

Total Approach of the Training for Graduate and Undergraduate Students in Medical Related Area in Japan.

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Background:

Legal requirements for pathogen possession as well as continuously occurring near misses and accidents in teaching laboratories led decision to turn experiments for students in the university more "safer". None hazardous mock bacteria culture and readily prepared dispensed materials use may made experiments safer but degraded technical level of graduate students who expected to work alone on the research bench. Biosafety and biosecurity basic knowledge and skill teaching prior to handle real "samples and hazards" became absolute necessity.

Biosafety involves people from wide range of background. Establishing one single standard system for "training for everybody" may not be easy. However, it could be more straight forward for the students as they start from the same "close to zero knowledge".

Objectives:

Create programme for systematic education and training of biosafety and biosecurity for students employing many different teaching approaches to make importance of risk management unforgettable and understandable in their fresh mind.

Subjects:

Undergraduate and Graduate students in risk management and clinical laboratory technician courses.

Methods:

Based on past 3 years' experiments using various modes of education and training tried at collaborating universities, e-learning, problem oriented group work, gaming and simulation and short introductory lectures were combined for biorisk management training.

Pre and post course and a year later exam were carried out using same questions in different order for evaluation.

Results:

Fig1. Power point based self oriented introduction programme of basic terminology and concept of biosafety and biosecurity. It explains fundamental terminology, why needed and principle concepts of biosafety and biosecurity, but does not include practical risk assessment or any logics of specific mitigation measures.

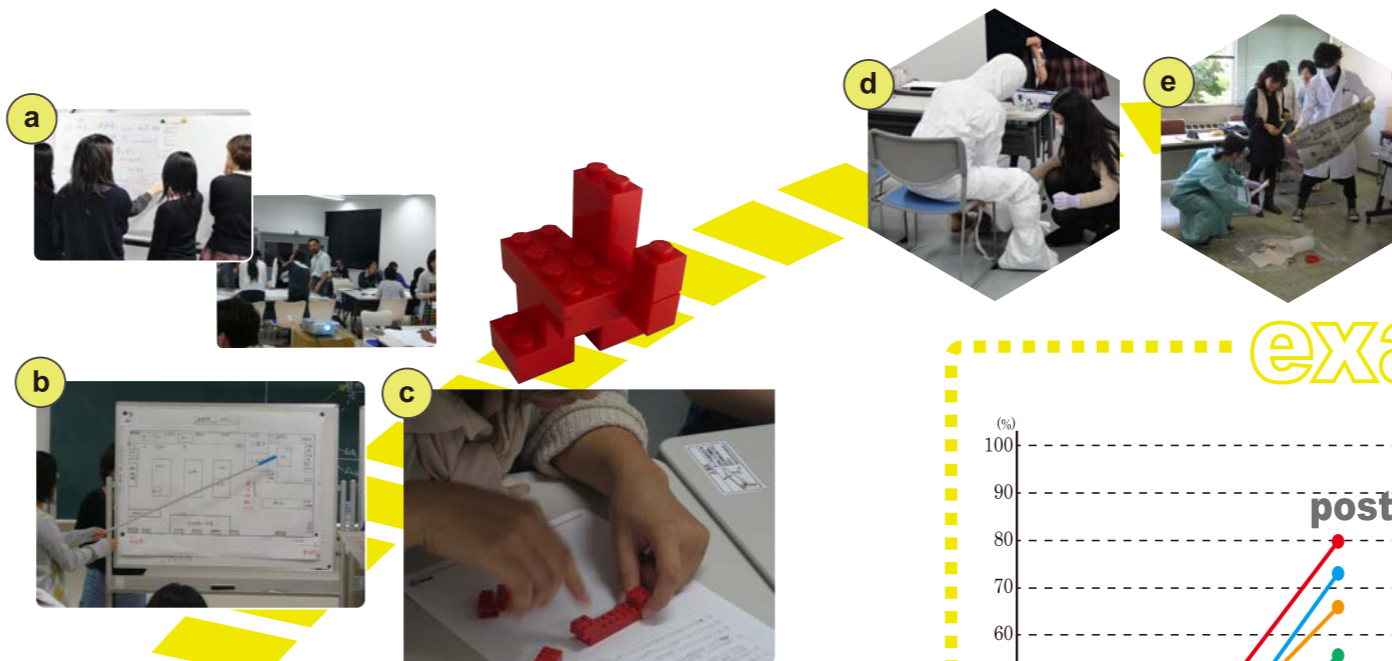


Fig2. Small group based interactive study with facilitator. (a) Brain storming, problem solving, questions and answers using video and examples, (b) risk assessment and mitigation choices, and (c) gaming experience mimic and simulate scenes from the real world management experiences (e.g. SOP writing).

Discussion:

Students in late twenties and thirties responded well to visual and audio approach. They struggled with logical assessments. Shortage of knowledge about pathogens and samples they work with and work place hazards were identified. Interviews to those sample students revealed importance of a textbook of risk assessment and biorisk management in their native language for the reference to use for learning principles, logical thinking and creative approach for real world problems.

We started to put together created materials into educational programme for the students and researchers in academia. It may not for the advanced researchers and experts who are able to seek their skills and further trainings internationally, but will serve to elevate levels of practice to manage biorisks in long term by working with new generation. This interim outcome shows annual continuous training

Conclusions:

Current programme have good short time effect but limited in long term effect. Further targeted revision is needed.

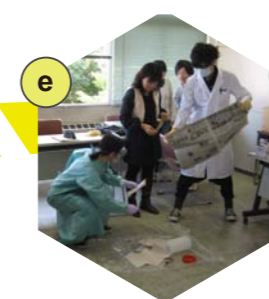


Fig3. Small scale focused hands on training without laboratory facility. (d) Donning and doffing training and (e) spill theory practice.



Fig4. Pre-, post- and a year later evaluation results. Y axis presents proportion of correct answers in both graphs. Left shows the pre and post exam results from the cohort of year 2011 and right post and a year later outcome of the cohort of the year 2010.



Fig5. New materials waiting for use in 2012 course.

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