

# **Biological Security Education Handbook: The Power of Team-Based Learning**

## **APPENDIX A**

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## APPENDIX A

### **FACILITATION NOTES ON PREPARING FOR, HOLDING, AND ASSESSING TEAM-BASED LEARNING SEMINARS**

The following section is specifically aimed at lecturers, instructors, and training providers, in order to provide further guidance and useful information on how to prepare for, hold, and evaluate the quality and effectiveness of Team-Based Learning (TBL) seminars and classes. Part One gives a step-by-step overview of the process of organising and facilitating a TBL session. Part Two then looks into the particulars and the adjustments that need to be taken into account when the TBL format is adopted for one-off sessions, in contrast to being used systematically over an extended period of time with one and the same audience.

#### **Part One: ‘Cradle-to-Grave’ Overview of the TBL Format in Use**

Whether you are already familiar with the subject matter of biological security, or you are beginning to engage with it, the TBL format can be of both interest and help to you. If you have been teaching or delivering training in biological security, you may wish to diversify your approaches and perhaps try something new. Or, if you would like to introduce a relevant class or module and are searching for a novel and interactive mode of doing that, TBL is an excellent strategy for engaging students and trainees, regardless of their age, level of instruction, or career stage.

Once you have decided that you would like to incorporate *Preventing Biological Threats: What You Can Do* into the tools and resources for raising awareness of biological security at your institution, developing a better understanding of the training methodology underpinning the book is an asset which will help you in delivering training content effectively and efficiently.

#### # Step 1: Identify Your Audience

A useful feature of the TBL format is its adaptability, that is, the possibility of using the approach in different training and learning environment and settings, with various audiences, and with diverse auxiliary tools and technological platforms. Whether you are planning a short course for established practitioners as part of a continued professional development (CPD) scheme, or a semester-long module for undergraduate students, or a series of interactive seminars with doctoral students, you can use the TBL format for promoting a participant-centred mode of instruction, that is underpinned by practical application of conceptual knowledge, reflection, and self-assessment. Appendix B offers practical tips and suggestions on how to design training sessions using individual chapters, based on the target audience and the learning objectives, that you want to achieve.

## # Step 2: Preparation

Pre-planning, time-mapping and time-keeping are critical, regardless of whether you intend to hold a single TBL seminar, or multiple TBL sessions. You (and your co-facilitator, if applicable) may wish to devise a session schedule, in order to ensure effective time management. Note that the session timing provided in Table 1.2 in Chapter 1 is only indicative. Make sure you leave time for debrief after each application exercise, and for an overall session debrief at the end. You may also wish to prepare some probing questions for the Application Exercises, in order to encourage discussion, if necessary. Alternatively, if there are particular elements that you wish to emphasise or highlight throughout the session, it is helpful to have a set of probing interventions – in the form of questions or comments – so that you can maintain a focused discussion.

Team packs are best prepared in advance, so that each team can get theirs upon arrival in class. Make sure that these are identical and that all necessary materials are included. If you are using online tools for assessment and evaluation (see below), make sure that these are fully operational, prior to the session. You may wish to consult Appendix A to the Guide for additional information on relevant resources and materials, that could be shared with participants in class. Finally, make sure that the pre-reading material is made available to participants **at least a week** in advance of the session.

## # Step 3: Forming the Teams

As a facilitator, it is important that you assume control for the formation of teams. This is best done by way of organising participants, in order to ensure that the risk and success factors are distributed. To this end, you may wish to pose a question which will enable participants to place themselves on a spectrum. You can ask them to line up based on their level of professional seniority, length of professional experience (either in general, or in a particular field), prior experience with active learning etc. Alternatively, you can pose a question, that is aimed at eliciting views and attitudes. In other words, a question that pre-supposes variance of opinions, on the basis of which participants can line up from ‘yes’ to ‘no’, or from ‘strongly agree’ to ‘strongly disagree’ etc.

Once participants have formed a line, you can use the strategy of ‘count off’ to form the teams. Depending on the number of learners, decide how many TEAMS you will require, bearing in mind that each team should have roughly 5-6 members. Then ask the learners to count off by THE NUMBER OF TEAMS. Example: a group of 35 learners can be split into 7 teams of 5. To do this, learners are asked to count by 7 until each of them has a number (1 to 7). Those who have got number 1, form the first team; number 2 – the second; number 3 – the third etc.<sup>1</sup>

## # Step 4: Facilitating the Session

As a facilitator, your primary role is to keep discussions at all time focused and in line with the set learning objectives. Whenever you feel that participants may be diverting from the main topic of the session, you need to intervene and stir deliberations, in order to ensure that

the defined goals are achieved. Remember that the participants and not the facilitator should be the focus of attention during the learning activities. As a facilitator, your key function is not to teach, but to foster a stimulating environment that supports and promotes learning. The key differences between effective facilitation and effective teaching are summarised in Table A.1 below.

**Table A.1: Effective Facilitation vs. Effective Teaching<sup>2</sup>**

Effective Facilitation	Effective Teaching
<ul style="list-style-type: none"> <li>• Emphasises collective learning</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasises individual learning, but can also foster collective learning</li> </ul>
<ul style="list-style-type: none"> <li>• Guides the process for the development of knowledge and skills</li> </ul>	<ul style="list-style-type: none"> <li>• Conveys concepts and knowledge</li> </ul>
<ul style="list-style-type: none"> <li>• Emphasises reflection and deeper understanding of pre-existing knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasises the acquisition of new knowledge and understanding in specific content domains</li> </ul>
<ul style="list-style-type: none"> <li>• Expertise is shared among the facilitator and other learners</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher often serves as the knowledge expert</li> </ul>

In order to ensure that participants are provided with immediate (and timely) feedback, the use of tools, such as [the] Clickers<sup>3</sup>, PollEverywhere, and scratch cards is recommended. In the absence of technology-based aids, immediate feedback can be provided through facilitation. For example, if you are not relying on an online assessment system for the iRAT and tRATs, it might be helpful to have slides with the relevant questions, which you can show during the Feedback session to highlight any key points. Writing comments and questions that participants may want to raise on flipcharts or a white board is another strategy for ensuring that those are adequately addressed during the session.<sup>4</sup>

#### # Step 5: Debrief

It is important to allow time and space for participants to feed in their reflections, questions, issues, and thoughts, both throughout the session and at the very end. This process will allow you, as a facilitator, to gain understanding and evaluate the extent to which participants have managed to achieve the learning objectives, that have been set at the start of the session. Each

Application Exercise needs to be followed by debrief, so bear this in mind when you are planning and timing your session.

## **Part Two: One-Off TBL Seminar**

It is possible to use the TBL format for one-off training sessions and classes. When doing so, there are a few important tips and points to remember.<sup>5</sup>

### # Preparation

Besides the steps outlined in the previous sections, there are a number of adjustments that may be necessary when using the TBL format for the purposes of a single session. Generally, team accountability and peer evaluation discourage free-riding, and offer incentives for participants to come to the session prepared. Yet during one-off sessions, the benefits of those features cannot be accrued, not least because the teams are only formed at the start of the session. Hence, it is key that sufficient alternative incentives are given to participants prior to the seminar, in order to ensure that they will come prepared. Making the pre-reading material available early in advance will provide participants with time to review and acquaint themselves with it. In addition to the relevant chapter of the Guide, it might be useful to share some additional material, in the form of audio-visuals and multimedia. If possible, you could even record a short video presentation, that offers an overview of the training content and the course learning objectives.

Make sure that all participants are informed (and reminded!) that they are expected to complete the pre-reading tasks, prior to the training event. Clear instructions need to be given in advance, stressing the importance of pre-class preparation, as failure to complete it would preclude participants from benefiting fully from the class.

A possible back-up plan is to time the seminar in a way that would accommodate an introductory session on the pre-reading activity – this could be especially useful if it turns out that more than half of the participants have not completed it. In this case, using different audio-visual aids and even showing a short film relevant to the session topic, in combination with an overview of the content of the relevant chapter of the Guide, will provide participants with basic knowledge, which in turn will allow them to actively engage with the tasks.

If this is a session targeted at lecturers and instructors, you may wish to allocate sufficient time at the end for discussion on the strengths and weaknesses of the format, as well as on how it can be adapted to different local circumstances.

## References

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<sup>1</sup> Further information on team formation is available at [http://www.teambasedlearning.org/answers-to-faqs/#q3\\_1](http://www.teambasedlearning.org/answers-to-faqs/#q3_1) (accessed 25/02/2016).

<sup>2</sup> Committee on Developing a Framework for an International Faculty Development Project on Education About Research in the Life Sciences with Dual Use Potential, Developing Capacities for Teaching Responsible Science in the MENA Region: Refashioning Scientific Dialogue (Washington DC: National Academies Press, 2013), available at [http://nap.edu/catalog.php?record\\_id=18356](http://nap.edu/catalog.php?record_id=18356) (accessed 25/02/2016).

<sup>3</sup> For an overview of the Clickers, see Centre for Teaching, Vanderbilt University, *Classroom Response Systems* (“Clickers”), available at <https://cft.vanderbilt.edu/guides-sub-pages/clickers/> (accessed 30 November 2015).

<sup>4</sup> On the topic of facilitating TBL sessions, see Charles Gullo et al. ‘Twelve Tips for Facilitating Team-Based Learning’, *Medical Teacher*, vol.37:9 (2015), pp.819-824.

<sup>5</sup> On the topic of running one-off TBL seminars, see Julie Considine et al., ‘Participant Evaluation of Team-Based Learning Using One-Off Teams in Hospital Setting’, *Australasian Emergency Nursing Journal*, vol.17: 2 (2014), pp.68-76.