

# TRAINING FOR THE USE OF E-LEARNING TOOLS FOR SPECIALISTS IN THE NUCLEAR SECTOR OF LATIN AMERICA AND THE CARIBBEAN



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# PARTNERSHIP

The Latin American Network for Education and Training in Nuclear Technology (LANENT) and the International Atomic Energy Agency (IAEA) developed a course to introduce the use of e-learning tools and to present the processes and stages involved in the planning, development and implementation of an online course



# PURPOSE

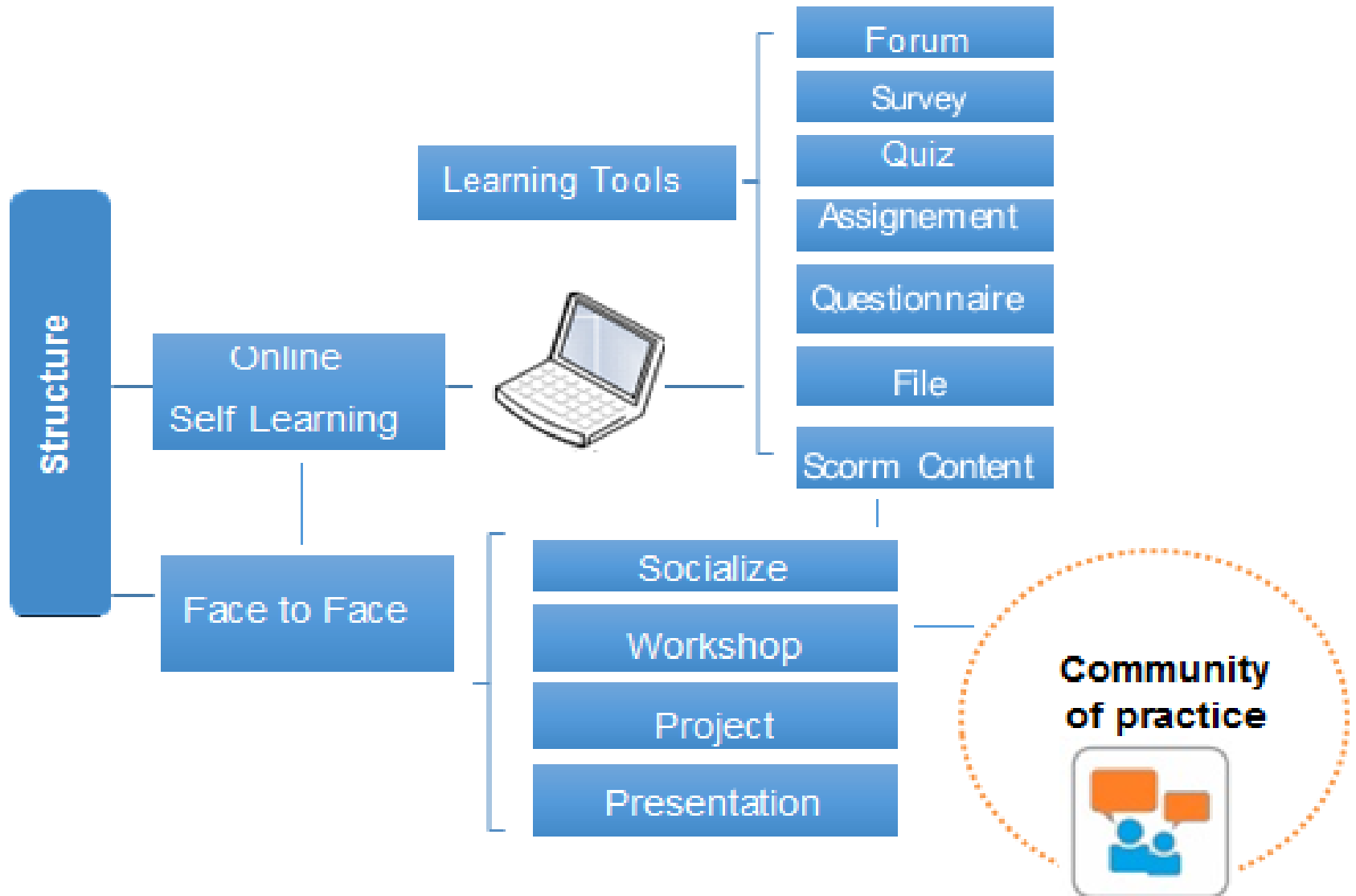


The members of LANENT working groups have considered that it would be important for the region to provide an opportunity for training in e-learning through a hybrid course, implemented in two successive stages - online and face-to-face - demonstrating the potential of self-managed learning mediated by ICTs and the advantages of a set of tools for the design, implementation and evaluation for education and / or training in the nuclear field

# OBJECTIVES

1. To create an e-learning course (structure, content selection and technological tools) to provide guidance and to support the university professors to develop on-line courses in the field of nuclear applications.
2. To develop at least the following tasks for the course: selection of content specialists, methodologies and technological tools, and define the tasks responsibilities; instructional design; development of teaching material for on-line learning; implementation and distribution of the course activities, to define the methods of course management and evaluation.

# COURSE STRUCTURE AND MODELING



# PEDAGOGICAL PLANNING AND PRODUCTION

## Online

- ✓ To present the basic concepts related to the e-learning modality;
- ✓ To understand the way of teaching in order to promote autonomous learning mediated with computer and communications technologies;
- ✓ Review, at an introductory level, a set of technological tools to design and implement e-learning courses.

## Face-to-face

- ✓ To reinforce and socialize learning outcomes based on the online stage;
- ✓ To practice the use of technological tools for e-learning reviewed in the online stage;
- ✓ To apply e-learning tools for designing an on-line pilot course (topics of interest and specialty of each participant).

# CONTENTS OF THE ONLINE COURSE (SELF-LEARNING)

The contents of the online course were structured in six modules:

Module 1 - Presentation

Module 2 - Introduction to E-learning

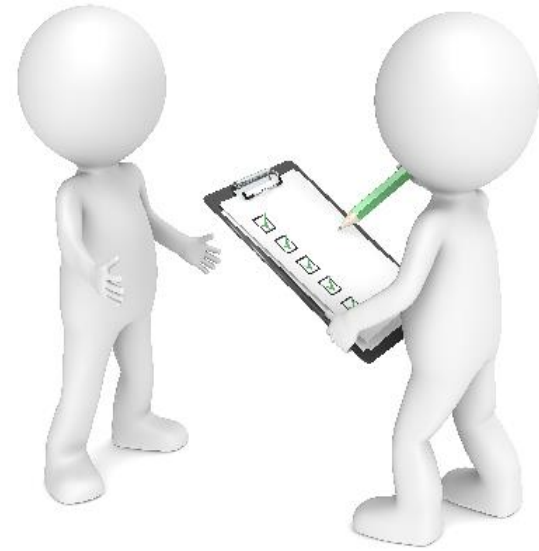
Module 3 - E-learning: Content Dimension

Module 4 - E-learning: Pedagogical Dimension

Module 5 - E-learning: Technological Dimension

Module 6 – E-learning: Management Dimension

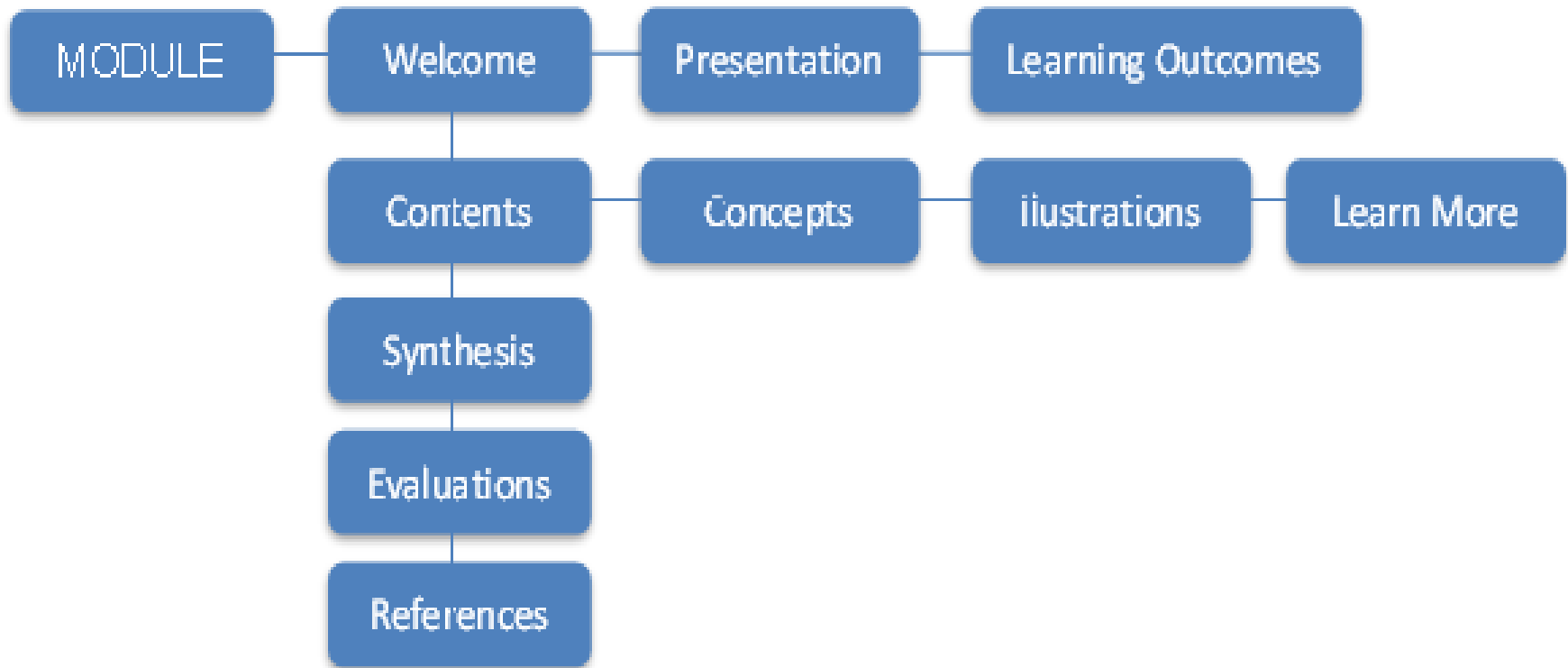
# LEARNING OUTCOMES:



- To understand the basic processes and steps involved in planning, developing and implementing an online course in its different variants and dimensions: self-learning or guided by a synchronous or asynchronous tutor etc;
- To analyze the pedagogical and management aspects of each dimension involved in the creation of an online course;
- To learn about the role of a working group to implement e-learning methodology;
- To learn about the tools integrated in the various stages of the process and their use, with examples related to the most used;
- To understand basic technology requirements in online courses.



# STRUCTURE TO CREATE THE CONTENTS OF EACH MODULE OF THE ONLINE COURSE



Each module was developed with a common structure, according to what the instructional design developed to the course.

The pre-training stage of the course was implemented in the **LMS Moodle environment of the LANENT Network**. The main functionalities available in the Moodle allow to establish the communication and the interaction activities of the course, to publish the course contents, accomplishment of tasks (lessons) and evaluations of the learning.

# CONTENTS, ACTIVITIES AND EVALUATION



- The specific content of the online course is presented in order to allow an autonomous and self-managing navigation for each participant to their own style and pace of learning.
- The virtual environment provides digital content, additional bibliography to enrich and deepen learning, useful links to complement the training and a glossary.
- Partial exams are used at the end of each module, which can be repeated until the required minimum knowledge is reached.
- A final evaluation of the course, of multiple choice type, is made and can be repeated. It can only be done after successful completion of the partial evaluations.

# CONTENT IN SCORM FORMAT

The digital content of the course was developed through the Articulate authoring software (<https://articulate.com/>). After creating the e-learning project with this authoring tool a scorm format content package is generated to publish in the virtual learning environment (LMS platform).



# A DIGITAL CONTENT OF THE COURSE

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## Auto-aprendizaje y colaboración

¿Qué es lo que ponen de relieve los autores? El auto-aprendizaje, y al mismo tiempo, el enfoque de colaboración entre los que aprenden! Para estos autores, el e-learning es una estrategia para el desarrollo de habilidades y el acceso a la información que necesitan una rápida adopción.

### Un ejemplo

Una empresa de telefonía móvil acaba de lanzar un nuevo producto *smartphone* y el personal de ventas, distribuidos en diferentes regiones, necesita aprender rápidamente cuáles son las principales características del producto. El e-learning es una estrategia para lograr este objetivo!

**Piense en otros ejemplos, seguramente encontrará muchas situaciones similares!**



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## E-learning y la cultura de aprendizaje corporativo

El e-learning en la perspectiva del desarrollo de la cultura de aprendizaje corporativo, es, según Rosenberg (2002), "la esencia de su uso en la vida cotidiana de una organización que aprende".

*"Con tantos cambios, el papel del aprendizaje en las empresas tiene que ampliar. El e-learning ofrece una oportunidad para ampliar esta perspectiva. Lo que se discute es la importancia de crear un ambiente y cultura que fomentan la generación e intercambio de conocimientos, de establecer un ambiente de aprender de los errores y asegurar que lo que se aprende se incorporarán a las actividades, decisiones e iniciativas futuras de la compañía. Así, la Internet y la Web se están convirtiendo en una herramienta esencial para el trabajo de la compañía y para las actividades de aprendizaje de la empresa."* (Rosenberg, 2002)

**Reflexionar sobre lo que dice el autor:**



# INTERACTIVE CONTENT CREATED IN SCORM FORMAT

## Situaciones para la Reflexión

*Considere las siguientes situaciones y reflexione sobre una práctica adecuada. A través del curso usted encontrará más ayudas para las decisiones que ahora se presentan.*



### Estructura del Contenido


Presentación Organización Calendario Actividad y Evaluación Conozca Más

#### Presentación

La presentación del curso y sus objetivos generales incluye:

- la bienvenida
- una descripción breve del curso
- una invitación a los estudiantes a participar.

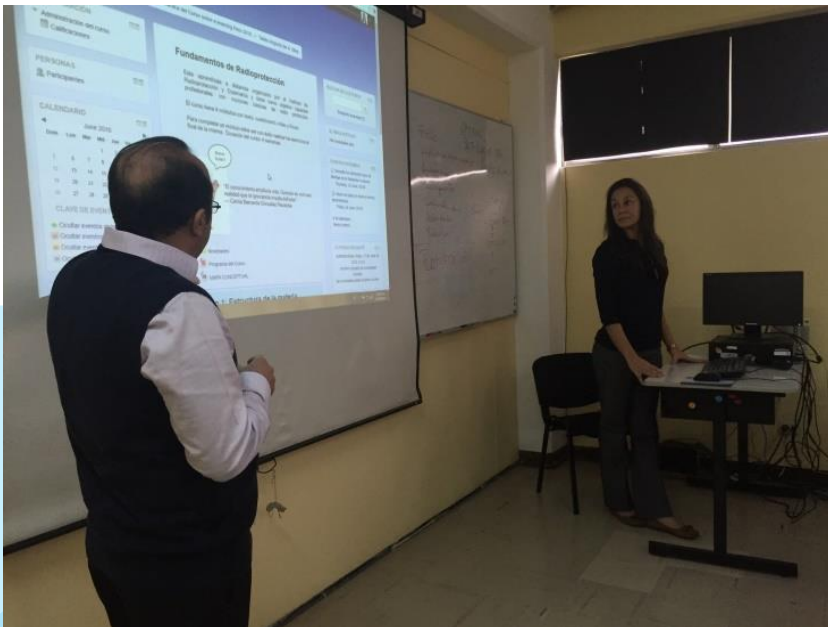
**Ejemplo**



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graph TD; A[Presentación] --> B[Bienvenida]; A --> C[Descripción]; A --> D[Invitación]
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# FACE TO FACE ACTIVITIES

The face-to-face stage is considered a fundamental part of the practice of e-learning. It is provided for the participants with practical training in computer lab 8 h / day \* 5 days; use of software tools deployed in a special section of the virtual classroom; group discussions on e-learning for nuclear education and training; the participants works on small sample projects and course evaluation (individual or group).



# THE EXPECTED RESULTS

- ✓ Discussion of the main barriers commonly argued against e-learning, in comparison with traditional teaching methods and resources;
- ✓ Demonstration of the possibilities and opportunities of e-learning/b-learning for nuclear education and training in the L. A. Region, through individual immersion on a pre-training stage ;
- ✓ Practical learning of ICT tools, through individual and group hands-on activities on the resources for production, delivery, managing and assessment of e-learning/b-learning courses;
- ✓ Exploration of needs and expectations for future courses on nuclear education and training in the L. A. Region, to be built in collaboration, thanks to the development of a community of practice.

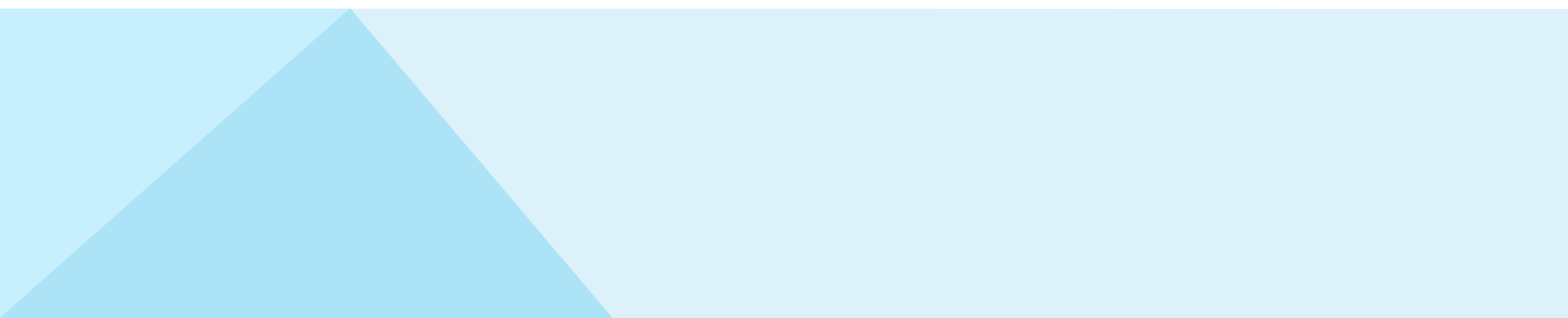
# Community of Practice

After the face-to-face stage, the participants decided to stay connected to continue working in collaborative way and expanding their new knowledge and skills on this teaching modality for their education / training / dissemination in their professional activities in the nuclear field. The LANENT LMS is being used for all activities of the created community of practice on e-learning for education and training in nuclear technology.





# CONCLUSIONS

- The two courses developed in Chile and Peru trained 36 participants and demonstrated to be a very good initiative developed by LANENT and IAEA to train the university professors in the L.A. Region;
  - All participants of the courses are interacting among them in the community of practice developing specific online courses related to nuclear topics;
  - It is expected to be offered new courses in the L.A. Region in 2017 and 2018 following the successful experience gained in the last years.
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**THANK YOU**

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