GOBLET/ELIXIR -EXCELERATE Workshop on e-learning

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Learning Goals

In this Workshop we will explore:

1. Main concepts related to e-elearning practice;
2. Contemporary research related to e-learning;
3. ADDIE as a model for e-learning content development;
4. SCORM reference model for content development;
5. Authoring tools to produce e-learning contents;
6. E-learning quality assessment.

1. e-learning Concepts

?

**What main ideas can we get from
Daphne Koller TED Talk
"What we're learning from online education"**

Ideas from TED Talk "Daphne Koller: What we're learning from online education"

#1 e-learning Benefits

- Allows to reach a huge number of students
- Students can be geographically dispersed
- Most of these students couldn't learn in other circumstances
- Ability to study anytime and anywhere
- Ability to review contents repeatedly
- Cost reduction (less expenses with travel, logistics, etc)
- …

Ideas from TED Talk "Daphne Koller: What we're learning from online education"

#2 e-learning @Coursera

- Short courses
- Flexible learning paths and styles
- Personalized learning
- Active Learning – practicing moments
- Constructive feedback
- Peer Assessment (involving students in the process, reducing evaluators)
- Collaboration possibilities → community building
- …

Ideas from TED Talk "Daphne Koller: What we're learning from online education"

#3 Opportunities

- Ability to analyze with detail to the interactions of the students;
- Contribution to continuous assessment of learning:
    - What are the best strategies for better learning outcomes?
    - What are the contents that raise recurring more doubts?
    - …

What is e-learning?

e-learning or online courses refer to a type of learning that, in its general principles, obeys the definition by Keegan (1986) and Paulsen (2002), among other authors:

• Existence of a separation between teacher and student, along learning process;

• Influence of an educational organization, both in planning and in the preparation of learning materials, and the availability of student support services;

• The use of mediated content to harmonize concepts between teacher and student and to make available education;

• A provision of two-way communication, so that the student can benefit initiate a dialogue with other students, teachers or coordinators.

What is E-learning?

Project "360º Panorama e-Learning Portugal" defined e-learning as the mobilization of ICT in the organization of the training process, **not limited to access information and content through the use of ICT.**

Distance, as an attribute presented in the training, must be seen as an advantage, being **a property that induces more broad and diversified interaction and participation, and an organizational flexibility favorable to participation**.

The project defines 4 attributes essential to e-learning:

- centrality of online environments and digital technologies in mediation of the process teaching / learning;
- existence of a distance learning / training time;
- Interaction between trainer-trainee, trainee-trainee and trainee–content;
- Tutorial support.

Digital – through ICT

Online – using www

Distance

Interaction – trainer, trainee, content

Tutoring / Pedagogical Guidance

2. Research Areas in e-learning

Haythornthwaite, C., Andrews, R., Fransman, J., & Meyers, E. (2016). Introduction to the Sage Handbook of E-learning Research.

Research Areas in E-learning

e-learning sphere:
- Contemporary youth media practices & educational perspectives;
- Video-based resources;
- Mobile Learning;
- Games and gamification;
- MOOCs: Massive Open Online Courses;
- Adaptive learning systems: next steps determined according to learner progress and types of error;
- Big-data, data mining, learning analytics;
- Success and retention rates, alert systems for students in academic trouble.

Research Areas in E-learning

Social and technical perspective:

- More active role of learner;
- Significant transformation in how, where, when and with whom we learn;
- Changes in formal, informal and non-formal learning environments;
- Connectivity – across sites, resources, technologies, and people (George Siemens and Steven Downes). Similar concepts: Networked/ubiquitous learning;
- E-learning as emergent, not electronic.

> " *A technology does not make e-learning, but rather teachers and learners use technology to create the social space in which learning occurs.*
>
> Haythornthwaite & Andrews (2011)

Research Areas in E-learning

Literacy

- Necessary literacy to navigate this new e-learning landscape
- knowledge co-construction
- How educational institutions will learn to be agile in an age of technological fluidity?

Research Areas in E-learning

Humans in the Mix

- Teacher/Tutor presence as a necessary part of successful e-learning implementations, along with cognitive and social presence;
- Roles for the teacher in e-learning settings: explainer of technology, in digesting, explaining, extending content, and in working with the learner and their learning experience;
- E-learners at the center of their personal learning environment and their personal learning network;
- New e-learner responsibilities: curriculum definition, assignment evaluation, etc;
- Learning analytics in relation to issues of student confidentiality, data ownership, and data use.

Research Areas in E-learning

Main topics that deserves further work:

- Ethics in the digital age: matters of intellectual property, storage, and distribution in the digital age;

- Assessment: as learning increasingly becomes independent, distributed, and mediated by technology, how do we develop models and methods for assessing the quality of learning experiences and the evidence of student learning?

ADDIE Model

ADDIE Model

General Model for Instructional Design, based on the steps:
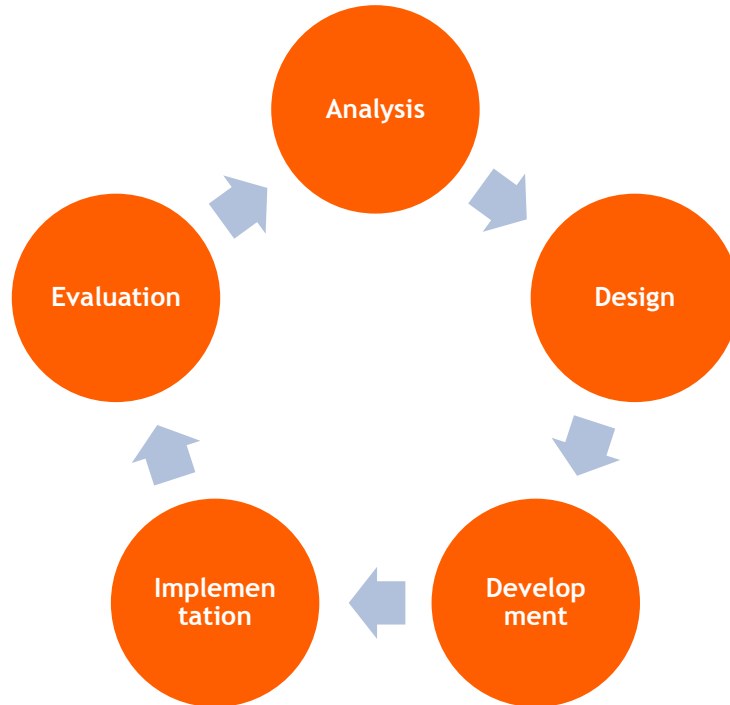
ADDIE Model

Analysis

The Analysis phase identifies the needs for the training, analyzes the characteristics of the participants; identifies the contents and the tasks needed.

Examples of questions addressed:

- Who are the learners and what are their characteristics (e.g. knowledge; technological assets; motivation)?

- What is the desired new behavior?

- What is the timeline for project completion?

ADDIE Model

Design

Results from the analysis phase are used to create a document that specifies the e-learning course.

- Design the learning goals (Bloom taxonomy may be used or Gagné Principles of ID);
- Design the curriculum (splitting course in small units, plan the sequence of the content);
- Plan instructional strategies (e.g. problem based learning)
- Plan assessment strategies (previous knowledge, summative, formative, participation);
- Media selection;
- Design the interface (e.g. what tools will be used and integrated? communication tools?)

ADDIE Model

Bloom taxonomy:

- Remember
- Understand
- Apply
- Analyze
- Evaluate
- Create

Gagné Principles of ID:

1. Gaining Attention
2. Informing learners of the objective
3. Stimulating recall from prior learning
4. Presenting stimulus
5. Providing learning guidance
6. Eliciting performance
7. Providing feedback
8. Assessing performance
9. Enhancing retention and transfer (call to action)

ADDIE Model

The creation of an internal sequence and logical content should be based on the principles of adult learning, i.e. an evolution of:

Known → Unknown

Simple → Complex

Concrete → Abstract

General → Particular

ADDIE Model

Develop

Based on the Design Phase, the e-learning course is developed:

- Write instructional materials (e.g. instructions, contents, video scripts, exercises, feedback messages, assessment instruments, summary messages);

- Produce materials (e.g. videos, screen capture, podcasts, presentations)

- Integrate in an authoring tool → export a SCORM package;

- Implement in the LMS;

- Test.

ADDIE Model

Implement

- With the e-learning course developed, it's now time to make it available to the audience;
- Monitor participants learning paths;
- Tutoring and guidance;
- Clarify doubts.

ADDIE Model

Evaluate

This phase measures the efficiency of the instruction.

It includes formative assessment, which occurs during the course/training, as well as summative, which occurs at the end of the course/training.

To assess the results of the course usually there are used:

- Results from the learning instruments;
- Results from satisfaction surveys.

Other learning metrics can be used, as we will see.

Building Learning Objects
&
SCORM Reference Model

Learning Objects

- Learning Objects are small instructional components that can be reused in different learning contexts (Wiley, 2002).

- They can be reorganised to build different learning paths.

- An LO can be a lesson, a unit, a course → there is no definition of the granularity.

SCORM Reference Model

https://www.youtube.com/watch?v=FzxNwWvmwf4
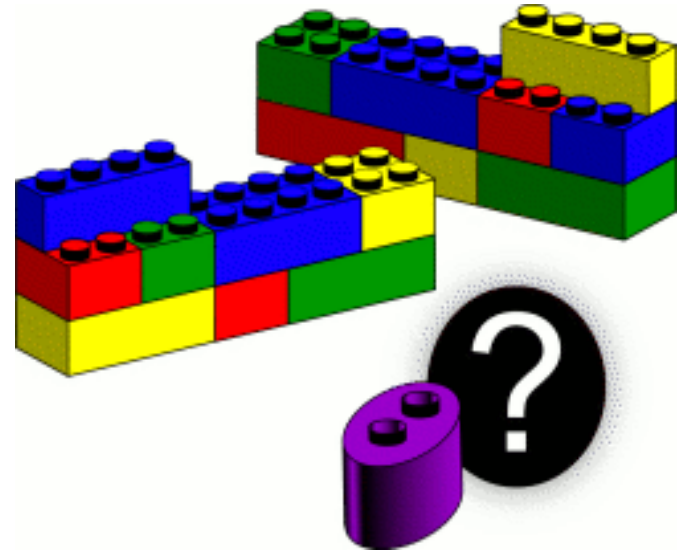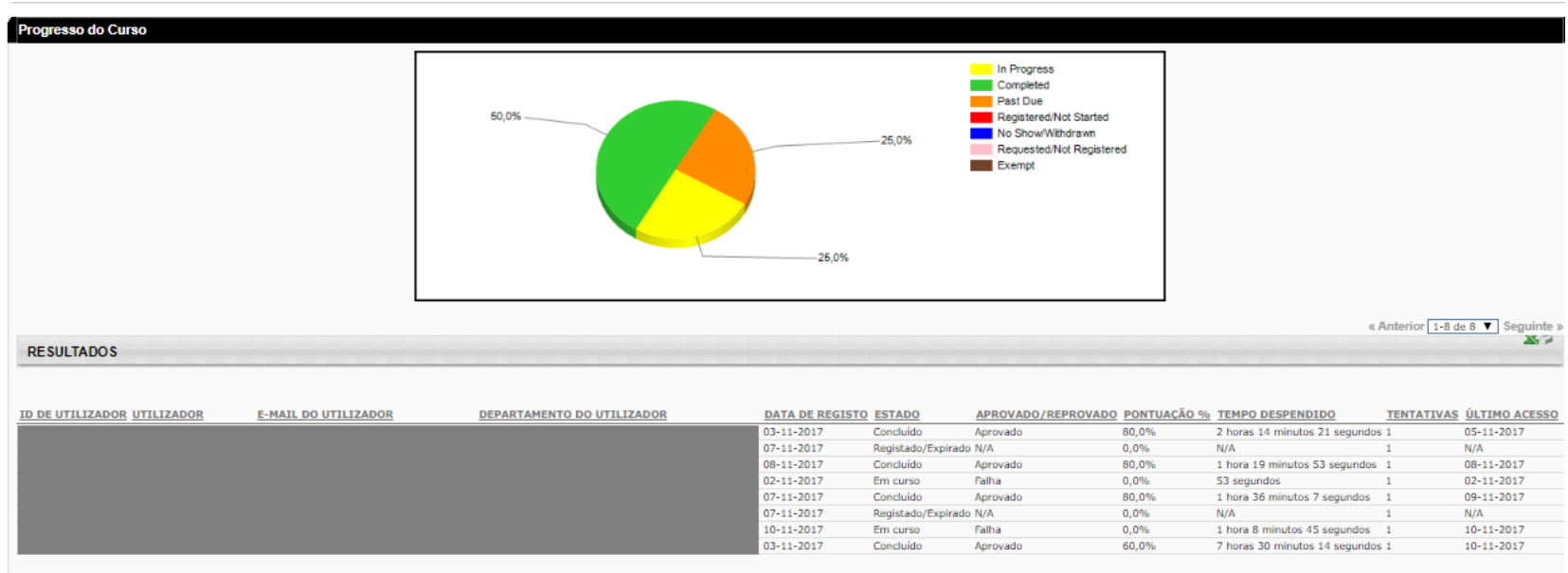
SCORM Reference Model

- SCORM = Sharable Content Object Reference Model, is about creating units of online training material that can be shared across systems;

Portability

- "Reference Model" reflects the fact that SCORM isn't actually a standard;

Reusability

- SCORM provided a set of technical specifications that gave developers an agreed blueprint to work with, providing answers to questions like:

Sequencing

  – How a LMS should read and present content?
  – How assessments should be scored?

Version History & Versions

  – How bookmarking and statuses should be exchanged between a course and a LMS?

SCORM Reference Model

- Many authoring tools and LMS are now SCORM compliant, which means they've been developed to fit SCORM's technical specs and should work with all compliant technologies and content.

- A scorm package is a zip file with a xml file called "manifest", that describes the structure of contents and files.

- Most recent version: SCORM 2004 (4th edition). You need to check which version your LMS is using.

SCORM Reference Model

- Examples of parameters (scorm 2004):

Progresso do Curso

In Progress (yellow)	
Completed (green)	
Past Due (orange)	
Registered/Not Started (red)	
No Show/Withdrawn (blue)	
Requested/Not Registered (pink)	
Exempt (brown)	

50,0% — 25,0% — 25,0%

« Anterior 1-8 de 8 ▼ Seguinte »

RESULTADOS

ID DE UTILIZADOR	UTILIZADOR	E-MAIL DO UTILIZADOR	DEPARTAMENTO DO UTILIZADOR	DATA DE REGISTO	ESTADO	APROVADO/REPROVADO	PONTUAÇÃO %	TEMPO DESPENDIDO	TENTATIVAS	ÚLTIMO ACESSO
				03-11-2017	Concluído	Aprovado	80,0%	2 horas 14 minutos 21 segundos	1	05-11-2017
				07-11-2017	Registado/Expirado	N/A	0,0%	N/A	1	N/A
				08-11-2017	Concluído	Aprovado	80,0%	1 hora 19 minutos 53 segundos	1	08-11-2017
				02-11-2017	Em curso	Falha	0,0%	53 segundos	1	02-11-2017
				07-11-2017	Concluído	Aprovado	80,0%	1 hora 36 minutos 7 segundos	1	09-11-2017
				07-11-2017	Registado/Expirado	N/A	0,0%	N/A	1	N/A
				10-11-2017	Em curso	Falha	0,0%	1 hora 8 minutos 45 segundos	1	10-11-2017
				03-11-2017	Concluído	Aprovado	60,0%	7 horas 30 minutos 14 segundos	1	10-11-2017

SCORM Reference Model

Why is it important to develop scorm contents?

- To be able to reuse contents

- To be able to share contents to other LMS

- To be able to share performance results from participants

Next generation of Scorm: [Experience API (xAPI)](#)

e-Learning Authoring Tools

e-Learning Authoring Tools

Examples of Authoring Tools

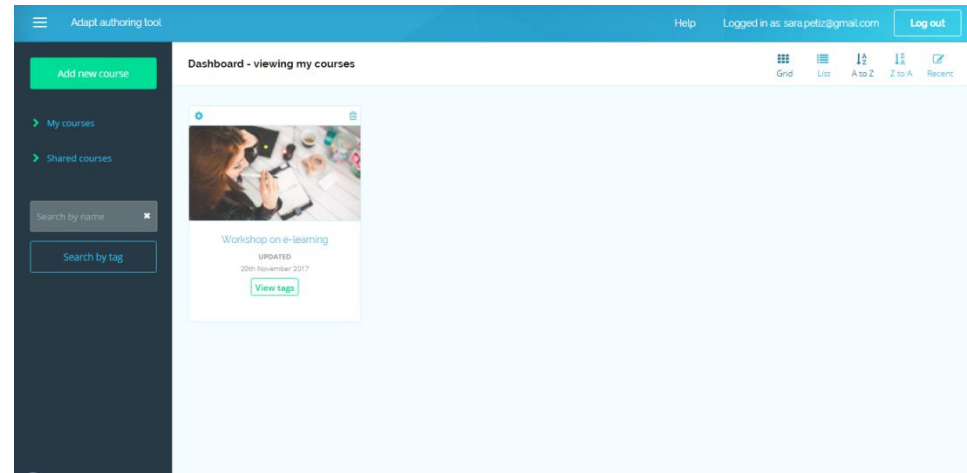https://elearningauthoringtools.wordpress.com/resources/elearning-authoring-tools/

Top Tools for Learning 2017 (Jane Hart – C4LPT)
http://c4lpt.co.uk/top100tools/

e-Learning Authoring Tools

Adapt Authoring Tool

- Responsive contents

- Scorm compliant (*needs spoor plugin*)

- Sharable courses and assets

- Integrates different media

- Many components - interactive content, quiz, etc.

- Multi-language support

https://www.adaptlearning.org/

Course Example: https://community.adaptlearning.org/learningpool_example1/main.html#

e-Learning Authoring Tools

Exercise Time

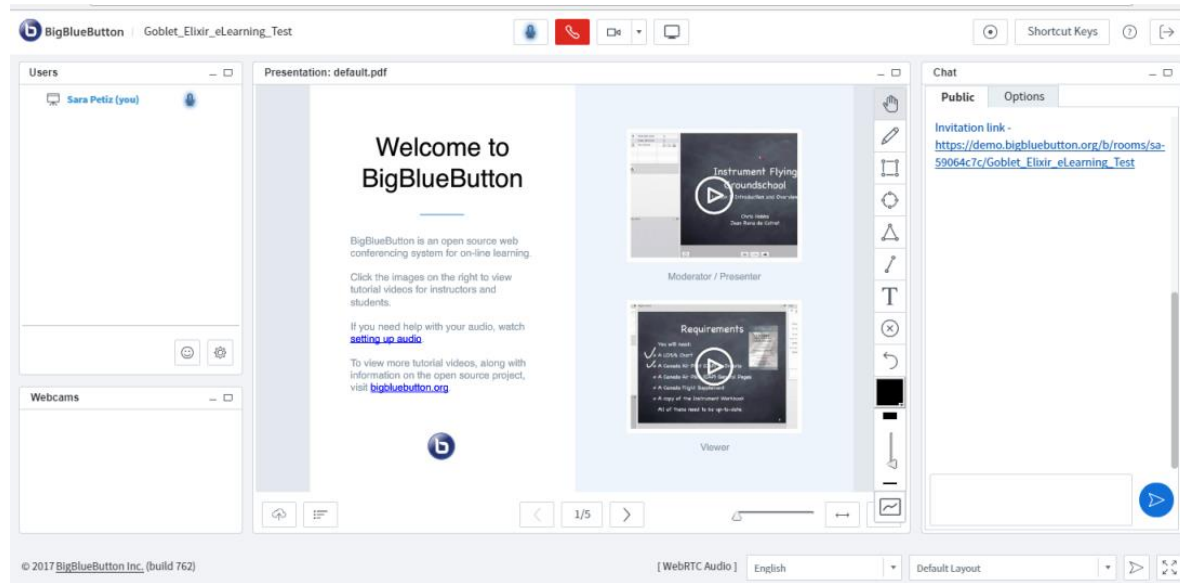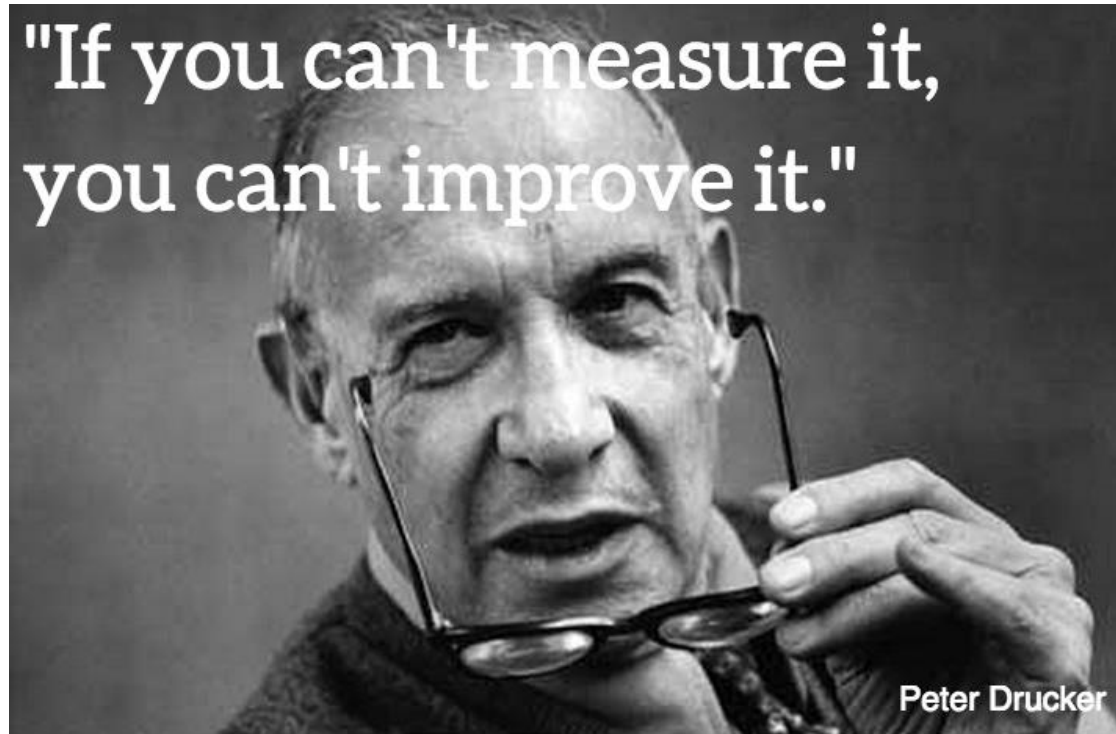**URL:** http://elixir.mf.uni-lj.si:65000/

e-Learning Authoring Tools

Big Blue Button
Webconference system

- Users
- User status
- Presentation
- Chat
- Webcam
- Audio
- Layout configuration
- Record
- Breakout rooms

https://bigbluebutton.org/
(needs Flash Player)

e-Learning Quality Assessment

e-Learning Quality Assessment

"If you can't measure it, you can't improve it."

Peter Drucker

e-Learning Quality Assessment

Measuring the results and impact of the training

- Approval indicators – assessment results;
- Participation in course activities (e.g. discussion foruns, non-mandatory exercises);
- Pre and Post-test Performance Comparison;
- Students feedback;
- Trainer feedback;
- Peer (Expert) Assessment;
- Accessibility & Usability Tests;
- Evasion (course started but not completed);
- Number of conducted training actions;
- Other learning analytic.

e-Learning Quality Assessment

Intervention Domains	Requisites	Quality Criteria
Organizational	A. Course Organization, Logistics & Information	1. Relevance of the course. 2. Adequacy of the pedagogical team. 3. Relevance of information given to trainees. 4. Adequacy of educational technology and online logistics.
Pedagogical	B. Course Design	1. Clarity and rigor of the objective. 2. Adequacy of course design to the proposed methodology. 3. Coherence and diversity of learning strategies. 4. Timeliness of course planning and learning strategies and tools.
	C. Educational Content (e-Content)	1. Rigor and reliability of contents. 2. Sequence of contents. 3. Navigability, interactivity and diversity of contents. 4. Consider different learner preferences concerning structure, communication and learning styles
	D. Support & Follow-Up	1. Consistency and relevance of follow-up. 2. Adequacy and diversity of technical instruments and evaluation strategies. 3. Subject related, social and/or technical learner support. 4. Promotion of autonomy and interaction.
Technological	E. Platforms & Educational Content	1. Accessibility and readability. 2. Navigability.
Continuous Improvement / Evaluation	F. Evaluation	1. Scope and relevance of the evaluation. 2. Continuous improvement.