

Enhancing Biosecurity Education: BioSecurity Textbook

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**BWC Meeting of Experts
Side Event on
*Safeguarding Science in the 21st Century: BioSecurity
Textbook***

**11 August 2015
Salle XXIII, Palais de Nations
Geneva, Switzerland**

Report of the UN Secretary General, 2002

5. *Education and training remain **important** but **underutilized tools** for promoting peace, disarmament and non-proliferation.*

10. *A global disarmament and non-proliferation culture **cannot be accomplished easily or quickly**. [...] Member States, international organizations, academics and NGOs are essential actors in this **long-term effort**. Its success will depend on a **partnership** that includes each of these communities and the provision of **adequate financial resources**.*

13. *Member States, in cooperation with the United Nations and relevant international organizations, are encouraged to sponsor **training, fellowships, and awareness programmes**, on as wide a geographical basis as possible, for **researchers, engineers, scientists and other academics** in areas of particular relevance, but not limited to treaties and agreements on weapons of mass destruction and their means of delivery.*



What Is Needed?

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/MSP/2008/9
12 December 2008

Original: ENGLISH

2008 Meeting
Geneva, 1-8 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 Bacteriological (Biological) and Toxin Weapons and on their Destruction (BWC/COP/VI), in the Decisions and Recommendations section, contained the following decision:

"The Conference decides:

- (i) 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:
 - (a) Ways and means to enhance national implementation, including enforcement of national legislation, strengthening of national institutions and coordination among national law enforcement agencies;
 - (b) Regional and sub-regional cooperation on implementation of the Convention;
 - (c) National, regional and international measures to improve biosecurity and biosafety, including laboratory safety and security of pathogens and toxins;
 - (d) 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;
 - (e) With a view to enhancing international cooperation, assistance and exchange on biological sciences and technology for peaceful purposes, promoting capacity building in the field of disease surveillance, detection,

GE.09.40007



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”

CBRN Security Education

Nuclear Security (Nuclear Security Plan, 2014 – 2017)

*To provide a **coordinated education, awareness raising and training programme in nuclear security** that meets the requirements and needs identified by Member States.*

Chemical Security (Third Review Conference of the CWC, April 2013)

*9.101 The Third Review Conference **acknowledged the role of education, outreach and awareness-raising as a relevant activity for the national implementation of the Convention** [...].*

Biological Security (Seventh Review Conference of the BTWC, December 2011)

*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;*

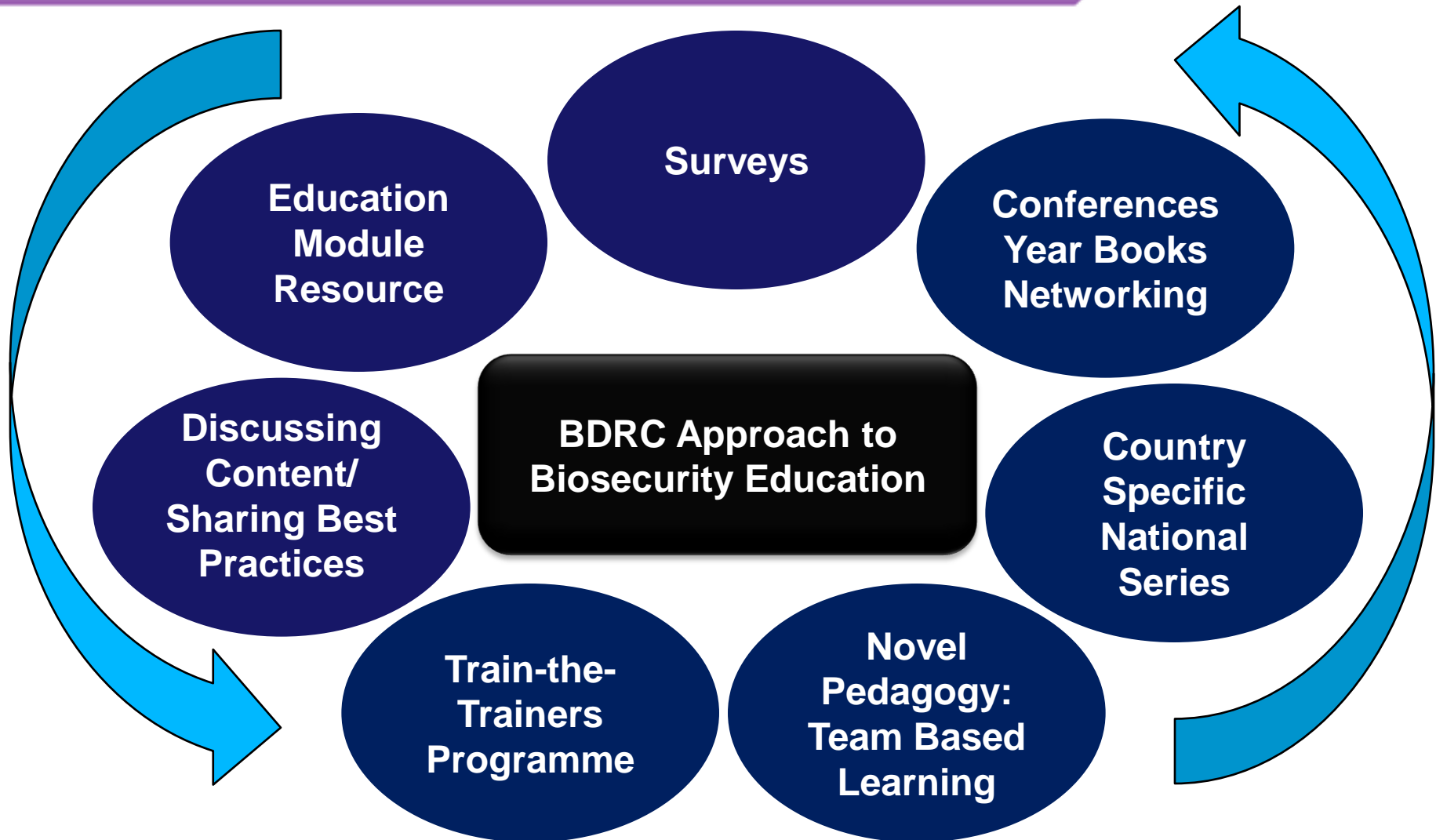
An Integrated Model Approach: Characteristics

Informed by the Nuclear Security Education Experience

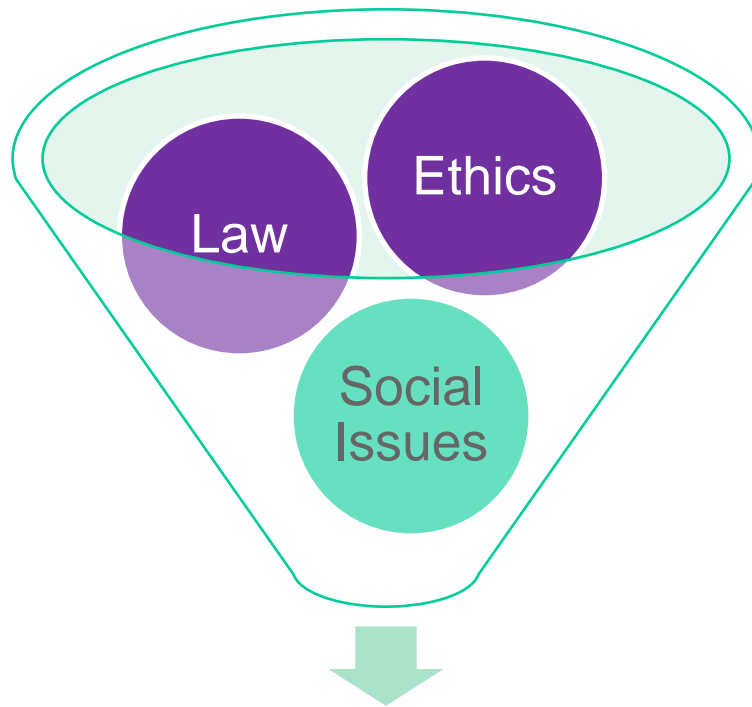
- State-led, multi-level (e.g. international, regional, national) action
- International coordination and cooperation
- Systematic strategic planning
- All inclusive, multi-stakeholder engagement: National Authorities, International Organisations, industry, professional associations, NGOs, academia;
- Well defined short- and mid-term objectives with clear milestones and criteria (indicators) for measuring effectiveness
- Adequate financial support
- Focus on sustainability and local ownership
- Long-term unequivocal commitment

Joint Wellcome Trust, BBSRC and MRC Statement: July 2015

We believe that a system based primarily upon **self-governance** by the scientific community, but **drawing on the inputs of other key stakeholders**, will ultimately provide the most effective means of managing risks of misuse. We suggest that the community, of which we as funders are part, **should take active steps to further develop mechanisms of self-governance**, and that through doing so the community can ensure that responsibly conducted research is not unnecessarily obstructed. Crucially, this process must be underpinned by **an active ongoing dialogue** between researchers and other key stakeholders, including Governments and security services.



BioSecurity Textbook: An Example of a State-Led Approach



BioSecurity Textbook



Canada



BioSecurity Textbook: Key Features

- An edited volume: contributions from academics, scientists, biosecurity practitioners, government representatives, law enforcement
- Target audience: undergraduate life science students **but** the content is easy to adapt to different settings and for different purposes
- Conceived as an **online** book **freely available**
- Initially available in **English** and **Arabic**
- An **active learning component** to facilitate dissemination
- Expected publication date: **MSP/2015**

BioSecurity Textbook: Content

Key Themes

- Threats and responses: challenges posed by the advancement of S&T; relevant international agreements; web of prevention
- Role of Scientists in Biosecurity: international scientific organisations, industry
- Role of Organisations in Biosecurity: national and international law enforcement, BWC ISU
- Role of States in Biosecurity: national experiences of Denmark, Jordan, South Africa, Canada
- The Relevance of Active Learning to Biosecurity

BioSecurity Textbook: Strategy

- *‘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.

Each **Textbook chapter** is accompanied with a set of **Team-Based Learning** exercises.

Biosecurity Education and the BTWC

The Meeting of States Parties in 2013

- *agreed on the value of promoting education on the Convention and the dual-use nature of biotechnology, including **through preparing easily accessible and understandable courses**, integrating consideration of biosecurity with broader efforts on bioethics, and **assessing the impact of such education**.*
- *agreed on the value of using **science responsibly as an overarching theme** to enable parallel outreach efforts across inter-related scientific disciplines, as well as taking **full advantage of active learning techniques**, consistent with national laws and regulations*

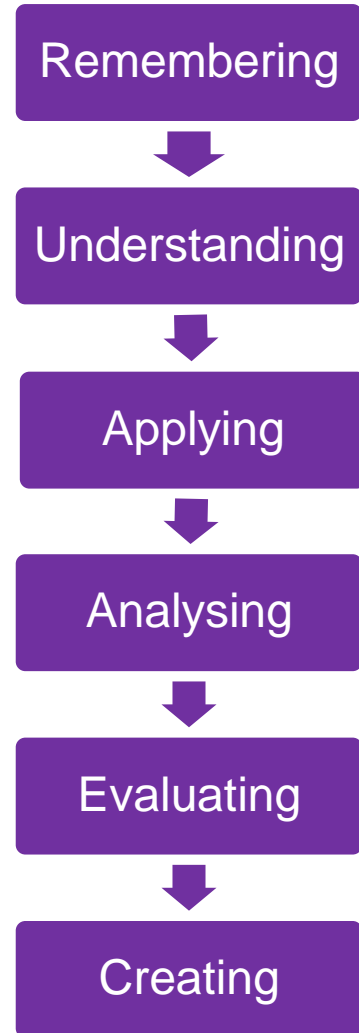


Team-Based Learning (TBL)

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 Interactive Seminars: Bradford (2012), Morocco (2014), Tajikistan (2015)

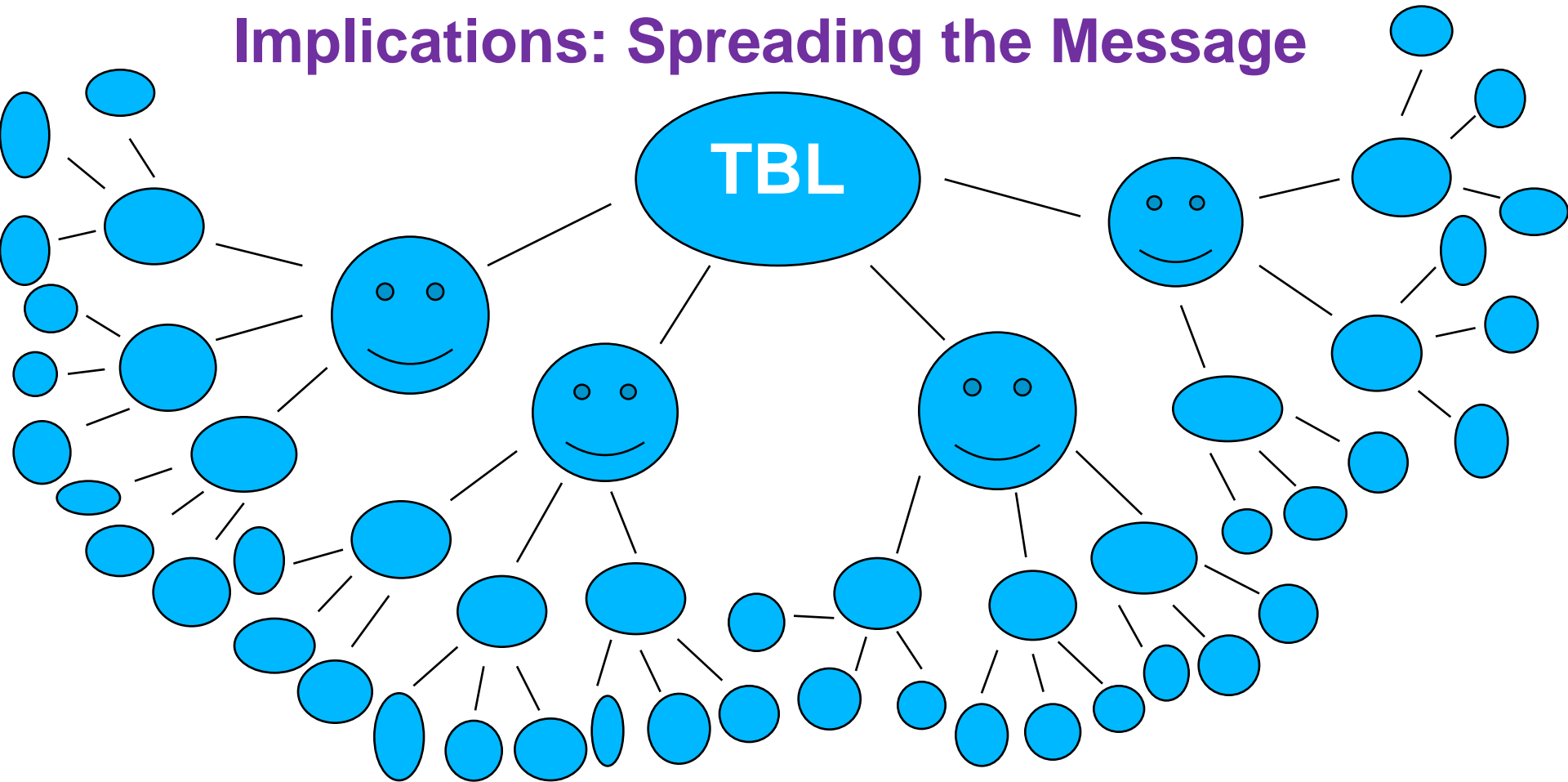


Why TBL?

- Team-Based Learning is an efficient and effective technique for teaching biosecurity both to prospective and career life scientists
- It allows learners to acquire practical action-oriented skills and capacities
- It is easy to replicate, so no extensive prior training is required
- It is applicable in different educational contexts with various audiences and for different purposes
- It is an useful approach for training trainers and fostering sustainable networks



Implications: Spreading the Message



BioSecurity Textbook: Further Steps

- English and Arabic versions to be launched at MSP 2015
- Wide online dissemination: outreach to life science faculties and departments worldwide
- Prospects for additional translations to facilitate the implementation of the textbook in different countries and regions
- Development of follow-up volumes and other supporting material

Biosecurity Education: What Is Needed?

- State-level leadership, commitment and support
- International coordination and consolidation of effort among various stakeholders
- Improved mechanisms for channelling resources, monitoring progress and evaluating effectiveness/results
- Support for the establishment and maintenance of networks for sharing of expertise, lessons learned and best practices
- Setting objectives and defining milestones
- Provision of financial support
- Strategic planning

Without such a large-scale and long-term commitment and effort, ignorance would remain the norm.

Milestones

Short and Mid-Term

- Development of a comprehensive strategic plan for biosecurity education implementation internationally
- Establishment of an international education network
- Production of biosecurity curricula, textbooks, manuals etc.
- Establishment of regional hubs and national networks for delivery of biosecurity education and training
- Regular reporting and update of national activities under the BTWC

Long-Term

- Development and exchange of models of best practice for national implementation of biosecurity education (e.g. introduction of mandatory modules and short courses)
- Development and exchange of models of best practice for pedagogy



Thank you for the attention!

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