

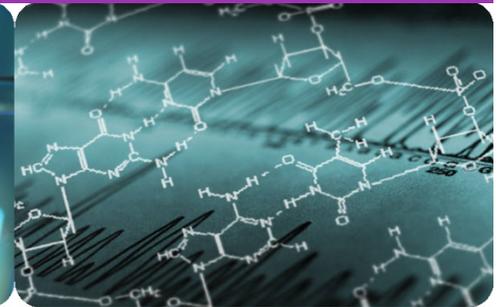


**UNIVERSITY OF
BRADFORD**
MAKING KNOWLEDGE WORK

School of Social & International Studies

Integrating Dual-Use Bioethics to Life Science Education

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University of Bradford**



**OIE Global Conference on Biological
Threat Reduction
30 June – 2 July 2015
Maison de la Chimie
Paris, France**

www.bradford.ac.uk

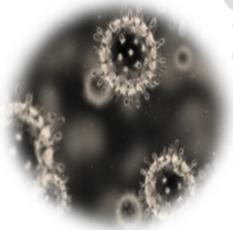
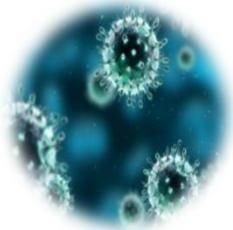
Outline

- 1. Dual use bioethics and its relevance to the life sciences**
- 2. Developing curricula**
- 3. Combining content with training strategy**



Why do we need to care? H5N1 Influenza 2011

Became contagious through air for mammals



Human to human?

Risk



Accident or Theft



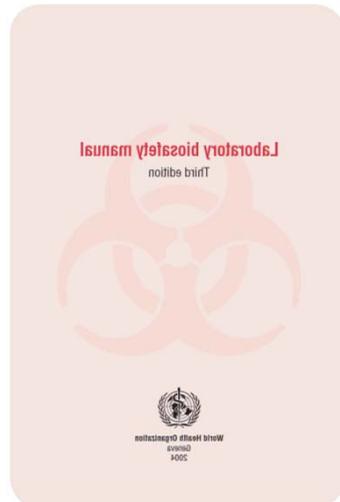
Remove experimental data

Intensive debate between scientists and security community

- The papers were published in 2012 by revising the manuscript,
- The case indicated there is **no internationally agreed framework on oversight.**



The Limits of Laboratory Biosafety and Biosecurity



WHO Biosafety Guidelines (2004), European Commission Laboratory Biorisk Management Standard (CWA-15793:2008)

The issue is **beyond** laboratories

The H5N1 researchers were aware about the WHO biosafety guideline and CEN biorisk (laboratory biosafety/biosecurity) standard, but the issue still emerged...

= (scientists had problems to publish their papers)

Dual Use Bioethics Education and the BTWC (i)

13. *The Conference notes the value of national implementation measures...to:*

*(c) promote amongst those working in the biological sciences **awareness of the obligations** of States Parties under the Convention, as well as relevant national legislation and guidelines;*

Standing Agenda Item on ‘*Review of Developments in the Field of Science and Technology related to the Convention*’:

*(e) **education and awareness-raising** about risks and benefits of life sciences and biotechnology;*

Dual-Use Bioethics Education and the BTWC (ii)

- *the concepts of biosafety, biosecurity and bioethics, as well as their relevance to life sciences;*
- *relevant national and international oversight, including import/export controls and the Convention;*
- *biosafety, biosecurity, dual-use and bioethical risks of life sciences;*
- *approaches for the management of research and responsible conduct of research;*
- *dual-use conundrums and dilemmas that arise due to the impact of science and technology on society; and*
- *communication dilemmas that arise due to ethical, legal and social considerations.*



An Education Gap in the Life Sciences



Dando and Rappert (2006)

- 90 biosecurity seminars in 13 different countries
- Found “a pervasive lack of awareness”

Where is Biosecurity: Analysing the Reasons



Understanding problems in Europe, Israel and the Asia-Pacific

Lack of:

- Space in the existing curricula,
- Time and resources to develop new curricula,
- Expertise and available literature on biosecurity education



Addressing the Gap

MEETING OF THE STATES PARTIES TO THE
CONVENTION ON THE PROHIBITION OF
THE DEVELOPMENT, PRODUCTION AND
STOCKPILING OF BACTERIOLOGICAL,
BIOLOGICAL AND TOXIN WEAPONS AND
ON THEIR DESTRUCTION

BWC/ASP/2008/5
12 December 2008
Original: ENGLISH

2008 Meeting
Geneva, 1-4 December 2008

REPORT OF THE MEETING OF STATES PARTIES

Introduction

1. The Final Document of the Sixth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Biological (Bacteriological) and Toxin Weapons, and on their Destruction (BWC/CONF/VI-6), in the Decisions and Recommendations section, contained the following decision:

The Conference decides:

(a) To hold four annual meetings of the States Parties of one week duration each year commencing in 2007, prior to the Seventh Review Conference, to be held not later than the end of 2011, to discuss and promote common understanding and effective action on:

- (i) Ways and means to enhance national implementation, including enforcement of national legislation, strengthening of national institutions and coordination among national law enforcement institutions;
- (ii) Regional and sub-regional cooperation on implementation of the Convention;
- (iii) National, regional and international measures to improve laboratory and biosafety, including laboratory safety and security of pathogens and toxins;
- (iv) Oversight, education, awareness raising and adoption and/or development of codes of conduct with the aim of preventing misuse in the context of advances in bio-science and bio-technology research with the potential of use for purposes prohibited by the Convention;
- (v) With a view to enhancing international cooperation, assistance and exchange in biological science and technology for peaceful purposes, promoting capacity building in the fields of disease surveillance, detection,

GE.09-60007



Final Document of the Meeting of States Parties of the BWC 2008

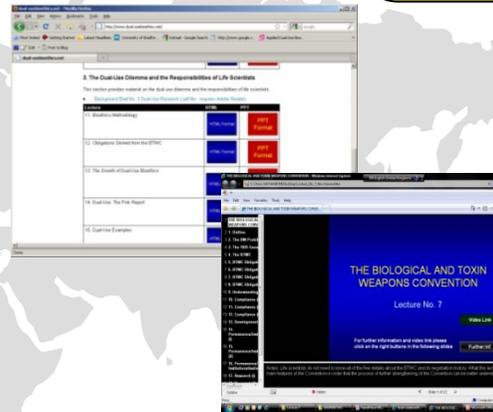
- Explains “*the risks* associated with the potential misuse of the biological sciences and biotechnology”
- Covers “*the moral and ethical obligations* incumbent on those using the biological sciences”
- Provides “*guidance on the types of activities* which could be contrary to the aims of the Convention and relevant national laws and regulations and international law”



Developing Content

Available in
**10 different
languages**

Biosecurity Education Module Resource (EMR)

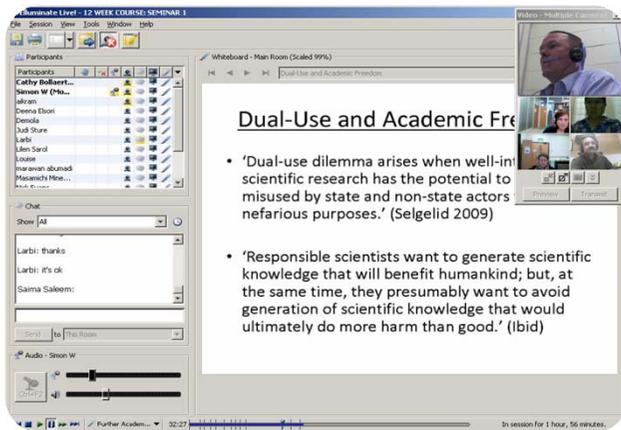


A free (open-source/shareware) on-line educational resource

- Threats of BW and terrorism (Lectures 1-Intro, 2-10)
- Responsibilities of life scientists (Lectures 11-18)
- National implementation of the BTWC (Lectures 19-20)
- Building web of preventive policies (Lecture 21)

Delivering Education

Step 1: Applied Dual-Use Biosecurity Online Distance Learning Course



Train the Trainer's Biosecurity Programme



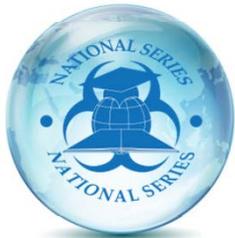
- Virtual classroom (PPTs, Webcam, Audio equipment),
- 30-Credit Course (UK Higher Education Master's level credit):
12 Lectures and 12 seminars in 12 weeks (3 hours weekly);
- Certificate Course: 6 lectures in 6 weeks



Step 2: National Series: Former Soviet States and The Middle East

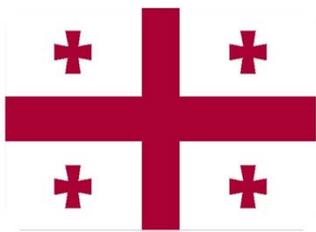
Immediate introduction of short biosecurity educational courses in specific countries

1. Developing Country-specific educational material,
2. Organising seminar with local contacts,
3. Facilitating biosecurity experts network,
4. Monitoring and evidencing course implementation, and
5. Report progress to the BTWC



What we do:

5 countries(2012-2013) + Additional 10 countries



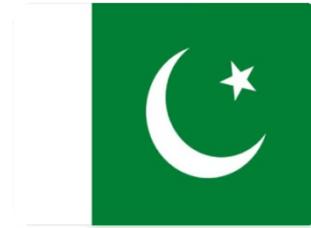
Georgia



Azerbaijan



Tajikistan



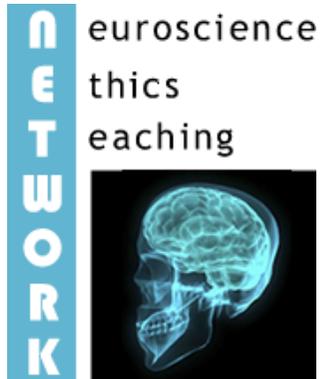
Pakistan



Ukraine

Project Agendas

1. Developing country specific educational material
2. Organising seminar with local contacts
3. Facilitating biosecurity experts network
4. Monitoring and
5. Reporting to the Biological Weapons Convention



Making ethics teaching in neuroscience work

Step 3: Specialised Courses

Neuroethics Education Module

1. Science Ethics and Responsible Conduct of Research
2. Clinical Practice
3. Experimental Practice
4. Cognitive Enhancement
5. Uses and Interpretation of Brain Imaging
6. Neuroscience of Morality and Moral Enhancement
7. Concepts and Approaches in (Neuro)Ethics
- 8. Introduction to Biosecurity and Dual-Use**
- 9. Novel Neuroweapons**
- 10. Chemical Weapons**
- 11. Biological Weapons**
- 12. The CBW Non-Proliferation Regime**

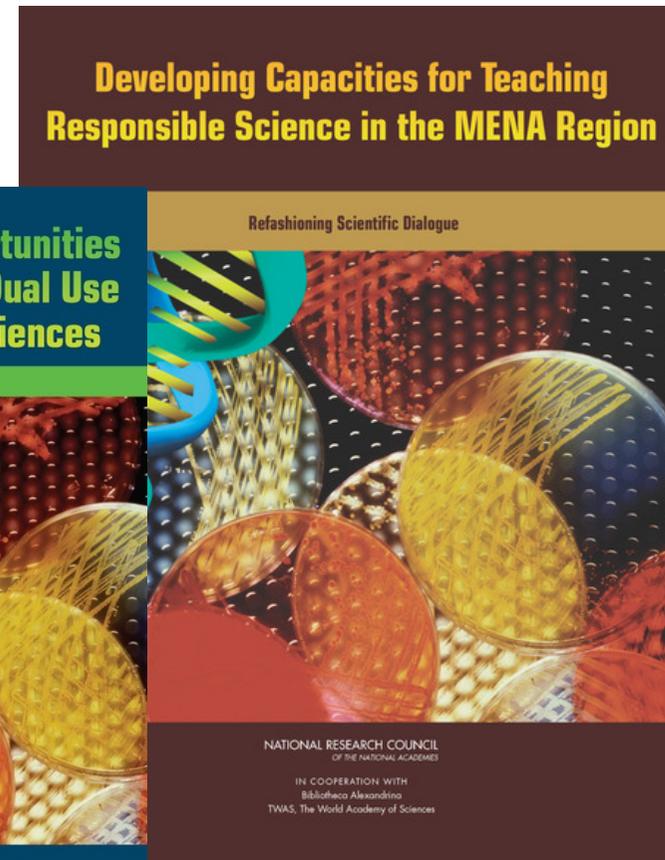
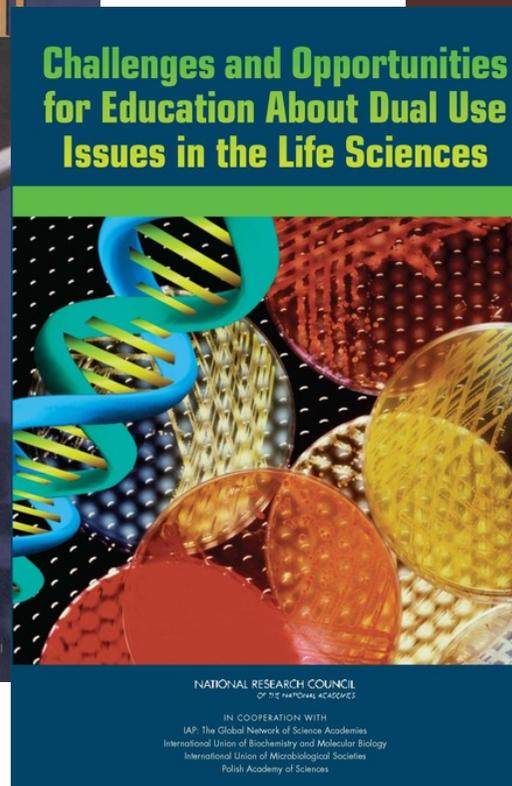
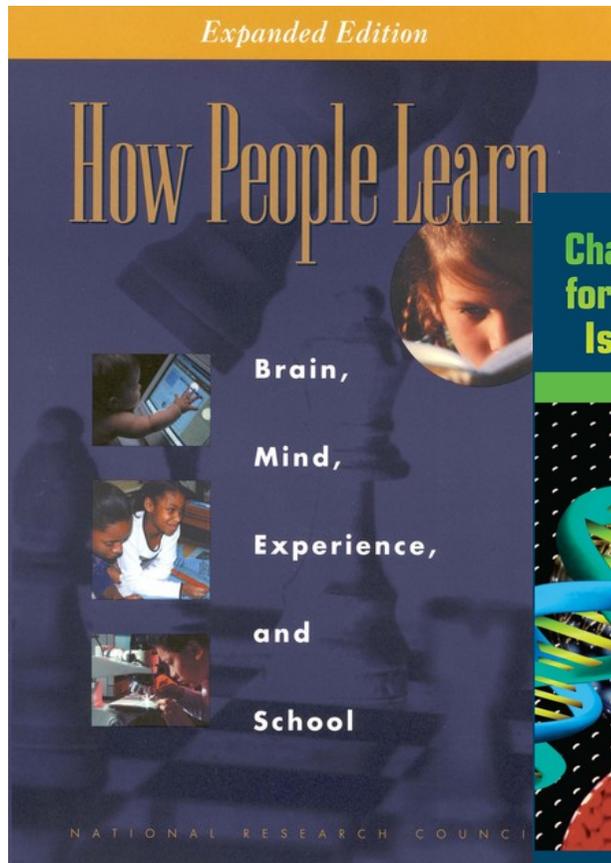
Why Pedagogy Matter?

- *'humans are not adept at making connections between disparate fields or types of knowledge, unless they are specifically helped to do so through education'* (NAS 2000)

Therefore, for education to be effective, attention has to be given both to the **content** of what is being taught and the **method** being used for the particular group being educated.



Active Learning

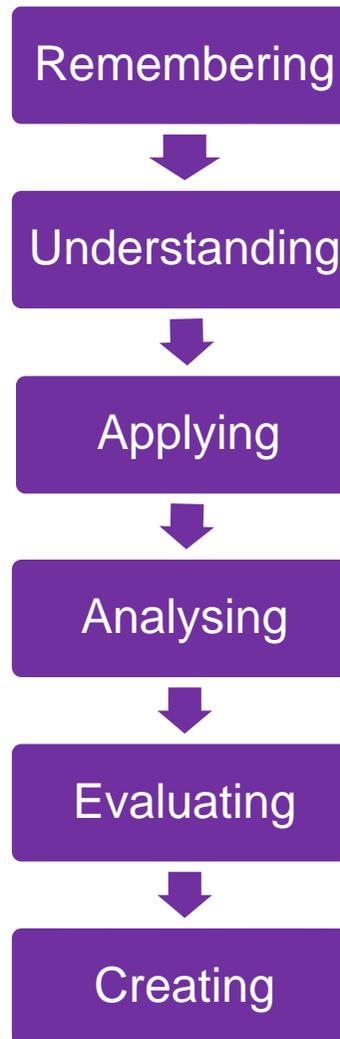


Team-Based Learning (TBL)

A special form of collaborative learning that **uses a specific sequence of individual work, group work and immediate feedback** to create a motivational framework, whereby the focus is shifted from conveying concepts by the instructor **to the application of concepts by student teams**



1. Pre-Reading Activity
2. Individual Readiness Assurance Test (iRAT)
3. Team Readiness Assurance Test (tRAT)
4. iRAT and tRAT Feedback Session
5. First Team-Based Application Exercise
6. Second Team-Based Application Exercise

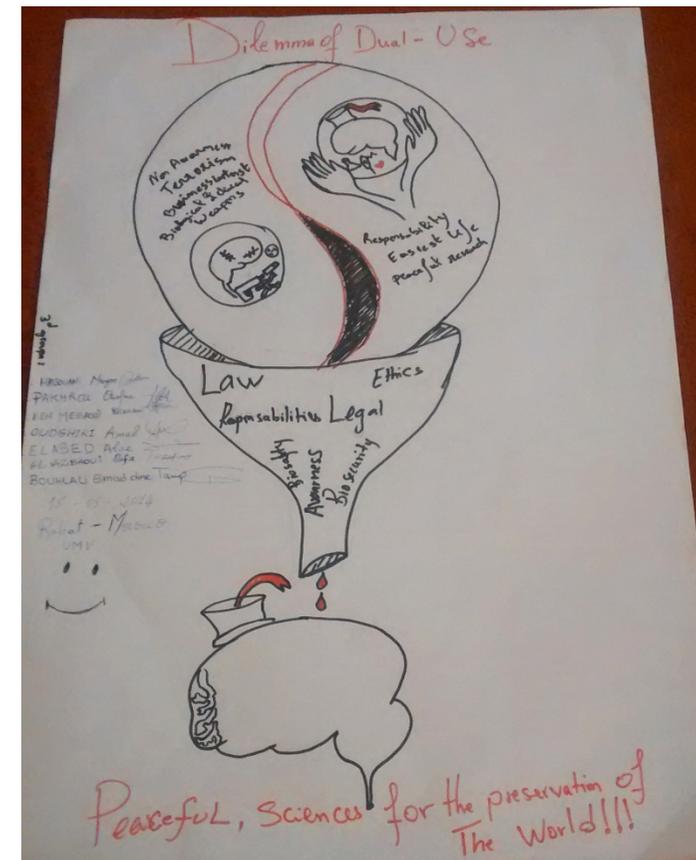
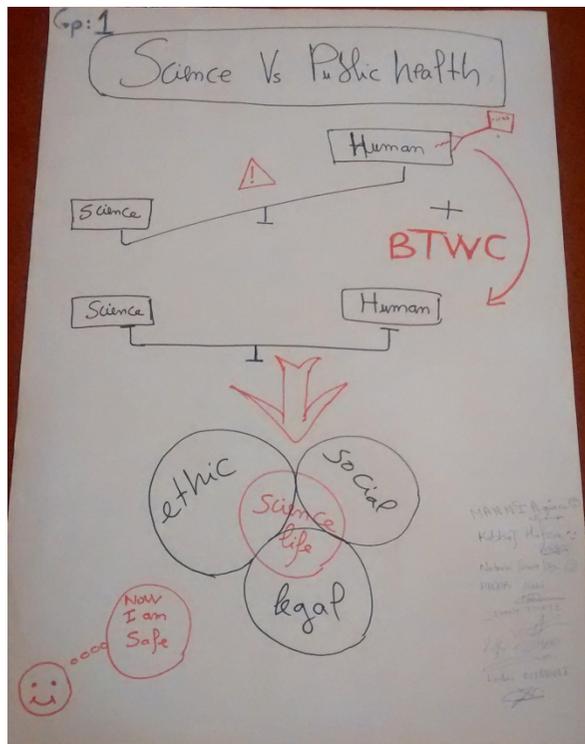


TBL in Bradford...

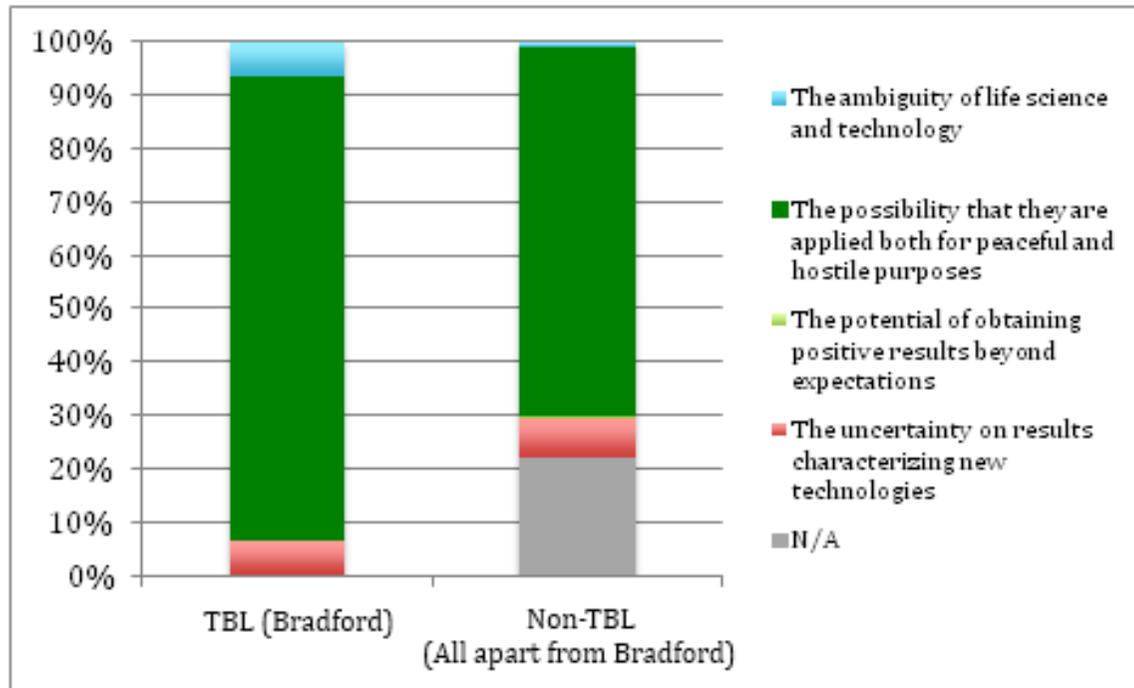




...and in Morocco



Teaching Biosecurity via Team-Based Learning



- *Bioethics and Responsible Research*, interactive seminar held at the University of Bradford (November 2012)
- 30 participants divided into 5 teams

“Which of these statements best defines the dual-use dilemma?”

Achieving Sustainability

**Development of educational material → Training trainers →
Supporting alumni in promoting education activities**

- EMR → Online Train-the-Trainer in Applied Dual-Use Biosecurity → REF Impact Survey (feedback from past participants)
- National Series → Implementation and Training Exercises → Education Activities in Georgia; National Education Network in Ukraine

Utilising Cutting-Edge Pedagogy

- Expert-Level Scenarios based on Real-Life Cases;
- Group Presentations
- Team Based Learning at UG and PG level

Biosecurity Textbook

- Jointly funded by Canada's Global Partnership Programme and the UK Global Partnership Programme
- An online book that would be made available initially in both English and Arabic
- Main issues to be covered: biosecurity and non-proliferation challenges; past and present threats; multilateral initiatives to promote biosecurity; key international organisations and legal instruments; examples of best practice in biosecurity.
- Focus on active learning: a set of TBL exercises to accompany each chapter
- An example of the required state-led long-term integrated strategy on biosecurity education and awareness-raising

Thank you for the attention!
Any Questions?

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http://www.brad.ac.uk/bioethics/