Integration of soft skills, employability skills and SDG’s in radiation protection: the Erasmus+ project ‘train the future trainer’

Outline

1. Introduction

2. Erasmus+ project “Blended learning in radioecology and radiation protection”

3. Erasmus+ project ”Train the future trainer/trainees”

4. Conclusion
Centre for Environmental Sciences: KEY = MULTIDISCIPLINARITY

1. Effect of environmental stressors on organisms

2. Sustainable and Clean Technologies

3. Biodiversity, Ecosystem Services and Climate Change

- Research groups
  - Sciences
  - Engineering & Technology
    - Research group NuTeC
  - Economics
  - Law
“Blended learning in radioecology and radiation protection”

- **Erasmus + Strategic Partnership**
  - 01-09-2015 until 31-08-2017
  - 6 e-learning modules – 6 training schools

- **Integration of:**
  - Academic skills
  - Training skills
  - Soft skills and employability skills

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<th>Basics nuclear and radiation physics</th>
<th>Basics of measurement and dosimetry</th>
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<td>Probability Risk Assessment</td>
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Soft skills & Employability skills

- Multi-disciplinary cooperation
- Networking
- Ethics
- Integrity
- Stakeholder awareness
- Multi languages
- Trainer skills
- (Risk) communication
- Self management
- Communication and presentation
Integrating **Sustainable Development Goals** (UN, 2030) in radiation protection training

- Current Ba/Ma students are about 35 in 2030

- 3 core elements SDGs:
  1. Economic growth
  2. Social inclusion
  3. Environmental protection
How to integrate soft skills, employability skills and SDGs?

What adaptations are needed in the E-modules and the training schools?

How to improve the blended learning process?

New Erasmus + Strategic Partnership
“Train the future trainers/trainees”
01-10-2018 until 30-09-2020
ERASMUS + STRATEGIC PARTNERSHIP
“Train the future trainers/trainees”

8 Partners (from the CHERNE network)
- HE2B-ISIB – BELGIUM
- UNIVERSITEIT HASSELT - BELGIUM
- HOCHSCHULE MANNHEIM - GERMANY
- UNIVERSITA DI BOLOGNA - ITALY
- UNIVERSIDADE DA BEIRA INTERIOR (Covilha) - PORTUGAL
- CZECH TECHNICAL UNIVERSITY IN PRAGUE – CZECH REPUBLIC
- UNIVERSITAT POLITECNICA DE VALENCIA - SPAIN
- GREEK ATOMIC ENERGY COMMISSION - GREECE

3 associate partners
- JRC (JRC-Geel)
- Tecnubel/ECS/Transnubel
- FANC – Belgium

Ad-hoc partners in the training activities

Target group for training schools: bachelor and master students of each partner: Different background in knowledge and practical skills
Kick-off meeting + workshop @ UHasselt 10-12 okt 2018

21 participants

Visit to training centre: ECS – Tecnubel associate partner

JRC (Geel – Ispra – Karlsruhe): Expertise, facilities and opportunities in nuclear research and education

FANC: legal aspect of RPO and RPE training (in light of new EU-BSS)

EEAE workshop
Moodles tools

Tips and tricks for teleteaching
Prof dr Koen Vanlaer
Hasselt University

Cifal:

SDG workshop

Methodological approach and project activities
Optimal blended learning activities

Pretraining activities

Screening
- Basic knowledge (depending on topic of training)
- Nuclear physics / radiochemistry
- Nuclear measurements
- Radiation protection
- MCQ

E-learning
- Selected content of existing basic modules
- Individual learning
- MCQ

E-Coaching
- Group interaction
- Guidance of tasks (introduction video lecture, 3 times 15’ per group per task)
- Guidance of e-learning modules of training school (video, articles, study guide...) 3 times 15’ per group
- Introduction lectures (video teaching)

Training school
- F2F training
- Group laboratory work
- Access to special equipment, facilities, site visits
- Evaluation of pre- and F2F training activities

3 groups of 10-15 students

Topic 1: Nuclear reactors and radioactive waste

Topic 2: Radiochemistry and medical dosimetry

Topic 3: Environmental radioactivity

CTU Prague 8-12/04/2019
HS Mannheim 4-8/03/2019
He2B-ISIB 6-13/03/2019
UHasselt
Integration of soft skills, employability skills and SDG’s

Environmental radioactivity

He2B/UHasselt
UBI/UPV
SDGs
Trainer skills
Stakeholder awareness
Multi-languages

Nuclear reactors and waste management

CTU/UHasselt
Ethics
Team work
Networking
Multi-languages

Radiochemistry and medical dosimetry

HS Mannheim/Unibo
Risk communication
SDGs
Trainer skills
Multi-languages
New teaching activities in action

Starting 1 month before the training school

- 2 Moodle modules: self study
  - MCQ: self assessment: 2 attempts

- Tasks in advance in small mixed groups (3-4 students)
  - Video lectures on SDGs
  - 3 Google meet sessions (15’ per group)
  - Group negotiation / consensus – stakeholders survey

- Training school: Team work in the same mixed groups
  - E-modules to prepare the lab activities and background information
  - ‘Trainer’ activities (micro/co-teaching), role play activities, debate
  - Group task presentation: innovative presentation techniques
  - Peer assessment (Prof Dochy method)
  - ‘Trainer’ presentations about lab experiments
  - Final MCQ
Module - Radiochemistry and medical dosimetry & Environmental radioactivity

SDGs Analysis

- Student discussion groups:
  - Example SDG case: radionuclide production with cyclotrons
Module - Nuclear reactors and waste management

Ethics round table

- Construction of deep geological repository of spent nuclear fuel
  - Group A: Inhabitants of municipalities
  - Group B: Political representation
  - Group C: National authority
  - Group D: Private companies
Module - Radiochemistry and medical dosimetry

Role play

- Ex. Wrong dose delivered during treatment with $^{131}$I
  - “The Patient, his Physician, and her Medical Physics Expert”
- Other participants: meet the nurse, the director of the clinic, the national authority, the press...
Module - Environmental radioactivity
Field trips guided by experts; lab exercises

Fieldtrip Demerbroeken

Lab exercises
Mixture of activating learning activities

- **Screening / E-modules**: Self determined/controlled, individual differences, constructive (levelling background gaps)

- **Group task / E-coaching**: Collaboration and interaction, cumulative, goal oriented

- **Face2face training school**: Team work, interaction, integrated tasks, trainer skills
Conclusion:
Our role as trainer in integrating and activating soft skills and SDG

Expert:
- Content, tools, MCQ screening,…

E-Coach:
- Time management
- Constructive feedback
- Increase autonomous motivation

Organiser/evaluator:
- New educational approaches: role plays, multidisciplinary tasks, micro teaching, peer assessment,…

Next challenges for the second year
Multisite synchronous teaching
Coaching on the job: preparing students for real training sessions for targeted groups
Thank you for your attention!

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