

Transforming the Approach of the Traditional Biosafety Training and Biosafety Profession

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Introduction

The importance of training for a good response to critical situations in laboratories and healthcare settings are part of the strategic planning and need to be considered in the day to day. Regardless of institutions or countries, emergencies and critical situations will occur. Dedicated staff and other related healthcare professionals involved in the biorisk assessment process must be trained in order to identify all the hazards, and for providing an adequate response. Since December 1st, 2018, the MSU community has been able to access multiple trainings by using a specific MSU platform (*Ability Training Compliance*). Ability platform has been used for assigning and tracking of required training for academics, students, researchers, and other staff. However, part of these educational activities have become a huge challenge for modern society, particularly in resource-limited settings because this staff often works in environments where time and resources for education are minimum, or just not considered a priority by top management. In addition, training can be difficult in resource-limited settings due to budget cuts and understaffing.

Project goal

- *International Approach:* Strengthening the existing alliances with Latin American countries by updating the biosafety and healthcare professionals with biosafety knowledge through weekly academic seminars.
- *National Approach:* Continue promoting biosafety training among the MSU community (Principal Investigators, researchers, staff and students).
- Compare training strategies, resources, and challenges from attendees on a local and international level.

Objectives

- Identify the basic needs for delivering an effective biosafety training as well as, the critical aspects that can be encountered by instructors, mentors or designees during the educational activities.
- Provide different resources that can be used to evaluate the technical competence of individuals in biosafety and biosecurity training.
- Demonstrate the imperious need of how to use soft skills to strengthen the hard skills in the critical thinking process in order to mitigate biorisk in labs and institutions that work with biological materials.

Methods and Materials

- *National Approach:* Review, promote, track compliance and help to keep updated the biosafety training of MSU community by using the MSU institutional platform.
- *International Approach:* Promote the acquisition and update of biosafety knowledge among participants from 5 Latin American countries by the implementation of weekly training sessions.

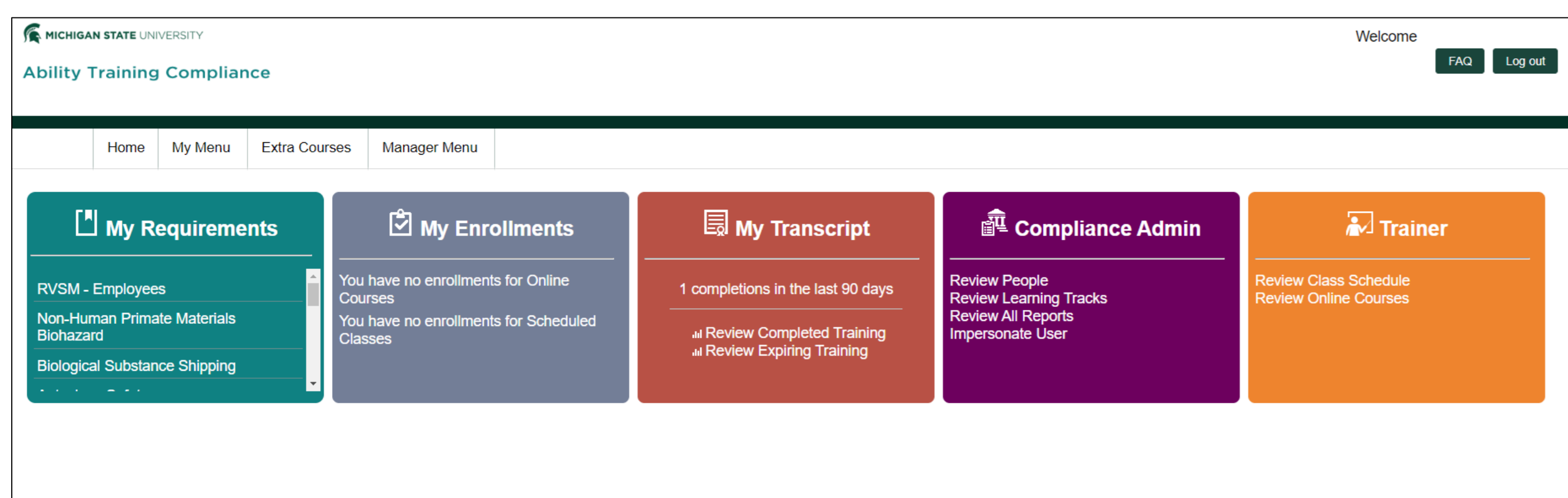


Figure 1 – MSU Ability Training Compliance Platform for MSU community.

Results

- *National approach:* Biosafety trainings on Ability platform include Biosafety Principles, Biological Substance Shipping, Autoclave Safety, Chemical Hygiene and Hazardous Waste, Bloodborne Pathogen, Medical Waste Management, Respiratory protection (N95/PAPR), among others.

Fit Testing Training (N95) (July 2021-July 2022)	223 students
MSU Colleges	4
Members that did not show up	9

Table 1 – Fit Testing Training from July 2021 – September 2022.

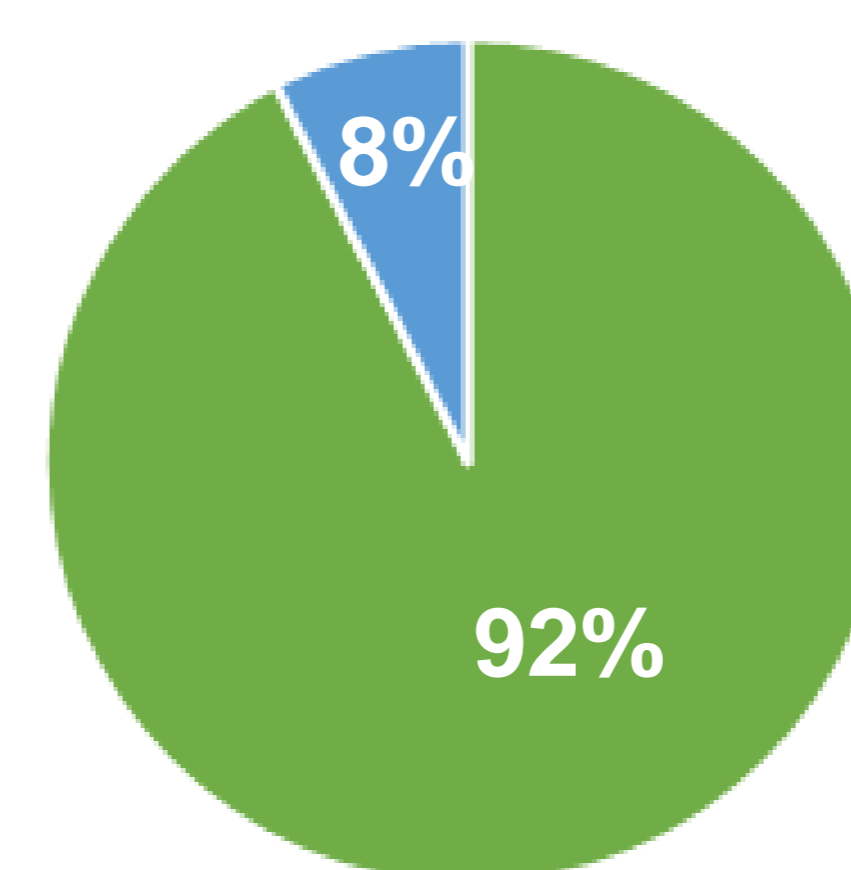
	<i>Staff Trained</i>
BSL-3 Training/Select Agents	18
Members from SA labs	2
Members from non-SA labs	13
Other areas (EHS office, Facility Manager)	5

Table 2 – BSL-3 Training from June 2022.

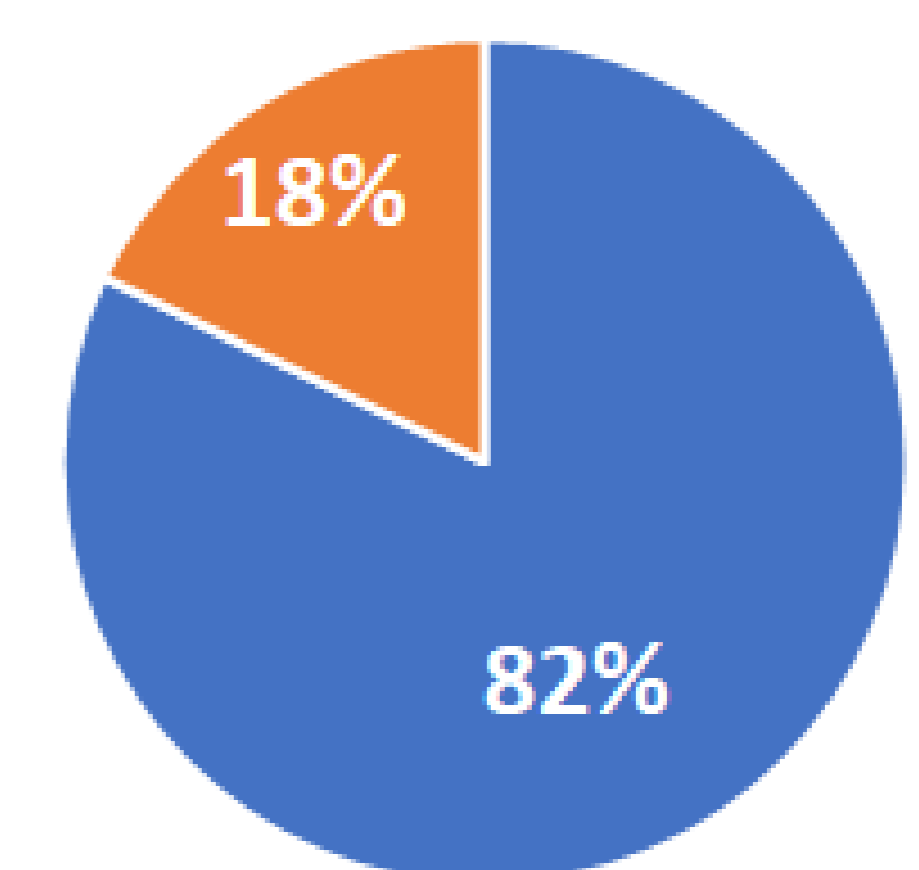
Abstract

The healthcare professionals of the 21st century transcend boundaries of institutions, disciplines, and countries. Providing education and training has been mentioned for several years as the basis for creating essential and strong pillars for success. However, providing training and the effective share of knowledge is difficult. This has different degrees of complexity, because it requires understanding of different needs, cultures, languages, systems and geographical location of participants. Even though the efforts promoted by academic institutions, government agencies, healthcare industry among others, some of them are only focused on the production of knowledge, but not in its analysis or the development of soft skills such as conflict resolution, critical thinking or strategic planning. As we gradually start returning to the new normal, questions regarding the future strategies for keeping updated, involved, and active our healthcare- or life sciences-staff against future pandemics preparedness or response remained unanswered. This work included the local experience during training sessions, but also its interaction with selected international biosafety professionals from Latin America.

MSU Community Training Status



MSU Biosafety Training Status



■ MSU active accounts ■ MSU bio-related active accounts ■ Complete training ■ Incomplete training

Graphs 1 and 2 – MSU Community Training Status and MSU Biosafety Training Status

Currently MSU has 81,315 active accounts of which 6,600 are bio-related.

- *International approach:*

Articles reviewed from July 2021 – July 2022: **50** Source: *Applied Biosafety Journal*

Training sessions utilized Microsoft PowerPoint presentations.

	Access to E-learning platform	Dedicated staff for training	Full-time biosafety professional	Support from top management	Access to training resources	Access/Communication with local biosafety association	Training Financing
<i>Local level</i>	Yes	Yes (most of the time)	Yes	Yes	Yes	Yes (most of the time)	Institution or Organization
<i>International Level</i>	No	No	No	Not always	Yes (limited and not specialized)	Not always	Employee most of the time

	Participation from attendees (E-learning)	Participation from attendees (in-person)	Participation if attendees need to pay	Time used for the training
<i>Local level</i>	No	Yes	Yes (sometimes)	Job time
<i>International Level</i>	Yes	No	No (most of the time)	Job time/Vacation time/Personal Time

Tables 3 and 4 – Perception and participation from attendees during trainings – A comparison between Local and International Level

Conclusions

Different biosafety and biosecurity trainings have been conducted at MSU using different strategies (i.e., E-learning and in-person). Regardless of the local or international level, remote training offers good opportunities to participants to continue their engagement and keep them active. However, the lack of personnel dedicated to review and update these trainings in resource-limited settings can be one big challenge. Among the advantages of having an E-learning platform is that it allows to keep trainees updated regarding their training status (i.e., expiration date or new required trainings). Likewise, this modality allows carrying out training to a greater number of people, compared to in-person training. Some trainings (i.e., BSL-3 and Select Agents), require face-to-face training by institution's specific area (i.e., EHS Office) and this is independent of the on-site trainings required by the PI. Among the difficulties found we highlight the challenges to maintain the attention of the participants as well as sometimes their involvement in the training (i.e., participation). From the international perspective this was a great issue as well as the cultural and language gaps. Lack of support from the authorities to allow participation of the attendees were also among the challenges and improvement areas. Training resources are needed as well as the creation of effective tools (i.e., virtual platforms). Regarding the strengthening of soft skills, some sessions included the review of safety behaviors or topics related to conflict resolution, teamwork, and biosafety leadership. After reviewing this articles some attendees participated sharing their experience at their own institutions.