literacy rates. Word of mouth approach required
- Educate children during primary schooling
- Educate priests so they can pass knowledge on to adults

2. Destruction of mosquito and larvae habitats

- Reduce vegetative growth surrounding small ponds
- Introduce natural predators of larvae – E.g. Gambusia affinis
- Remove, tip over or regularly clean artificial containers
- Initiate 'spraying of homes' programs to repel mosquitoes

3. Research of treatment, avoidance and cures

- Encourage financial investment by research bodies and governments
- Produce vaccine for malaria immunity
- Non-toxic repellent sprays for spraying programs
- Economically advantageous
- reduced child death rate
- increased healthy work force

Malaria Prevention

- Suitable clothing - long sleeves, long trousers
- Mosquito nets impregnated with insecticide - these could reduce the death rate by 20-30%
- Mosquito repellent
- Prophylactic antimalarial drugs for all pregnant women
- Spraying programmes



The Problem

- Malaria kills 1-2 million people a year world wide, mostly pregnant women and children
- Leaving 100's of millions more incapacitated or with severe anemia
- Ninety percent of these deaths occur in Africa, and is the single largest killer of children under 5
- The World Bank predicts the economic cost in Africa to be US \$12 billion a year
- Malaria is strongly associated with poverty, as our study of Zimbabwe shows

Every thirty seconds a child dies in Africa, killed by malaria. (That's twenty by the end of this presentation)



REFERENCES:

- studentBMJ 2003;11:437-480 December (ISSN 0960-6494)
- www.nuffieldtrust.org.uk
- Knowledge, practices, and perceptions about malaria in rural communities of Zimbabwe: relevance to malaria control. Bulletin of the World Health Organization, Jan 1996 v74, C. Vundule and S. Mhankurwa

Dropping like flies; the malaria problem in Zimbabwe

Evaluative Research

Aimed to gain information about:

- (i) Students' reactions to the course
- (ii) Ideas on modifications/improvements
- (iii) Students' insights into their own or others' disciplines
- (iv) What, if anything, was distinctive about *interdisciplinary* EBL experience

Numerical data

- Course unit evaluation forms, end week 6 (i.e. the end of the interdisciplinary team projects)
- Student self-evaluations, completed in the first session and at the end of week 6

Qualitative data

- Semi-structured interviews (individual students, mono & interdisciplinary groups)
- Open-ended questionnaire items
- Notes from teaching sessions and tutor meetings/discussions

Results:

Course unit evaluations

Main strengths

- (i) Working with 'new' people/those from other disciplines
- (ii) Learning new approaches to research and study
- (iii) Seeing problems from a different or more holistic viewpoint
- (iv) Freedom to choose topics/work independently

Semi-structured student interviews

Favourable responses to

- Tasks (posters, presentations, writing abstracts, responding to seen questions: to *‘really show what we know’*)
- Using WebCT: *‘without it we wouldn’t have been able to meet the deadlines’*

Less favourable responses to

- Delay in getting on with posters
- Too little time to go sufficiently deeply into a complex/intractable problem
- Compulsory for some students

Understanding/appreciation of own or others' disciplines:

- *knowing that you have to come at a problem from several different people's views. You can't ignore the other opinion because it's going to be an obstacle to your solving the problem. I think that geography has a role to play there*
- *'I didn't realise how sciency Geography could be'*
- *'the medic's was completely scientific and yours (education) was more like mine in that you look at all the different factors involved. It's good to have a mixture of thinking of the broad issues and then focussing down'*
- *'I was really impressed with the Languages people. They don't just study the language and we don't just study maps'.*

... but still progress to be made

- *'It would be good to include more disciplines'*
- *'Engineering would be cool, so would Law'*
- *'I don't think we want any fine art students here'*
- *'If you had a philosophy student, you could just sit round and talk'*
- *'I feel that the only real skill that they bring is the ability to speak Spanish'*
- Possible implications?

Distinctiveness of ID for students 1

- Novelty
 - Problem not directly related to their degree
 - Working with new people in new locations
 - Working closely with team mates throughout the process (contrasted with PBL)
- Learning
 - about how other disciplines approach research/ problem-solving
 - about what students on other courses are learning
 - new techniques or resources (eg note-taking techniques, displaying information, electronic journals & databases).

Distinctiveness of ID for students 2

- Being challenged
 - having to explain own disciplinary concepts and ways of working
 - pre-conceptions about other disciplines called into question
 - real and complex tasks that mirror interdisciplinary nature of future professional life

Staff perspective: embedding ID

- Interdisciplinary T&L is worth pursuing: for staff and students
- The basic model ‘works’
- Institutional constraints to overcome, e.g.:
 - Assessment
 - Funding, especially staff time and ‘ownership’ of FTEs
- Developing a 10-credit, university-wide option:
 - Standardise unit & assessment (eg pts 1 & 2)
 - Team + individual assessment
 - Staff development (shadowing): staff and PGs
 - More attention to *developing* ID communication skills

Thank you for listening
Questions, please.....

