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Learn2Analyze (L2A)

An Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' (Instructional Designers and e-Trainers) Competences in Educational Data Analytics

Learn2Analyze

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R5b. Learn2Analyze MOOC v2 Syllabus (Educational Design of L2A MOOC v2)

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Executive Summary

The scope of **Result 5b** (*Learn2Analyze MOOC v2 Syllabus: Educational Design of L2A MOOC v2*) is to inform the design and the implementation of the L2A MOOC version 2 by

- defining possible alternative options (a) for the design of its *gamification* elements and (b) for the *assessment* towards an advanced certification on Educational Data Literacy (EDL), and
- providing the outline of an *implementation plan*.

Thus, the purpose of this document is two-fold:

i. To explore the alternative options of implementing Gamified Competence-Based Assessment (Part A)

ii. To propose the integration of gamification elements in the design of the L2A MOOC version 2 (Part B)

Finally, the document describes the current implementation plan based on the technical capabilities of IMC's platform for delivering MOOCs (Appendix A).

The Learn2Analyze (L2A) initiative is an Academia-Industry Knowledge Alliance for enhancing Education Professionals' Competences in Educational Data Literacy, co-funded by the European Commission through the Erasmus+ Program of the European Union. The pilot phase A of the L2A MOOC started on 21st of October 2019 and was completed successfully on 14th of January 2020, with nearly 2000 enrollments. This first edition of Learn2Analyze MOOC remained available for self-study until 15th of April 2020. The evaluation insights (described in Result 13) from pilot phase A can lead to reflective revisions of the L2A MOOC Design, prior to the pilot phase B. In terms of overall L2A MOOC syllabus design, state-of-the-art research on improving the educational design of Professional Development MOOCs is taken into consideration, to address common problems related to low learners' motivation and retention rates. Gamification is one method to be considered, which relates to the use of game-based mechanics in non-game situations with the aim of enhancing participant motivation and to promote their engagement in planned activities. Moreover, the assessment activities of the revised L2A MOOC for phase B can include hands-on assignments, to allow participants to apply their attained knowledge in simulated practice scenarios.

Part A - Competence-based assessment

1. Authentic Competence-Based Assessment for MOOCs

2.1 Competence-based Assessment

According to UNESCO (UIL, 2012) "Competences indicate a satisfactory state of knowledge, skills and attitudes and the ability to apply them in a variety of situations."

The Competence Assessment is defined by Pepper (2013) as "The process of making inferences about an individuals' knowledge, skills, attitudes or other constructs using information from one or more methods such as tests, observations, interviews, projects or portfolios with reference to pre-defined criteria."

Competence Based Assessment models can take a variety of forms, but most programs include two common elements: (1) a **competence framework** (The Learn2Analyze project has developed a comprehensive proposal for an Educational Data Literacy Competence Profile Framework, the L2A-EDL-CP Framework, to enhance existing competence frameworks for instructional designers and e-trainers of online courses with Educational Data Literacy competences) and (2) **competence assessments**. The value of credentials hinges on the **reliability** and **validity** of those assessments. The key requirements for competence-based assessment are listed below (Table 1):

Table 1. Requirements for Competence-based Assessment

Requirements for competence-based assessment	**#**
The development of instruments for competence assessment requires the breaking down of broadly defined competences into sub-competences or specific skills, so as to relate them to measurable learning outcomes using reliable assessment standards (Gordon, 2009).	[C1]
The assessment tasks must appropriately reflect the competence that needs to be assessed (Gulikers, Bastiaens, & Kirschner, 2004). The assessment should be consistent with the learning outcomes (Commonwealth of Learning, 2016).	[C2]
The competences required to earn a credential are clearly and openly articulated to learners, faculty, staff and external partners. (C-BEN, 2017)	[C3]
The alignment of competencies and competency demonstration assessments is visible to all learners and stakeholders. (C-BEN, 2017)	[C4]
Assessments are designed to provide **pass/fail proof of a specific (typically high) level of mastery** in targeted tasks. The level of mastery a student must perform on the assessment in order to demonstrate competence is clearly determined. In other words, the **cut score** that separates the competent from the not-yet-competent is defined, (McClarty & Gaertner, 2015)	[C5]
Establish performance levels that map proficiency of knowledge and skills in respective competence dimension. (McClarty & Gaertner, 2015)	[C6]
Timely feedback from assessments enables learners to progress efficiently. (C-BEN, 2017)	[C7]
The assessment design accommodates personalization for learners by offering flexibility around when assessments will be administered. (C-BEN, 2017)	[C8]
Learners should be able to get **credit for skills already learned on the job**, they can	[C9]

submit a **portfolio** of their work to be rated by human experts or receive **credit for prior learning** based on course equivalency databases (Jamai, & Merrilea, 2019).	
Certificate communicates competencies and support learners' needs for transfer, admission to other institutions and employment (C-BEN, 2017)	[C10]

2.2 Authentic Assessment

Authentic assessment as defined by Gulikers, Bastiaens and Kirschner (2004, p.p. 69) is "an assessment requiring students to use the same competencies, or combinations of knowledge, skills, and attitudes, that they need to apply in the criterion situation in professional life."

To implement authentic elements into competence-based assessment the following requirements (Table 2) should be applied:

Table 2. Requirements for Authentic Assessment

Requirements for authentic assessment	**#**
Authentic Competence Assessment needs to measure the use of competence in context and to have real-world relevance or reproduce real-life contexts authentically (Gordon, 2009; Herrington, Reeves, Oliver, & Woo, 2004)	[A1]
Each authentic assessment is transparently aligned to program competencies and their corresponding rubrics. (C-BEN, 2017)	[A2]
The performance criteria must be clear and understandable for all learners involved (Sluijsmans, Prins, & Martens, 2006)	[A3]
The set of authentic assessments is designed to provide learners with multiple opportunities and ways to demonstrate competency, including measures for both learning and the ability to apply (or transfer) that learning in novel settings and situations. (C-BEN, 2017)	[A4]
Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity (Herrington, Reeves, Oliver, & Woo, 2004)	[A5]
Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources (Herrington, Reeves, Oliver, & Woo, 2004)	[A6]
Authentic activities allow competing solutions and diversity of outcome (Herrington, Reeves, Oliver, & Woo, 2004)	[A7]

2.3 MOOCs Assessment

MOOCS are Massive Open Online Courses with thousands of enrollments. Multiple assessment methods and tools are used in MOOCs. To respond to the massiveness of MOOCs the following requirements (Table 3) should be applied for the assessment activities:

Table 3. Requirements for Assessment **in MOOCs**

Requirements for assessment in MOOCs	**#**
Most tests, and quizzes are **computer-graded** (Jamai, & Merrilea, 2019).	[M1]
Self-graded or **peer graded** assignments are a common practice. Peer grading works adequately well, largely because of clear grading rubrics and the fact that each	[M2]

assignment's grade is the median grade from amongst 3-4 other students' evaluations (Jamai, & Merrilea, 2019).	
Open-ended projects have their own on-demand **human graders** (usually **eTutors,** to reduce cost of assessing student work) (Jamai, & Merrilea, 2019).	[M3]
A pass/resubmit assessment mentality according to rubric criteria reduces the time and effort related to human grading (Jamai, & Merrilea, 2019).	[M4]

Table 4 presents the strengths and limitations related to authentic competence-based assessment requirements, for the most popular assessment formats in MOOCs.

Table 4. Strengths and limitations for assessment formats in MOOCs

Assessment Format	**Example:**	**Learning Outcomes**	**Strengths**	**Limitations**
Automated Multiple-Choice Questions (Yao & Hoi, 2018)	Online final exams	List, state, tell, recall, label	Instant feedback, automated and efficient	Only applicable to certain skills/levels of knowledge Not considered as authentic tasks
Self-Assessment	Learners assess their own work according to exemplary rating based on rubric	Examine, critically, assess or judge	Immediate feedback, scalable and efficient	Lack of credibility
Peer Assessment (Yao & Hoi, 2018)	Peers provide feedback to other peers' work	Examine, critically, assess or judge	Immediate feedback, scalable and efficient	Lack of credibility of peer raters
Expert Assessment (Yao & Hoi, 2018)	Instructors provide summative feedback	Create, generate and produce	Maximized validity	Not scalable
Online proctored examinations (Witthaus et al., 2016)	The learner is monitored throughout the time of the exam over a webcam	List, state, tell, recall, label	Verification of identity and supervision, Maximized Credibility	Increased cost and complexity
Recognition of prior learning	Learners gain recognition for	Create, generate and	Flexibility	Not scalable

(Witthaus et al., 2016)	knowledge, understanding, skills and competences that they already possess. RPL is conducted by expert(s)	produce		

MOOCs in general offer two tiers of digital certificates (Witthaus et al., 2016):

- Certificates that confirm participation and completion of a course,
- Certificates that verify the learner's identity and confirm mastery of learning outcomes.

According to literature the recommendation for accreditation comes with a requirement that a final exam be proctored and that the identity of the test taker be authenticated, whether in-person at a testing center or using a webcam proctoring service. Authentication and proctoring are vital elements to provide a high degree of confidence in assessments within MOOCs.

2.4 Conceptual Framework for EDL-CP Assessment

This section presents the conceptual framework for the assessment of the Educational Data Literacy (EDL) competences, as defined in the Learn2Analyze Educational Data Literacy Competence Profile (L2A EDL-CP) framework, for each professional role, namely Instructional Designers, e-Tutors, School Teachers of blended learning courses (using the flipped classroom model).

Sluijsmans et al. (2006) proposed four steps for the design of Competence-based Performance Assessment in eLearning:

Define the purpose of the assessment: List the skills and knowledge that you wish to have students learn as a result of completing a task.

Choose performance assessment tasks: Design a performance task which requires the students to demonstrate these skills and knowledge.

Define performance criteria: Develop explicit performance criteria which measure the extent to which students have mastered the skills and knowledge.

Create performance scoring rubrics: Use one scoring system or performance rubric for each performance task. The performance criteria consist of a set of score points which define in explicit terms the range of student performance. In a performance scoring rubric, the different levels of proficiency for each criterion should be defined.

Following these steps, an assessment framework for the Educational Data Literacy (EDL) competences is proposed (Table 5) in compliance with the requirements for authentic competence-based assessment for MOOCs defined in the previous sections.

Table 5. Authentic Competence-Based Assessment Framework

#	Requirements	Authentic Competence-Based Assessment Framework
[C1]	The development of instruments for competence assessment requires the breaking down of broadly defined competences into sub-competences or specific skills, so as to relate them to measurable learning outcomes using reliable assessment standards (Gordon, 2009).	Define EDL Competence Profile (EDL-CP) for each professional role, namely Instructional Designers, e-Tutors, School Teachers of blended learning courses (using the flipped classroom model). Relate competence dimensions and statements (sub-competences) to measurable outcomes.
[A1]	Authentic Competence Assessment needs to measure the use of competence in context and to have real-world relevance or reproduce real-life contexts authentically (Gordon, 2009; Herrington, Reeves, Oliver, & Woo, 2004)	For each professional role, Instructional Designers, e-Tutors, School Teachers of blended learning courses (using the flipped classroom model), there is a suitable use-case scenario which leaners are requested to work through to identify the problem(s) and to offer potential solutions. Through these tasks, the learners' understanding and skills are being assessed, encouraging them to link theory with practice by applying the respective L2A EDL competence in a real-life scenario.
[C3]	The competencies required to earn a credential are clearly and openly articulated to learners, faculty, staff and external partners. (C-BEN, 2017)	A competence credential is issued to the learner for each of the 6 dimensions of the L2A EDL-CP Framework, for providing evidence of their ability/ prove mastery in this particular competence.
[C4]	The alignment of competencies and competency demonstration assessments is visible to all learners and stakeholders. (C-BEN, 2017)	To earn the competence credential the learner needs to achieve all the learning outcomes as specified by the respective statements of the dimension.
[C2]	The assessment tasks must appropriately reflect the competence that needs to be assessed (Gulikers, Bastiaens, & Kirschner, 2004). The assessment should be consistent with the learning outcomes (Commonwealth of Learning, 2016).	For each competence dimension or statement all associated learning outcomes are measured via an automated assessment or human-assessed (self/peer/tutor/expert) activity, or artifacts/evidence of prior learning that learners submit for review so as to demonstrate the respective competence.
[A2]	Each authentic assessment is transparently aligned to program competencies and their corresponding rubrics. (C-BEN, 2017)	The criteria to measure and score evidence for the learning outcome are directly linked to underlying rubrics.

[C5]	Assessments are designed to provide **pass/fail proof of a specific (typically high) level of mastery** in targeted tasks. The level of mastery a student must perform on the assessment in order to demonstrate competence is clearly determined. In other words, the **cut score** that separates the competent from the not-yet-competent is defined. (McClarty & Gaertner, 2015)	There is a score threshold of e.g. 70% for of each assessment activity completion.
[C6]	Establish performance levels that map proficiency of knowledge and skills in respective competence dimension. (McClarty & Gaertner, 2015)	The levels of proficiency for each competence are divided into basic, intermediate and advanced which represent the progressive levels of knowledge, skills, and abilities required to function successfully in respective professional roles. The levels of proficiency are specified based on the number of completed assessment activities.
[C8]	The assessment design accommodates personalization for learners by offering flexibility around when assessments will be administered. (C-BEN, 2017)	Participants can complete the competences on their own pace.
[A4]	The set of authentic assessments is designed to provide learners with multiple opportunities and ways to demonstrate competency, including measures for both learning and the ability to apply (or transfer) that learning in novel settings and situations. (C-BEN, 2017; Rowan, 2016).	To prove mastery of a particular competence the learner should complete multiple types of assessment activities, related to the competence that needs to be assessed.
[C9]	Learners should be able to get credit for skills already learned on the job, they can submit a portfolio of their work to be rated by human experts or receive credit for prior learning based on course equivalency databases (Jamai, & Merrilea, 2019).	Participants can submit evidence of prior learning for review so as to demonstrate the respective competence.
[M1]	Most tests, and quizzes are **computer-graded** (Jamai, & Merrilea, 2019).	The learners are requested to undertake complex tasks and answer MCQs which are automatic graded by the platform.
[M2]	**Self-graded** or **peer graded** assignments are a common practice. Peer grading works adequately well, largely because of clear grading rubrics and the fact that each assignment's grade is the median grade from amongst 3-4 other students'	The evaluation of the outcomes of the tasks takes place either by the learners themselves as self-assessment or peer assessment using a rubric which includes the criteria that each response should meet and functions as guidelines for participants to assess themselves or

	evaluations.	others. For this type of assessment, learners initially practice how to assess responses by grading some example responses and comparing how their grade differs to instructor's grade, using the same rubric.
[M3]	Open-ended projects have their own on-demand **human graders** (usually **eTutors,** to reduce cost of assessing students' work).	Concluding Assignment is an open-ended project reviewed by the instructor/expert.
[A5]	Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity (Herrington, Reeves, Oliver, & Woo, 2004)	In the concluding assignment, learners are requested to submit a real-life scenario assignment, using a variety of resources, which is reviewed by the instructor/expert, based on an EDL competences measurement rubric across three proficiency levels.
[A6]	Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources (Herrington, Reeves, Oliver, & Woo, 2004)	
[A7]	Authentic activities allow competing solutions and diversity of outcome (Herrington, Reeves, Oliver, & Woo, 2004**)**	
[C10]	Credentials communicate competencies and support learners' needs for transfer, admission to other institutions and employment (C-BEN, 2017)	Credential issuing utilizes visualization and e-portfolio technology to communicate the richness of the competencies demonstrated in earning the credential.

Based on the proposed assessment framework an indicative educational design template, for the implementation of competence-based assessment in L2A EDL-CP Certification platform, is presented below (Table 6).

Table 6. Template for L2A EDL-CP Certification Platform for Instructional Designers, e-Tutors, School Teachers of blended learning courses (using the flipped classroom model).

L2A EDL-CP Certification Platform for Instructional Designers, e-Tutors, School Teachers of blended learning courses (using the flipped classroom model)			
0	**Introduction**	Text page to present the scope of the Use Case (the Use Case scenario is used to certify the EDL competences of K12 teachers/IDs/eTutors).	
0.1	Use Case	The background story - Introduction of the main character (Alice/Laura/David)	
1	**Data Collection**	Text page to present the competence dimension and the outcomes needed to certify the competence development.	
Statement/	Evidence of	Use Case Scenario	Activities

Dimension	competence development		
Statement 1.1	Auto-graded Assessment Activity for L2A EDL-CP Statement 1.1	Real life scenario activity based on the Use Case which is auto-graded	Quiz Q1. Auto-graded for LO #1.1.1 Q2. Auto-graded for LO #1.1.2 …. Q5 Auto-graded for LO #1.1.5
Statement 1.2	Auto-graded Assessment Activity for L2A EDL-CP Statement 1.2	Real life scenario activity based on the Use Case which is auto-graded	Quiz Q1. Auto-graded for LO #1.2.1 Q2. Auto-graded for LO #1.2.2 …. Q5 Auto-graded for LO #1.2.5
	*** Continue with assessment activities for the remaining L2A EDL statements of the competence dimension***		
Dimension 1	Concluding human-assessed (self/peer/tutor/expert) assignment for L2A EDL Dimension 1 using rubrics for the assessment	Human-assessed real life scenario activity based on the Use Case, using a rubric of EDL Dimension 1 Competence Statements across three proficiency levels and an exemplary solution rating	Human-assessed activity or Evidence of prior learning
***** Continue with other dimensions Data Management … Data Ethics *****			
7	**Concluding Assignment**		
EDL-CP	Concluding assignment	Real life scenario assignment reviewed by the **instructor/expert**, using an EDL competences rubric across three proficiency levels	Instructor/expert assessed activity or Evidence of prior learning

2. Gamification of an EDL-CP Certification Platform

3.1 Purpose

The purpose of this section is to discuss the possible implementation of gamification elements on the educational design of an EDL-CP Certification Platform to collect evidence for the credible assessment of EDL competences.

3.2 Gamification for competence assessment

Gamification aims to enhance traditional assessment methods by integrating game elements so as to create an engaging assessment experience and motivate participants, increase enjoyment and positively influence the learners' perception of their progress (Borrás-Gené, Martínez-Núñez, & Martín-Fernández 2019). Antonaci's et al. (2019) systematic literature review resulted that gamification can be used to set clear goals and have a positive effect on performance. Weiner and Foster (2017) argue that gamification raises interesting implications for credentialing assessment methods and is used to yield richer portrait of an examinee's professional competence. They point out the use of digital badging in the context of professional credentialing to verify competence in the domain based upon assessment.

Examples of game elements that can be applied to traditional assessments include storylines, progress indicators, feedback mechanisms, interactive item types, leader boards, points, badges, levels. (Gardner, 2017). In the Handbook of best practices in gamification report (2016), apart from points, badges, leaderboards, several commonly used gamification elements and mechanics are listed, like goal setting; onboarding (i.e tutorials and familiarization); giving feedback on progress towards future goals; sending reminders for tasks. Scott and Neustaedter (2013) also recognize certain game dynamics and concepts that seem to be effective when applied to learning environments. These concepts are: freedom to fail; rapid feedback; progression; and storytelling. Tsay et al. (2018) examined four game elements: immediate feedback; badges; leaderboard and time limits and concluded that performance was significantly better in the gamified condition than in the non-gamified one.

In conclusion, gamification holds promise for the evolution of assessment models and approaches. In the context of assessing professional competences, gamification can be useful for goal setting, self-monitoring, feedback, and collecting evidence for credible assessment. To address these needs, gamification elements can be integrated into an EDL-CP Certification Platform as presented in section 2.4 resulting in the following gamification proposal.

3.3 Gamification for competence-based assessment of the EDL-CP

3.3.1 Overview

In order to fulfill the requirements pointed in previous sections, a number of gamification elements and concepts (i.e. Storytelling, Onboarding, Gamified Assessment activities, Goal setting, Freedom to fail, Rapid feedback, Badges, Points, Levels, Progression) are implemented in the proposed Authentic Competence-Based Assessment Framework. Table 7 presents the integration of game elements and concepts into the Authentic Competence-based Assessment Framework.

Table 7. Gamified Authentic Competence-Based Assessment Framework

#	Requirements	Authentic Competence-Based Assessment Framework	**Gamification Elements and Concepts**
[C1]	The development of instruments for competence assessment requires the breaking down of broadly defined competences into sub-competences or specific skills, so as to relate them to measurable learning outcomes using reliable assessment standards (Gordon, 2009).	Define EDL Competence Profile for each professional role, namely ID, eTutor, K12 Teacher. Relate competence dimensions and statements (sub-competences) to measurable outcomes.	
[A1]	Authentic Competence Assessment needs to measure the use of competence in context and to have real-world relevance or reproduce real-life contexts authentically (Gordon, 2009; Herrington, Reeves, Oliver, & Woo, 2004)	For each professional role, instructional designer, e-Tutor, teacher of online and blended courses, there is a suitable use-case scenario which leaners are requested to work through to identify the problem(s) and to offer potential solutions. Through these tasks, the learners' understanding and skills are being assessed, encouraging them to link theory with practice by applying the respective L2A EDL competence in a real-life scenario.	**Storytelling:** Assessment activities are based on a use case scenario (there are 3 different use cases, one for each professional role – K12 Teacher, ID and eTutor).

[C3]	The competencies required to earn a credential are clearly and openly articulated to learners, faculty, staff and external partners. (C-BEN, 2017)	A competence credential is issued to the learner for each of the 6 dimensions of the L2A EDL-CP Framework, for providing evidence of their ability/ prove mastery in this particular competence.	**Competence Badges:** Open competence badges for each competence dimension. **Onboarding**: Text page/animation to introduce Open Competence Badges
[C4]	The alignment of competencies and competency demonstration assessments is visible to all learners and stakeholders. (C-BEN, 2017)	To earn the competence credential the learner needs to achieve all the learning outcomes as specified by the respective statements of the dimension.	**Progressing:** From competence completion monitoring, participants (learners and stakeholders) can be informed for the activities related to each competence. As the participant completes competences s/he can see the competence bar progressing.
[C2]	The assessment tasks must appropriately reflect the competence that needs to be assessed (Gulikers, Bastiaens, & Kirschner, 2004). The assessment should be consistent with the learning outcomes (Commonwealth of Learning, 2016).	For each competence dimension or statement all associated learning outcomes are measured via an automated assessment or human-assessed (self/peer/tutor/expert) activity, or artifacts/evidence of prior learning that learners submit for review so as to demonstrate the respective competence.	
[A2]	Each authentic assessment is transparently aligned to program competencies and their corresponding rubrics. (C-BEN, 2017)	The criteria to measure and score evidence for the learning outcome are directly linked to underlying rubrics.	
[C5]	Assessments are designed to provide **pass/fail proof of a specific (typically high) level of mastery** in targeted tasks. The level of mastery a student must perform on the assessment in order to demonstrate	There is a score threshold of e.g. 70% for of each assessment activity completion.	

	competence is clearly determined. In other words, the **cut score** that separates the competent from the not-yet-competent is defined. (McClarty & Gaertner, 2015)		
[C6]	Establish performance levels that map proficiency of knowledge and skills in respective competence dimension. (McClarty & Gaertner, 2015)	The levels of proficiency for each competence are divided into basic, intermediate and advanced which represent the progressive levels of knowledge, skills, and abilities required to function successfully in respective professional roles. The levels of proficiency are specified based on the number of completed assessment activities.	**Levels of Badges:** There are 3 badge levels (bronze, silver and gold) per competence dimension according to competence completion.
[A3]	The performance criteria must be clear and understandable for all learners involved (Sluijsmans, Prins, & Martens, 2006)		**Onboarding**: Text page or animation to introduce performance criteria.
[C7]	Timely feedback from assessments enables learners to progress efficiently. (C-BEN, 2017)		**Rapid Feedback**: Most activities are in the form of automated quiz test with immediate feedback. If a participant fails passing an activity s/he will be automatically prompted to review content from L2A MOOC and/or other relevant resources.
[C8]	The assessment design accommodates personalization for learners by offering flexibility around when assessments will be administered. (C-BEN, 2017)	Participants can complete the competences on their own pace.	**Goal setting:** Participants can select the order and the set of competences to provide evidence either by completing the relevant assessment activities or by uploading evidence of prior learning. They can choose to partially complete some competences and return with evidence to reach higher level of proficiency or

			to claim the Mastery/Excellence Badge.
[A4]	The set of authentic assessments is designed to provide learners with multiple opportunities and ways to demonstrate competency, including measures for both learning and the ability to apply (or transfer) that learning in novel settings and situations. (C-BEN, 2017; Rowan, 2016).	To prove mastery of a particular competence the learner should complete multiple types of assessment activities, related to the competence that needs to be assessed.	
[C9]	Learners should be able to get credit for skills already learned on the job, they can submit a portfolio of their work to be rated by human experts or receive credit for prior learning based on course equivalency databases (Jamai, & Merrilea, 2019).	Participants can submit evidence of prior learning for review so as to demonstrate the respective competence	**Mastery/Excellence Badge** Participants can provide evidence for competence completion by uploading evidence of prior learning to skip some activities or to receive better competence rating and claim the Mastery/Excellence Badge.
[M1]	Most tests, and quizzes are **computer-graded** (Jamai, & Merrilea, 2019).	The learners are requested to undertake complex tasks and answer MCQs which are automatic graded by the platform.	**Gamified Interactive Assessment activities:** a. Bite size assessment activities based on the use case scenario, connected to competence statements, b. usage of technology-rich environments **Points:** Participants gain points for activity completion
[M2]	**Self-graded** or **peer graded** assignments are a common practice. Peer grading works adequately well, largely because of clear grading rubrics and the fact that each assignment's grade is the median grade from amongst 3-4 other students' evaluations.	The evaluation of the outcomes of the tasks takes place either by the learners themselves as self-assessment or peer assessment using a rubric which includes the criteria that each response should meet and functions as guidelines for participants to assess themselves or others. For this type of assessment, learners	**Points:** Participants gain points for activity completion

		initially practice how to assess responses by grading some example responses and comparing how their grade differs to instructor's grade, using the same rubric.	
[M3]	Open-ended projects have their own on-demand **human graders** (usually **eTutors,** to reduce cost of assessing student work).	Concluding Assignment is an open-ended project reviewed by the instructor/expert.	**Points:** Participants gain points for activity completion
[A5]	Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity (Herrington, Reeves, Oliver, & Woo, 2004)	In the concluding assignment, learners are requested to submit a real-life scenario assignment, using a variety of resources, which is reviewed by the instructor/expert, based on an EDL competences measurement rubric across three proficiency levels.	
[A6]	Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources (Herrington, Reeves, Oliver, & Woo, 2004)		
[A7]	Authentic activities allow competing solutions and diversity of outcome (Herrington, Reeves, Oliver, & Woo, 2004**)**		
[M4]	A pass/resubmit assessment mentality according to rubric criteria reduces the time and effort related to human grading (Jamai, & Merrilea, 2019).		**Freedom to fail:** Participants can take the assessment activities multiple times (re-attempt different auto-grading activities, or re-submit new answer for human-assessed activity).
[C10]	Credentials communicate competencies and support learners' needs for transfer, admission to other institutions and employment (C-BEN,	Credential issuing utilizes visualization and e-portfolio technology to communicate the richness of the competencies demonstrated in earning the credential.	Open competence badges can be automatically transferred to learners backpack (i.e badgr.io)

	2017)		

The aforementioned gamification elements and concepts can be integrated in an EDL-CP Certification Platform Template (section 2.4) resulting in the gamification proposal, as presented in the following section.

3.3.2 Gamification proposal of the L2A EDL-CP Certification Platform

Three different gamified courses, one for each of the three professional roles (K12 Teacher, ID and eTutor), based on the three Use Case scenarios (Alice, David and Laura), could be created, according to the following template. Table 8 presents the integration of game elements to the Template for the EDL-CP Certification.

Table 8. Gamified Template for the EDL-CP Certification

<table>
<tr><th colspan="7">Gamified EDL-CP Certification</th></tr>
<tr><td>0</td><td>Introduction</td><td colspan="5">Text page to present the scope of the Use Case (the Use Case scenario is used to certify the EDL competences of K12 teachers/IDs/eTutors).</td></tr>
<tr><td rowspan="3">0.1</td><td rowspan="3">Onboarding</td><td colspan="5">Text page to introduce Open Competence Badges</td></tr>
<tr><td colspan="5">How to find competence completion report (Animation)</td></tr>
<tr><td colspan="5">How to upload evidence of prior learning (Animation)</td></tr>
<tr><td>0.2</td><td>Use Case</td><td colspan="5">The background story - Introduction of the main character (Alice/Laura/David)</td></tr>
<tr><td>1</td><td>Data Collection</td><td colspan="5">Text page to present the competence dimension and the outcomes needed to certify the competence development.</td></tr>
<tr><td rowspan="2">Statement</td><td rowspan="2">Evidence of competence development</td><td rowspan="2">Use Case Scenario</td><td rowspan="2">Activities</td><td rowspan="2">Points for activity completion</td><td colspan="2">Competence Badge</td></tr>
<tr><td>Badge Level</td><td>Criteria</td></tr>
</table>

Statement 1.1	Auto-graded Assessment Activity for L2A EDL-CP Statement 1.1	Real life scenario activity based on the Use Case which is auto-graded	Quiz Q1. Auto-graded for LO #1.1.1 Q2. Auto-graded for LO #1.1.2 …. Q5 Auto-graded for LO #1.1.5	60 XP	Bronze	Completion of competence statement 1.1 **OR** 1.2
Statement 1.2	Auto-graded Assessment Activity for L2A EDL-CP Statement 1.2	Real life scenario activity based on the Use Case which is auto-graded	Quiz Q1. Auto-graded for LO #1.2.1 Q2. Auto-graded for LO #1.2.2 …. Q5 Auto-graded for LO #1.2.5	60 XP	Silver	Completion of (competence statement 1.1 **AND** 1.2) **OR** (competence dimension)
	*** Continue with assessment activities for the remaining L2A EDL statements of the competence dimension***					
	Onboarding	Guidelines for taking part to the concluding peer-assessed activity				
Dimension 1	Concluding human-assessed (self/peer/tutor /expert) assignment for L2A EDL Dimension 1 using rubrics for the assessment	Human-assessed real life scenario activity based on the Use Case, using a rubric of EDL Dimension 1 Competence Statements across three proficiency levels and an exemplary solution rating	Human-assessed activity or Evidence of prior learning	80 XP	Gold	Completion of competence dimension 1 **AND** competence statement 1.1 **AND** 1.2

*** Continue with other dimensions Data Management … Data Ethics ***						
7	**Concluding Assignment**					
	Onboarding	Guidelines for taking part to the concluding peer-assessed activity				
EDL-CP	Concluding assignment	Real life scenario assignment reviewed by the **instructor/expert** , using an EDL competences rubric across three proficiency levels	Instructor assessed activity or Evidence of prior learning	500 XP	Mastery/ Excellence Badge	>80% rating given by the instructor using EDL competences rubric

3.3.3 Limitations of IMC Platform for Authentic Competence-based Assessment

The constrains and limitations of the IMC platform (detailed in Table 9) include the absence of a peer assessment mechanism and open badges issuance mechanism. These are key features of the aforementioned gamification proposal and therefore appropriate adjustments are required to enable the implementation of the gamification and assessment plan. Gamification of L2A MOOC based on IMC capabilities is described in Appendix 1.

Table 9. Limitations of IMC Platform for Authentic Competence-Based Assessment in MOOCs

	Requirements (Proposed framework)	**IMC**
Competence-based Assessment	Competence Framework definition **[C1]**	since multiple modules contribute to the development of each competence and these modules are implemented as different courses it is hard to map courses (modules) to competences -
	Assessment tasks reflect the competences **[C2]**	+
	Competences required to earn a credential are clearly stated **[C3]** (Badge issuing according to competence completion)	badge definition does not map to the EDL-Competence Profile - hard to map which activities / learning objects

		count for which competence -
	Visible alignment of competences and assessments **[C4]** (Competence completion monitoring)	-
	Assessments are designed to provide pass/fail proof of mastery **[C5]**	+
	Establish performance levels that map proficiency **[C6]** (Badges per competence levels)	multiple levels of experience track
	Timely feedback **[C7]**	+
	Personalization and flexibility **[C8]**	+
	Evidence of prior knowledge **[C9]**	Recognition of users' evidence for prior learning i.e. the EDL Certification Level A (for participants to the L2A MOOC Phase A) so as to proceed with Certification on EDL Level B. Not optimized for a massive use in an open online course. -
	Credentials communicate competencies and support learners' needs for transfer, admission to other institutions and employment **[C10]**	-
Authentic Assessment	Assessment measures the use of competence in context (real-life scenario) **[A1]**	+
	Each assessment is aligned to the competence and the corresponding rubric **[A2]**	+
	Clear performance criteria **[A3]**	+
	Multiple ways to demonstrate competence **[A4]**	+-
	Ill-defined activities **[A5]**	+
	Examine tasks from different perspectives using a variety of resources **[A6]**	-
	Competing solutions and diversity of outcome **[A7]**	-
Assessment in MOOCs	Auto-graded bite-size assessment activities **[M1]**	as a quiz activity
	Self-assessed activities (using a rubric for grading) **[M2]**	as a quiz activity
	Peer-assessment activities (using a rubric for grading) **[M2]**	-
	Final assignment reviewed by instructor (using a rubric for grading) **[M3]**	not realistic in massive scenarion-
	Pass/resubmit **mentality [M4**]	-
mifi cati	Onboarding (Text/graphics/ Animation)	Text/ graphics
	Points for activity completion	+

	Open Badges	-
	Send badges to backpack	-
	Levels	+
	Progress	+

The previous sections presented the initial proposed gamified authentic competence-based assessment mechanism for EDL competences for L2A MOOC Phase B.

Based on the technical capabilities of the IMC platform, the initial gamified authentic competence-based assessment proposal for EDL competences for L2A MOOC Phase B is accordingly reformed as presented in the Appendix 1.

Next, we will describe the integration of gamification elements in the educational design (both content and structural gamification) of the L2A MOOC for Phase B, towards improving the overall learning experience of the participants.

Part B – Gamification in L2A MOOC

3. Gamification of L2A MOOC

4.1 Purpose

The purpose of this section is to propose gamification elements on the educational design of the Learn2Analyze (L2A) MOOC towards improving the overall learning experience of the participants for stimulating the development of certain competences and promote their collaboration and social presence in the MOOC community.

4.2 Gamification for MOOCs

According to Werbach and Hunter (2012, p. 26), gamification is *"The use of game elements and game-design techniques in non-game contexts*". In the context of education, it is mainly used in order to enhance participants' engagement and motivation (Dicheva et al., 2015).

Gamification in the context of MOOCs, is mainly proposed to enhance motivation to the achievement of the learning goals and to increase the engagement to the learning activities (Romero-Rodríguez, Ramírez-Montoya & González, 2019), but also to support collaboration among participants, handle isolation and improve social participation (Antonaci et al., 2018). Hew et al. (2016) claimed that the use of game mechanics had a positive effect on motivating students to engage with more difficult tasks.

Chang and Wei (2016) created a concept map of 40 gamification mechanics in MOOCs and using a survey of 5,000 participants identified the top most engaging among them: *Virtual Goods, Redeemable Points, Team Leaderboards, Trophies and Badges*. *Points, badges and leaderboards* are the most common gamification elements used in online environments (Dicheva et al., 2015). The key element of gamification is the inclusion of tasks linked to predetermined learning objectives that learners have to perform to accumulate points, move to higher levels, and win awards (Kiryakova et al., 2014).

Badges "*allow badge owners to digitally show and publicize online an achieved knowledge or skill*" (Jobe et al., 2014, p. 1582). They are credible graphical icons that appear to learner's profile and indicate his/her level of achievement. *Leaderboards* refer to high score tables that indicate a learner's performance compared to his/her peers (Zichermann & Cunningham 2011).

Points, badges and leaderboards, along with levels and progress bar can be integrated in the L2A MOOC educational design, aiming to enhance engagement with the content and learning activities and to promote participation to the discussion forum, resulting in the following gamification proposal.

4.3 Gamification of the current L2A MOOC

4.3.1 Content Gamification

For this type of gamification, the content is altered to be more game-like by using gamified activities such as storytelling and feedback loops, in order to enhance learners' interaction with content material:

A. **Storytelling** (using the 3 Use Cases: Alice – School Teacher, Laura: eTutor, David: Instructional Designer)

B. **Rapid feedback**: Most activities are in the form of automated quiz test with immediate feedback. If a participant fails passing an activity s/he will be automatically prompted to review content from L2A MOOC and/or other relevant resources. Such activities include learning activities in the form of MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.

C. **Freedom to fail**: Participants can try the assessment activities multiple times

4.3.2 Structural Gamification (on the Instructional Design of the MOOC)

For this type of gamification, game elements are incorporated in the instructional design of the MOOC.

A. Points: Participants gain points by completing activities and accumulate points to advance level.

Points	**The learner receives points**
content track	for watching course content such as text, videos, slides, documents.
module track	if s/he completes a learning object of that module
engagement track	for completing quizzes and exercises, regardless of the result
test track	if s/he successfully completes a test

B. Badges

Name:	**Modulet Badge** – 6 badges one for each Module 2..7
Purpose:	To promote engagement to the content and the activities of a module
Verifies:	This badge verifies that the participant has reviewed the module content and participated to the module quizzes regardless the students' results
Rule:	To earn this badge the participant must gain at least a certain number of XP points in the Module

Name:	**Knowledge** Badge
Purpose:	To promote excellence
Verifies:	This badge verifies that the participant has excelled in the final MCQ test
Rule:	To earn this badge the participant must score over 90% in the final MCQ

Name:	**Community** Badge (3 badges: Commentator, Moderator, Forum Master)
Purpose:	To promote discussion activities
Rule:	The participant earns the respective badge when s/he posts a certain number of posts in the discussion forum.

C. Levels - Each experience track is divided into **5 levels**. By accumulating experience points (XPs) a student can reach higher levels in an experience track.

D. **Progress bar -** Progress bar shows the names of the levels and the amount of 'XP' points that is needed to the next level. It is used to display progress towards next or ultimate performance level.
E. **Leaderboard -** The student is able to see where s/he is in the ranking compared to other students.

Table 10 presents that gamification proposal for enhancing the L2A MOOC v1 where both

- gamified activities are included in each content subtopic to enhance learners' interaction with content material and
- game elements are incorporated in the instructional design of the MOOC

Table 10. Gamification for enhancing the L2A MOOC v1

1.0	**Introduction**		**Gamification**
1.0.1	Welcome	A short (~ 2 min) instructor talking head video to introduce the scope and the learning outcomes of the module + Transcript in .txt and .srt files to download.	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.0.2	Introduction	Text page to present the scope of the module (the module introduces xxx, the module will introduce / discuss / identify / present / highlight / etc)	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.0.3	Learning Outcomes	Text page to present the learning outcomes of the module (max 5)	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.0.4	*Case Study or Exemplary Scenario or Demonstrator or High Level Expert Opinion*	*External Existing Video from a YouTube to present a Case Study or an Expert Opinion related with the theme of the Module at large* ***[Optional]***	**XP Points** **Points:** 'Content' track **Points:** 'Module' track[1]
	Learning Activity	MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.	**XP Points** **Points:** 'Test' track **Points:** 'Engagement' track **Points:** 'Module' track
1.0.5a,b	*Poll*	Page with 1-4 Polls to self-assess participants existing knowledge and/or experience and/or initial views on the core theme of the module. Option to review the responses of the group of learners by checking the results again after more people	**XP Points** **Points:** 'Engagement' track **Points:** 'Module' track

.

		have completed the poll. ***[Optional] [to relate with the community]***	
1.1	**Topic 1**		
1.1.0	Poll	Page with 1-4 Polls to self-assess participants existing knowledge and/or experience and/or initial views on the topic 1 of the module. Option to review the responses of the group of learners by checking the results again after more people have completed the poll. [to relate with the community]	**XP Points** **Points:** 'Engagement' track **Points:** 'Module' track
1.1.1	Subtopic 1.1	Text Page with presenting Subtopic 1.1 + Graphic + Web Links to External References	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
	Learning Activity	MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.	**XP Points** **Points:** 'Test' track **Points:** 'Engagement' track **Points:** 'Module' track
1.1.2	Subtopic 1.2	Text Page with presenting Subtopic 1.2 + Graphic + Web Links to External References	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
	Learning Activity	MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.	**XP Points** **Points:** 'Test' track **Points:** 'Engagement' track **Points:** 'Module' track
1.1.3	Subtopic 1.3	Text Page with presenting Subtopic 1.2 + Graphic + Web Links to External References	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
	Learning Activity	MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.	**XP Points** **Points:** 'Test' track **Points:** 'Engagement' track **Points:** 'Module' track
****** continue for max 5 subtopic per topic ******			
1.1.4	Case Study or Exemplary Scenario or Demonstrator on How to or Expert Opinion	External Existing Video from a YouTube to present a Case Study or an Expert Opinion	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
	Learning Activity	MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners.	**XP Points** **Points:** 'Test' track **Points:** 'Engagement' track **Points:** 'Module' track
****** use at least 1 external case study or demonstration video AND at least***			

	1 Expert Opinion video per topic *		
1.1.5a,b	*Poll*	Page with 1-4 Polls to self-assess participants existing knowledge and/or experience and/or initial views on the core theme of the module. Option to review the responses of the group of learners by checking the results again after more people have completed the poll. ***[Optional] [to relate with the community]***	**XP Points** **Points:** 'Engagement' track **Points:** 'Module' track
1.1.6	Discussion Forum	Encourage participants to elaborate on their poll and/or word count responses in a discussion task, by posting their thoughts on the discussion board. ***[to engage with the community]***	**XP Points** **Points:** 'Engagement' track **Points:** 'Module' track (IMC feedback on most suitable type of track to be used for forum)
1.2	**Topic 2**		
	***** continue for max 4-5 topics using the same design*****		**…**
1.5	**Concluding human-assessed assignment (for each module)**		
1.5.1	Assignment details	Guidelines for taking part to the assignment and for peer-grading mechanism	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.5.2	Concluding human-assessed (self/ peer) assignment using rubrics for the assessment	Human-assessed (self/peer) real life scenario activity based on the Use Case, using a rubric across three proficiency levels and an exemplary solution rating. The evaluation of the outcomes takes place either by the learners themselves as self-assessment or peer assessment using a rubric which includes the criteria that each response should meet and functions as guidelines for MOOC participants to assess themselves or others.	**XP Points** **Points:** 'Test track' **Points:** 'Engagement' track **Points:** 'Module' track
1.5.3	Discussion Forum	Encourage participants to use discussion forum for collaboration, by posting their thoughts and questions related to the concluding assignment on the discussion board. ***[collaboration]***	**XP Points** **Points:** 'Engagement' track **Points:** 'Module' track
1.6	**Module Summary**		
1.6.1	Summary of the Module	Text to summarise what was learnt	**XP Points** **Points:** 'Content' track **Points:** 'Module' track

1.6.2	Instructor Video: Module Summary	A short (~ 2 min) instructor talking head video to provide a summary of what we have covered in this module.	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.6.3	Next Up	Short text to introduce the next module	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.6.4	Reminder	Short text to prompt completing the assessment of the module	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
1.7	**References and Reading**		
1.7.1		List of References and Suggested Readings per Topic (mainly to open access resources)	**XP Points** **Points:** 'Content' track **Points:** 'Module' track
…	****** continue for the rest modules using the same design******		**…**

Based on the technical capabilities of the IMC platform, the initial assessment and gamification proposal of the L2A EDL-CP Certification Platform is accordingly reformed in order to enable the implementation of the gamification and assessment mechanism for L2A MOOC for Phase B. The final guidelines are presented in the Appendix 1. This Appendix also be explains how to "normalize" scores and points for the Structural Gamification, despite of the different Modules having different volume, semantic density and structures.

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APPENDIX 1 – Implementation in IMC Platform

1. Supported Features based on IMC platform capabilities

The purpose of this section is to present the guidelines to follow in order to implement the gamification elements on the content and educational design of the Learn2Analyze (L2A) MOOC version 2 as well as the assessment mechanism, as supported by IMC platform capabilities.

Table 11. IMC platform capabilities

Gamification		**Feasibility**
Content	Storytelling	✓
	Rapid feedback	✓ * Upon completion of the quiz
	Freedom to fail	✓
	H5P	✓ * Module partners should create the content themselves * No direct communication of results of the external activity with the IMC Learning Suite
	SCORM WBTs	✓ * Partners should create interactive content themselves, export it as SCORM WBT and IMC could integrate it into the course.
Structural	Points	✓
	Badges	✓
	Levels	✓
	Progress bar	✓
	Leaderboard	✓
	Open Badges	☒
	Polls	✓ *No direct communication of results of the external activity with the IMC Learning Suite * Experience points possible but only based on completion of activity, not on result.
Formative Assessment (assessment for learning)	Automated quiz tests	✓
	Self-Assessment	✓

		* Potential uploading of empty solutions * Supportive tools: Discussion Forum, Double Dare
	Peer Assessment	☒
Final / Summative Assessment (assessment of learning)	Certificate A	✓
	Certificate B	✓

2. Gamification of L2A MOOC v2 based on IMC capabilities

2.1 Content Gamification

A. Storytelling

Use of the 3 Use Cases: Alice – School Teacher, Laura: eTutor, David: Instructional Designer

B. Rapid feedback

- Learning activities added after each content subtopic are in the form of automated quiz test with immediate feedback.
- Once the learner completes the quiz (mini quiz with just one question).
- We will follow the self-learning / training scenario
  - If a student fails s/he can repeat the activity 2 times
  - Already after failing the first time, student can click on a button and s/he will be automatically prompted to review content from L2A MOOC and/or other relevant resources and if applicable s/he will also see sample solution.
  - Student can repeat the activity no matter if s/he viewed resource/solution or not.
- Such activities include learning activities in the form of MCQs or other QTI question types related to the video watched or the topic studied providing regular and meaningful feedback to the learners.

C. Freedom to fail

Participants can re-attempt the auto-grading quiz activities multiple times

2.2 Structural Gamification (on the Instructional Design of the L2A MOOC v2)

A. ***Points*** Participants gain experience points (XPs) by completing activities and accumulate points to advance level. There are 4 experience tracks: Content, Engagement, Test and Module.
B. ***Levels*** Each experience track is divided into **5 levels**. By accumulating experience points (XPs) a student can reach higher levels in an experience track.

Table 12. Points and Levels

Track Name / Points	**Track description (concept) / The learner receives points**	**Description visible to learner**	**Levels** (Indicative XPs, to be specified upon finalization of the content additions for phase B)
Content	for watching course content such as text, videos, slides, documents.	This experience track shows your progress on course content such as text, videos, slides, documents.	(1): Novice: 0XP (2): Intermediate: 75XP (3): Experienced: 150XP (4): Advanced: 225XP (5): Expert: 300XP
Engagement	for completing quizzes and exercises, regardless of the result	This experience track shows your participation in the activities of the course. Points are awarded for completing quizzes, exercises and other interactive learning objects, regardless of your result.	(1): Uninvolved: 0XP (2): Tuned in: 45XP (3): Active: 90XP (4): Engaged: 135XP (5): Committed: 180XP
Test	if s/he successfully completes a quiz test	This experience track shows your progress on tests. Points are awarded for successfully completing quiz tests.	(1): Novice: 0XP (2): Intermediate: 40XP (3): Experienced: 80XP (4): Advanced: 129XP (5): Expert: 160XP
Module Track Names (for each module): • Orientation • Educational Data • Learning Analytics • Teaching Analytics • Moodle • eXact Suite • IMC Learning Suite	if s/he completes a learning object of that module	This experience track shows your progress in module “X” - “name of module track”. Points are awarded if you complete a learning object within module “X” - “name of module track”.	(1): Starter: 0 XP (2): Bronze: NN XP (3): Silver: MM XP (4): Gold: PP XP (5): Platinum: XX XP

Mechanism:

- Upon finalization of any content additions to the modules, the number of hours to complete each module will be calculated and the total number of XP points to

allocate per module will be estimated accordingly. Thus, each module receives a specific number of XPs, based on a weighted factor.

- Example (numbers are fictitious), if we decide to assign 100 points in total for the whole course and the duration is 20 hours (5 points/hour), then
  - module 2 needs 4 hours → 20 points
  - module 3 needs 3 hours → 15 points
  - module 4 needs 5 hours → 25 points
  - module 5 needs 2 hours → 10 points
  - module 6 needs 4 hours → 20 points
  - module 7 needs 2 hours → 10 points

- Each module leader will be responsible
  - to assign the XP points for each LO/item/page (more complicated objects => more XP points, introductory texts => no points at all, etc.) included in the module
  - to select for each LO/item/page the corresponding experience track (Content, Engagement, Test).
  - For Quiz Tests

    a) Engagement points will be assigned for completing the quizzes, regardless of the result and

    b) Test points will be assigned if a learner successfully completes a quiz test.
  - For self-assessed concluding assignments,

    a) Content points will be assigned for reading the description

    b) Engagement points will be assigned for participating in the forum, uploading and self-assessing the solution, and

    c) Test points will be assigned for self-assessing the solution
  - For the Polls, XP points for the object can be awarded and assigned to the Engagement Track.
  - All LOs (with XPs) should be included in the Module Track.
- The total number of XP points of the LOs of each module needs to sum up to the total points allocated for the specific module (as calculated above).

Note: With regards to the polls, the learners will be requested to mark manually the learning object where the poll is embedded as completed, so as XP points for the object can be awarded and assigned to the Engagement Track (and Module Track).

Table 13. Sample of the .xls file to be filled in by each module leader

Name	Type	Indicative XPs value	Content	Engage-ment	Test	Module 2
2.0 Introduction	Link	1	y			y
2.0.1.1 Welcome to Module 2	Link	1	y			y
2.0.2.1 Module 2 Introduction	Link	1	y			y
2.0.3.1 Module 2 Learning Objectives	Link	1	y			y
2.0.4.1 Poll: You and Educational Data	Link	1		y		y
2.1 Educational Data as a key success factor for online and blended teaching and learning	Link	1	y			y
2.1.1 Educational data for data-driven decision making	Link	1	y			y
2.1.1.1 Poll	Link	1		y		y
2.1.1.2 Big Data	Multi-media file	2	y			y
2.1.1.3 The 4V's of Big Data	Link	2	y			y
Learning Activity (new content)	Test	2		y	y	y
2.1.1.4 Educational Data	Multi-media file	2	y			y
Learning Activity (new content)	Test	2		y	y	y
2.1.1.5 Educational Data Opportunities	Link	1	y			y
Learning Activity (new content)	Test	1		y	y	y
2.1.1.6 Data-Driven	Multi-media	3	y			y

Decision Making	file					
Learning Activity (new content)	Test	2		y	y	y
2.1.1.7 Competences for Data-Driven Decision Making	Link	2	y			y
Learning Activity (new content)	Test	2		y	y	y
2.1.1.8 Use Case: Canterbury Christ Church University, UK	Multi-media file	3	y			y
Learning Activity (new content)	Test	2		y	y	y
2.1.1.9 Poll & Discussion	Link	4		y		y
2.1.1.10 References and Further Readings	File	2	y			y
…						
…						
Concluding Assignment - Description (new content)	Link	2	y			y
Concluding Assignment – Discussion Forum (new content)	Link	2		y		y
Concluding Assignment – Upload your answer (new content)	File	15		y		y
Self-grade your answer based on the rubric (new content)	Test	15		y	y	y

y=YES

C. Badges

Name:	**Module Badge (6 badges one for each Module 2..7):** • **Educational Data L2A Finisher** • **Learning Analytics L2A Finisher** • **Teaching Analytics L2A Finisher**

	• **Moodle L2A User** • **eXact Suite L2A User** • **IMC Learning Suite L2A User**
Purpose:	To promote engagement to the content and the activities of the module
Verifies:	This badge verifies that the participant has reviewed the module content and participated to the module quizzes regardless the students' results
Rule:	To earn this badge the participant must gain at **least 75% of XP points** in the respective Module

Name:	**Community Badge (3 badges):** • **L2A Commentator** • **L2A Moderator** • **L2A Forum Master**
Purpose:	To promote discussion activities
Rule:	The participant earns this badge when s/he posts a certain number of posts in the discussion fora, calculated across all the modules. **Commentator: At least 3 posts,** **Moderator: At least 10 posts,** **Forum Master: At least 20 posts**

D. ***Progress bar***

Progress bar shows the names of the levels and the amount of 'XP' points that is needed to the next level. It is used to display progress towards next or ultimate performance level.

E. ***Leaderboard***

a. The student is able to see where s/he is in the ranking compared to other students.
b. Leaderboard is a global ranking list displayed per experience track.
c. Learners on global ranking list will be anonymized, thus that only an encrypted ID and no name will be displayed. Learner sees only his/her name compared to anonymized other learners.

3. Assessment at L2A MOOC v2

3.1 Formative Assessment (assessment for learning)

A. ***Learning Activities*** **(as described above**). Learning activities are quiz tests, added after each content subtopic, related to the video watched or the topic studied. The

learners are requested to undertake complex tasks and answer MCQs which are automatic graded by the platform. For Quiz Tests, a) Engagement points will be assigned for completing the quizzes, regardless of the result and b) Test points will be assigned if a learner successfully completes a quiz test.

B. ***Self-Assessment*** **(Concluding Self-Assessed assignment for each module)**

- At the end of each module, there is **a Concluding self-assessed assignment using rubrics for the assessment**. This Human-assessed assignment is a **real life scenario activity based on the Use Case**, using a rubric across three proficiency levels and an exemplary solution rating. **The evaluation of the outcomes takes place by the learners themselves as self-assessment** using a rubric which includes the criteria that each response should meet and functions as guidelines for MOOC participants to assess themselves.
- **Learning logic to be used:** student uploads solution of assignment, student then receives sample solution with grading scheme, student then self-assesses his original solution. Inform students that we do random checks to minimize potential uploading of empty solutions.
- **XP points** can be awarded and assigned to the Content Track, Engagement Track, Test Track and Module Track.
  a) Content points will be assigned for reading the description
  b) Engagement points will be assigned for participating in the forum, uploading and self-assessing the solution, and
  c) Test points will be assigned for self-assessing the solution
  d) Module points for all the above points.
- **There is also a Discussion Forum** so as to encourage participants to use discussion forum for collaboration, by posting their thoughts and questions related to the concluding assignment on the discussion board.

3.2 Final – Summative Assessment (assessment of learning)

A. ***Level A Certificate***

The certificate as is in L2A MOOC v1 (same questions, structure & criteria).

B. ***Level B Certificate***

Once the learner passes Level A Certificate (s)he will be eligible to proceed with the **Level B Certificate**. This is a final concluding assessment, where learners are requested to undertake complex tasks, by going through several steps (e.g. by following the respective use case) and answer a set of Multiple-Choice Questions (MCQs) which are automatic graded by the platform. Many MCQs could resemble to the ones added in the above learning activities but should use different data.

In order for learners to successfully complete L2A MOOC and earn the respective Certificate of Achievement (Level A and Level B Certificate) they must gain a mark of 60% or greater overall to the corresponding set of multiple choice quiz questions, distributed to the 6 core

modules, aiming to assess their understanding of the core concepts presented. The learners may complete the Multiple Choice Questions Assessment at any time as there are no 'due dates'.

APPENDIX 2 - Examples

Automated Assessments for Level B Certificate

After running the online course for three weeks, Alice checks the data about students' activity which have been tracked by the online learning environment so far. Thus, she also **collects** data related to students' engagement, behavior and performance within the LMS, e.g. time spent in the platform, the videos her students watched, their progress in the online elements of the course, the downloaded files, their online quiz scores, their participation in the forum as well as interaction between peers. [*L2A EDL-CP Dimension: 1. Data Collection*]

You are requested to access the logs data file "Moodle report 2020-21" and select the correct answer(s) (out of multiple answers questions or other QTI question types):

1. Select three types of activities recorded:
   - ☐ **assignment upload**,
   - ☐ calendar add,
   - ☐ blog view,
   - ☐ chat talk,
   - ☐ **course view**,
   - ☐ **quiz attempt**

2. Select the date with most activities
   A. 05/11/2020
   B. 22/06/2020
   C. 09/12/2020
   D. 12/05/2020
   E. 07/01/2020
   F. 30/09/2020

3. Select the total number of wiki view activities
    A. 342,
    B.1125,
    C. 296,
    D.766,
    E. 2348,
    F. 123
4. Select the usernames of the students with most and least activities
    A. Stud39 with the most and Stud117 with the least
    B. Stud117 with the most and Stud39 with the least
    C. Stud43 with the most and Stud126 with the least
    D. Stud39 with the most and Stud126 with the least
    E. Stud78 with the most and Stud122 with the least
5. Select the total number of unique users that added a new post in a forum
    A. 20 users
    B. 40 users
    C. 134 users
    D. 87 users
    E. 176 users

Before proceeding further, Alice confirms that the collected data meets basic quality characteristics. Thus, she examines and verifies the educational data against different **quality measures,** such as **relevancy** (the data must directly relate to the questions she posed), **reliability** (the data must be measured, trustworthy and consistent) and **validity** (the data must measure what she intends to measure). Alice pays attention to avoid biases e.g. **Availability bias** by collecting the data that are easier to obtain, rather than collecting more relevant data.

You are requested to review the questions below and select the correct answer(s) (out of multiple answers questions or other QTI question types):

1. Alice notices that a student's parent, which is a US Citizen, when applied to this European school completed the data of birth for the student in US date format, MM/DD/YYYY rather than in the European DD/MM/YYYY format, causing the representation of day and months to be reversed. Which data quality indicator is not fulfilled?
    A. uniqueness
    B. consistency
    C. completeness
    D. variety
    E. validity
2. She also notices that this student's date of birth has different format in the online application form and the SIS. Which data quality indicator is not fulfilled?
    A. reliability
    B. validity
    C. consistency
    D. veracity
3. Review the data table below on the basis of uniqueness, completeness and validity. Which data quality indicator is not fulfilled?
    A. validity
    B. completeness
    C. uniqueness
    D. both validity and uniqueness
    E. all three of them.

Name	Gender	Class	Arts	Ancient Greek	Modern Greek Literature	Maths	Physics	Chemistry	Biology	History	English	Computer Science
Dimitrios	M	Class1	95	130	85	85	90	60	90	55	75	60	90
Anastasios	M	Class1	0	85	90	90	70	70	75	90	75	85	100
Vassiliki	F	Class1	100	85	80	90	75	50	85	80	80	85	100
Lina	F	Class1	0		90	100	95	100	100	95	90	60	100
Chara	F	Class1	100	85	90	100	95	95	100	95	95	100	100
Hector	M	Class1	100	80	85	100	60	60	90	55	70	100	85
Stephanos	M	Class1	90	75	85	80	95	75	65	65	75	70	95
Anastasios	M	Class1	100	80	95	85	75	90	90	85	85	80	90
Melina	F	Class1	100	85	85	100	70	75	70	60	80	85	90
Stephanos	M	Class1	90	80	80	100	60	70	75	7,5	80	70	100
Thomas	M	Class1	95	80	85	95	65	90	80	80	80	70	95
Fotini	F	Class1	100	95	95	100	100	100	100	100		85	100
Odysseus	M	Class1	100	85	90	100	80	95	100	90	90	70	100
Constantine	M	Class1	100	65	90	100	85	90	75	85	75	60	100
Panayiotis	M	Class1	95	85	85	90	80	95	85	90	90	60	100
Constantine	M	Class2	100	55	65	65	70	45	60	45	60	77	75
Stella	F	Class2	100	65	75	65	75	45	70	50	70	84	100

Maria	F	Class2	100	90	95	100	100	90	100	95	95	84	100
Andreas	M	Class2	100	75	85	90	90	95	80	80	85	80	90
Maria	F	Class2	100	90	95	85	90	90	90	100	100	85	100
Dimitrios	M	Class2	95	85	90	100	90	85	100	85	85	70	80
Ioanna	F	Class2	100	75	85	100	90	80	100	85	75	60	100
Irene	F	Class2	100	95	95	100	95	95	95	95	100	85	100

Self-Assessment using rubrics

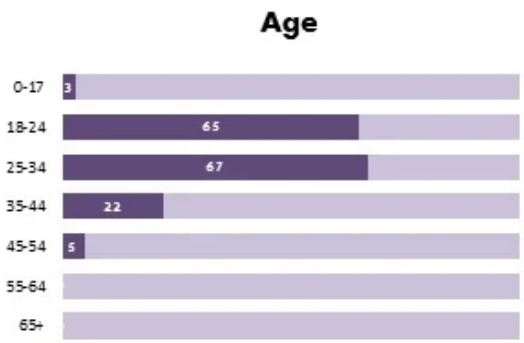
Alice is an enthusiastic English Language teacher who has just been appointed in an Experimental High School, in Athens, Greece.

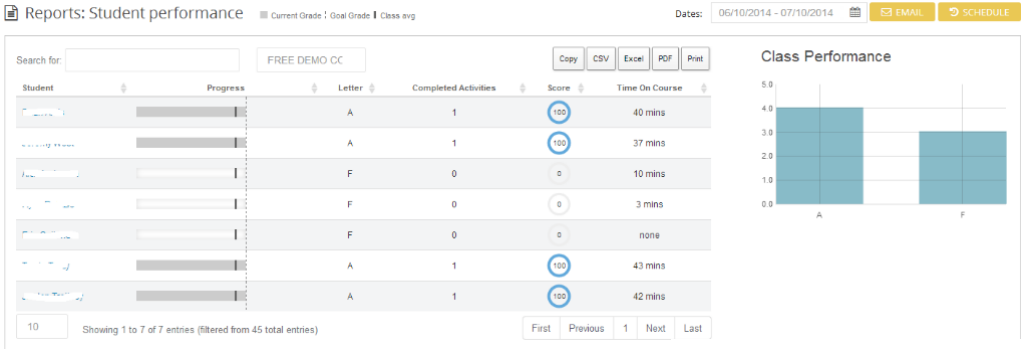
She will be responsible for the English Language Course of class1 and class2 of the 9th Grade (14 to 15 years students). Alice is very excited about her new role. Nevertheless, the school's principle, Alex, is concerned about the relatively low performance of last year's 8th graders compared to other experimental schools in the region. Alex encourages Alice to use student data to gain insights and plan her teaching activities accordingly, so as to improve this year's Grade 9 students' academic performance. The principal also informs Alice about the Learning Management System (Moodle) used by the school to facilitate teaching and learning, pointing out that the previous teacher has already created some online activities there.

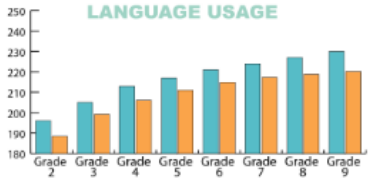
Alice decides to apply the flipped classroom strategy to her new students using the school's LMS. For this purpose, she designs and develops online teaching resources for Class1 and Class2. Students of these classes enrol in the respective group and study the lecture material at home (prior to classroom meeting). The material is in the form of video, text, small activities with automatic feedback (such as online quizzes), and forum discussions. During the classroom sessions, students are performing more complex activities, typically in small groups, with the benefit of Alice's scaffolding, guidance and feedback. Then, they can undertake some additional homework online to further check their understanding and extend their learning through appropriately designed individual and group assignments. Alice is confident with the flipped classroom approach, as she has used it before with great results. However, she is lacking data literacy competences. Are you ready to help Alice?

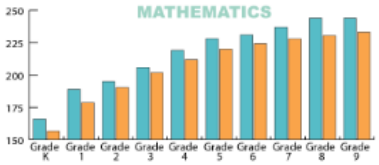
Alice starts posing questions to identify and **collect** the appropriate educational data. She asks herself "*Why do I need the data*?", "*What data are needed?*" "*Where are data located*?" "*How will data be collected*?" [*L2A EDL-CP Dimension: 1. Data Collection*]

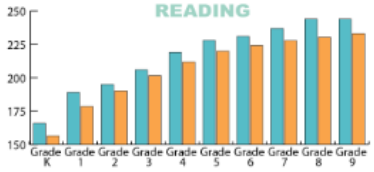
1. Describe the reasons why Alice would like to collect the educational data.
2. List the types of data that Alice should collect.
3. State the sources where she can retrieve the data she would like to collect.
4. Search the web, find/locate and list one source providing open educational data sets.
5. Find and describe an open data set containing metrics for demographics and student performance.
6. Review the image below and specify which of this data is considered as dynamic and which as static.
7. Review the image again and list the 3 qualitative types of data.
8. Visit https://data.cityofnewyork.us/Education/2006-2011-English-Language-Arts-ELA-Test-Results-b/yu9n-iqyk


Age
0-17
3
18-24
65
25-34
67
35-44
22
45-54
5
55-64
65+


Reports: Student performance
Current Grade
Goal Grade
Class avg
Dates:
06/10/2014 - 07/10/2014
EMAIL
SCHEDULE
Search for:
FREE DEMO CC
Copy
CSV
Excel
PDF
Print
Student
Progress
Letter
Completed Activities
Score
Time On Course
A 1 100 40 mins
A 1 100 37 mins
F 0 0 10 mins
F 0 0 3 mins
F 0 0 none
A 1 100 43 mins
A 1 100 42 mins
10
Showing 1 to 7 of 7 entries (filtered from 45 total entries)
First
Previous
1
Next
Last
Class Performance
5.0
4.0
3.0
2.0
1.0
0.0
A
F

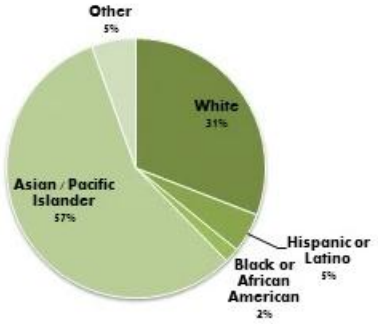

LANGUAGE USAGE
250
240
230
220
210
200
190
180
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8
Grade 9

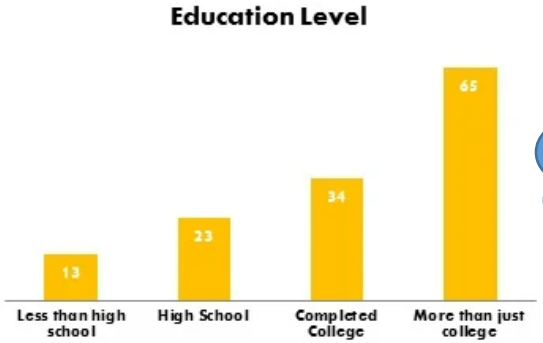

MATHEMATICS
250
225
200
175
150
Grade K
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8
Grade 9


READING
250
225
200
175
150
Grade K
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6
Grade 7
Grade 8
Grade 9

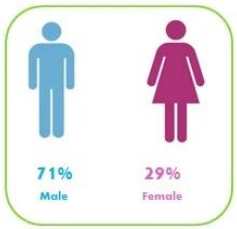

Classroom
Observation


SURVEY


Other
5%
White
31%
Asian / Pacific Islander
57%
Hispanic or Latino
5%
Black or African American
2%


Education Level
13
23
34
65
Less than high school
High School
Completed College
More than just college


Perception
Data


71%
Male
29%
Female

Alice decides to gather a variety of students' data, including demographics, perception data, past academic performance, last year's academic performance and summative assessments for English Language course and other relevant courses, as well as the regional performance data over the past 5 years.
To retrieve the needed data, she has to access diverse sources: school's internal data sources like the student information system as well as external data sources, like the district's databases. [*L2A EDL-CP Dimension: 1. Data Collection*]

1. Review the table below and specify the data that verifies the 8th graders' relatively low performance compared to other district schools.
2. How can Alice retrieve the perception data for her students?
3. You are requested to prepare a pre-course survey that could help you identify your students' experience and preferences [Learners to prepare a survey based on example using a free tool e.g. SurveyMonkey or Google form]

8th Grade – English Language							
Class	**Gender**	**Num of Students**	**Mean Final Score**	**Below Basic [0, 60]**	**Basic (60,70]**	**Proficient (70,85]**	**Advanced (85,100]**
Class1	Female	8	89,38	1	0	3	4
	Male	12	77,08	3	4	2	3
Total for Class1		20	82,00	4	4	5	7
Class2	Female	11	80,27	1	1	9	0
	Male	9	78,33	0	1	8	0
Total for Class2		20	79,40	1	2	17	0
Total for 2nd Grade			80,53				
District Mean			82,00				

Alice contacts the colleague, appointed as school's Data Prot

ection Officer (DPO), to secure all necessary approvals for the sources handled by her school or by the corresponding district. As soon as Alice signs the required data protection consent form, she gets permission and downloads the datasets from the several sources.
Alice also requests to grant her access to the LMS used by the school (a new teacher account is created by the LMS administrator). Before implementing her flipped classroom strategy, she contacts the school's DPO again to discuss any legal and ethical issues she needs to pay attention to. As advised by the DPO, she accesses the LMS and via the "*User agreements page*", she reviews the existing user agreements and confirms that **signed informed consent** has been given for all participating students (either parental consent on behalf of minors or directly by the students, as defined by National Data Protection Authority).
Alice realizes that she must update the current consent form based to the new General Data Protection Regulation Policy.

You need to help Alice preparing a new consent form for the students participating in her flipped classroom model.

a. Evaluate the Initial Consent Form using the Rubric for assessing the Consent Form
b. Prepare and upload a consent form for the students participating in the online course for the flipped classroom initiative.
c. You can post your thoughts and questions related to this concluding assignment on the discussion board
d. Please review a sample of an Exemplary solution that follows the criteria specified in the Rubric for assessing the Consent Form.
e. Now that you have seen the Exemplary sample solution, please rate **your** initial answer (evaluate the consent form you created), using the criteria in the Rubric for assessing the Consent Form.

NOTE: We suggest modeling the self-assessing procedure of the uploaded answer, as a quiz with questions based on the rubric's criteria. Each question has three possible answers, giving 1/3/5 score points each. The total score of this quiz is the actual result for the self-assessing

Assign 1 point for choice 1, 3 points for choice 2, and 5 points for choice 3 (passing score > 20, i.e. 6 criteria good/solid and 3 unacceptable)

Now that you have seen the exemplary consent form, please rate your initial answer (evaluate the consent form you created), using the criteria in the rubric.

Language

1. The consent request is presented neither in a clear, nor in a concise way, using language that is not easy to understand
2. The consent request is presented in a quite clear and concise way, using language that is quite easy to understand
3. The consent request is presented in a very clear and concise way, using language that is very easy to understand

Explicit and Distinguishable

1. The consent request is not explicit or distinguishable from other pieces of information.
2. The consent request is quite distinguishable from other pieces of information but is not given via a positive act.
3. The consent request is clearly distinguishable from other pieces of information, given via an electronic tick-box that the individual has to explicitly check online

Freely given consent

1. The individual does not have a free choice.
2. The individual has a free choice and it is quite clear how to refuse consent without being at a disadvantage.
3. The individual has a free choice and it is very clear how to refuse consent without being at a disadvantage.

Possibility to withdraw the given consent

1. The consent form does not include the possibility to withdraw consent
2. The consent form includes the possibility to withdraw consent, but does not explain how to do it.
3. The consent form includes the possibility to withdraw consent and explains clearly how to do it.

Rights of the data subject

1. The individuals are not informed about their rights as a data subject (GDPR Art.12 to 23)
2. Rights of the data subject (GDPR Art.12 to 23) are somehow stated but the modalities to exercise these rights are not clear.
3. Individuals are clearly informed about their rights as a data subject (GDPR Art.12 to 23) and they can effectively exercise these rights

Identity of the organisation processing data

1. The consent form does not include the identity of the organisation processing data
2. The consent form includes quite clearly the identity of the organisation processing data
3. The consent form includes very clearly the identity of the organisation processing data

Purposes for which the data is being processed

1. The consent form does not explain the purposes for which the data is being processed
2. The consent form explains quite clearly the purposes for which the data is being processed
3. The consent form explains very clearly the purposes for which the data is being processed

Describes the type of data that will be processed

1. The consent form does not describe the type of data that will be processed
2. The consent form describes the type of data that will be processed
3. The consent form describes in detail the type of data that will be processed

International transfer of data

1. The consent form does not include information about whether the consent is related to an international transfer of your data
2. The consent form includes quite clearly information about whether the consent is related to an international transfer of your data
3. The consent form includes clearly information about whether the consent is related to an international transfer of your data

INITIAL CONCENT FORM

I. Introduction

Welcome to Athens Experimental High School (the "School" or "We") Learning Management System (LMS). The School provides this LMS to you subject to the following Terms of Use and Privacy Policy (together, the "Terms"). When you use this LMS, you agree to abide by these Terms. If you do not agree to abide by these Terms, you may not use this LMS. Please read the Terms carefully.

The School reserves the right to make changes to this LMS and to modify the Terms at any time at its sole discretion. We encourage you to review the Terms frequently for modifications. By your use of this LMS, you agree to abide by any such modifications to the Terms, which are binding on you.

II. Privacy Policy

This Privacy Policy describes the School's agreement with you regarding how we will handle certain information on the LMS. This Privacy Policy does not address information obtained from other sources such as submissions by mail, phone or other devices or from personal contact. By accessing the LMS and/or providing information to the School on the LMS, you consent to the collection, use and disclosure of certain information in accordance with this Privacy Policy.

A. Information Collected on Our LMS:

If you merely download material or browse through the LMS, our servers may automatically collect certain information from you which may include: (a) the name of the domain and host from which you access the Internet; (b) the browser software you use and your operating system; and (c) the Internet address of the website from which you linked to the LMS. The information we automatically collect may be used to improve the LMS to make it as useful as possible for our visitors; however, such information will not be tied to the personal information you choose to provide to us.

We do collect and keep personally identifiable information when you choose to voluntarily register to the LMS and submit such information. After your registration, we retain the information you submit for our records and to contact you from time to time. Please note that if we decide to change the manner in which we use or retain personal information, we may update this Privacy Policy, at our sole discretion.

B. Disclosure of Personal Information to Third Parties:

The School does not rent or sell personal information that you choose to provide to us nor does the School disclose credit card or other personal financial information to third parties other than as necessary to complete a credit card or other financial transaction or as required by law. The School does engage certain third parties to perform functions and provide services, including, without limitation, hosting and maintenance, customer relationship, database storage and management, payment transaction and direct marketing campaigns. We will share your personal information with these third parties, but only to the extent necessary to perform the functions and provide the services, and only pursuant to binding contractual obligations requiring such third parties to maintain the privacy and security of your data.

C. Receiving Promotional Materials:

We may send you information or materials such as newsletters, ebooks, whitepapers by e-mail or postal mail when you submit your address via the LMS. By your registration in the LMS, you are consenting to our sending you such information or materials.

If you do not want to receive promotional information or material, please send an email with your name, mailing address and email address to athens.expschool.online@gmail.com. When we receive your request, we may take reasonable steps to remove your name from such lists.

D. Cookies:

A cookie is a small text file that a website can place on your computer's hard drive for record-keeping or other administrative purposes. Our LMS may use cookies to help to personalize your experience on the LMS. Although most web browsers accept cookies automatically, usually you can modify your browser setting to decline cookies. If you decide to decline cookies, you may not be able to fully use the features of the LMS. Cookies may also be used at certain sites accessible through links on the LMS.

E. Links to Other Websites:

The School is not responsible for the practices or policies of the websites linked to or from the LMS, including without limitation their privacy practices or policies. If you elect to use a link that accesses another party's website, you will be subject to that website's practices and policies.

II. Terms of Use

A. For Informational Purposes Only

The School makes available the information on this Website for informational purposes only. You are solely responsible for the information you provide on this Website and for the information you use that you view on this Website. Information on this Website is not intended to be a replacement for direct consultation with the School; if you have questions or concerns, please contact the School directly.

B. Copyright and Trademark Information

The content included on this LMS, such as data, text, graphics, logos, images and software and its compilation is the property of the School and/or its content suppliers and is protected by copyright and trademark laws. In the event you upload any content including, without limitation, photographs or videos to this LMS, you (i) represent to the School and its affiliates that you have all rights necessary to upload the content; (ii) agree to indemnify the School and its affiliates for any third party infringement or other claims related thereto; and (iii) hereby license to the School and its affiliates a perpetual non-cancellable royalty-free license to use such uploaded content for any purposes in any media now existing or hereafter developed.

C. License for Your Use

For any period of time that you use this LMS and abide by these terms, the School grants to you a limited, revocable and nonexclusive license to access this LMS for your use but not to copy, download or modify it, or any portion of it, except with the express written consent of the School. This LMS or any portion of this LMS may not be reproduced, duplicated, copied, sold, visited or otherwise exploited without the express written consent of the School. You may not utilize framing to enclose any trademark, logo, content or other proprietary information contained on this LMS without the express written consent of the School. You may not use any meta tags or any other “hidden text” utilizing the School or its affiliates’ name or trademarks without the School’s express written consent.

You agree to use this LMS only for lawful purposes, and you acknowledge that your failure to do so may subject you to civil or criminal liability. You are responsible for ensuring that any materials you upload, post or submit to this LMS do not violate the copyright, trademark, trade secret or other personal or proprietary rights of any third party and you hereby agree to indemnify the School for any third party infringement or personal rights claims. You agree not to disrupt, modify, or interfere with this LMS or its

associated software, hardware and servers in any way and you agree not to impede or interfere with others' use of this LMS. You further agree not to alter or tamper with any information or materials on or associated with this LMS. Any unauthorized use or violation of these terms automatically terminates any permission or license granted by the School to access and use this LMS.

D. External Links

This LMS may provide links or references to third party websites or applications, including without limitation, third party websites or applications of advertisers or of providers of informational articles or other users. The School is not responsible for any information you choose to provide to those third party websites or applications; any information, products or services you acquire from those third party websites or applications, or any damages arising from your access to or use of those third party websites or applications.

Any links to third party websites and applications are provided as a convenience to the visitors of this LMS and any inclusion of any such links in this Website does not imply an endorsement or warranty of the third party websites or applications or their security, content, products, offerings or services. You are cautioned that any third party websites or applications are governed by their own terms of use and privacy policies, so when linking you should make sure to visit the appropriate pages of those third party websites or applications to determine what terms of use and privacy policies will apply to your use.

- ☐ **YES, I GIVE CONSENT FOR MY CHILD TO PARTICIPATE IN THE ONLINE COURSE AND AGREE TO THE CONSENT AS NOTED ABOVE.**
- ☐ **NO, I DO NOT GIVE CONSENT FOR MY CHILD TO PARTICIPATE IN THE ONLINE COURSE AND AGREE TO THE CONSENT AS NOTED ABOVE.**

Adapted from: https://www.whitbyschool.org/privacy-policy

RUBRIC FOR ASSESSING THE CONSENT FORM

Criteria	1 Unacceptable	3 Good/Solid	5 Exemplary
Language	The consent request is presented neither in a clear, nor in a concise way, using language that is not easy to understand	The consent request is presented in a quite clear and concise way, using language that is quite easy to understand	The consent request is presented in a very clear and concise way, using language that is very easy to understand
Explicit and Distinguishable	The consent request is not explicit or distinguishable from other pieces of information.	The consent request is quite distinguishable from other pieces of information but is not given via a positive act.	The consent request is clearly distinguishable from other pieces of information, given via an electronic tick-box that the individual has to explicitly check online
Freely given consent	The individual does not have a free choice.	The individual has a free choice and it is quite clear how to refuse consent without being at a disadvantage.	The individual has a free choice and it is very clear how to refuse consent without being at a disadvantage.
Possibility to withdraw the given consent	The consent form does not include the possibility to withdraw consent	The consent form includes the possibility to withdraw consent, but does not explain how to do it.	The consent form includes the possibility to withdraw consent and explains clearly how to do it.
Rights of the data subject	The individuals are not informed about their rights as a data subject (GDPR	Rights of the data subject (GDPR Art.12 to 23) are somehow stated but the	Individuals are clearly informed about their rights as a data subject (GDPR

	Art.12 to 23)	modalities to exercise these rights are not clear.	Art.12 to 23) and they can effectively exercise these rights
Identity of the organisation processing data	The consent form does not include the identity of the organisation processing data	The consent form includes quite clearly the identity of the organisation processing data	The consent form includes very clearly the identity of the organisation processing data
Purposes for which the data is being processed	The consent form does not explain the purposes for which the data is being processed	The consent form explains quite clearly the purposes for which the data is being processed	The consent form explains very clearly the purposes for which the data is being processed
Describes the type of data that will be processed	The consent form does not describe the type of data that will be processed	The consent form describes the type of data that will be processed	The consent form describes in detail the type of data that will be processed
International transfer of data	The consent form does not include information about whether the consent is related to an international transfer of your data	The consent form includes quite clearly information about whether the consent is related to an international transfer of your data	The consent form includes clearly information about whether the consent is related to an international transfer of your data

EXEMPLARY SAMPLE SOLUTION

Consent Form to Register and Participate in the Online Course for the English Language Course of the 9th Grade of Athens Experimental High School

In order to register and participate in the online course that will be offered for the English Language Course of the 9th Grade, you are invited to indicate your consent for the collection and processing of your personal data for the purposes of the online course, administered by Athens Experimental High School.

Athens Experimental High School (or "we") uses a variety of resources to support student learning. Moodle™ software has been adopted as Athens Experimental High School 's Learning Management System (LMS). Moodle™ software is free and open source, and allows educators to create a private space online, filled with tools that easily create courses and various activities, all optimised for collaborative learning. In order to provide access to our students to the online course for the English Language Course of the 9th Grade on this platform/site, we need to collect and store personal information about them. You may also refer to https://moodle.com/privacy-notice/.

Please note:

1. The online course for the English Language Course of the 9th Grade will be carried out from 15/09/2021 to 15/06/2021.
2. Before you proceed to the registration to this online course, you will be asked to indicate your consent for the collection and processing of your personal data for the purposes of the course.
3. For the purposes of GDPR Regulation: 'personal data' means any information relating to an identified or identifiable natural person ('data subject'); profiling' means any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements; 'controller' means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of such processing are determined by Union or Member State law, the controller or the specific criteria for its nomination may be provided for by Union or Member State law.
4. The **Data Controller** for data processed under this Notice is:
   Athens Experimental High School (VAT 021 27 76 45)

20 Makrygianni Road
11676 Athens
Greece
email: athens.expschool.online@gmail.com

Legal basis for processing the personal and sensitive data:

Personal Data:

In connection with this online course, the Athens Experimental High School ’s collection and processing of the following Personal Data is lawful based on

Article 6.1(a), GDPR, Consent

Article 6.1(b), GDPR, Contract

Article 6.1(c), GDPR, Legal Obligation

Article 6.1(f), GDPR, Legitimate Interest:

□ Name, Surname, Email Address

□ User activity and contribution data

Sensitive Data:

In connection with this research, the Athens Experimental High School ’s collection and processing of the following Sensitive Data is lawful based on consent (Article 9.2(a), GDPR):

□ Gender

Potential Benefits:

The participation in this online course enables data subjects (students) to effectively collaborate with their peers, and tutor(s) to collect data, efficiently provide resources, timely feedback and differentiated learning opportunities.

Potential Risk or Discomforts:

We do not perceive of any risk or discomfort in participating in the online course.

Storage of Data:

The installation of the Moodle™ software platform is hosted in a secure server at Athens Experimental High School's premises. The collected data is also stored in this secure server for the time required by the purposes described in this notice, for maximum 5 years.

Data transfer outside the European Union:

We may share some of the data collected with services located outside the European Union, in particular through the aforementioned Moodle™ software services.

Right to Withdraw:

Your participation in this online course is voluntary. You are under no obligation to participate in this online course and you may withdraw consent at any time, without being at a disadvantage, by contacting the Athens Experimental High School Data Controller for this online course in athens.expschool.online@gmail.com.

Rights of Data Subject:

Whilst Athens Experimental High School is in possession of or processing your personal data, you, the data subject, have the following rights:

- Right of access – you have the right to request a copy of the information that we hold about you.
- Right of rectification – you have a right to correct data that we hold about you that is inaccurate or incomplete.
- Right to be forgotten – in certain circumstances you can ask for the data we hold about you to be erased from our records. The erasure of your information shall be subject to the Athens Experimental High School 's need to retain certain information pursuant to any other identified lawful basis.
- Right to restriction of processing – where certain conditions apply to have a right to restrict the processing.
- Right of portability – you have the right to have the data we hold about you transferred to another organisation.
- Right to object – you have the right to object to certain types of processing such as direct marketing.
- Right to object to automated processing, including profiling – you also have the right to be subject to the legal effects of automated processing or profiling.
- Right to judicial review: in the event that Athens Experimental High School refuses your request under rights of access, we will provide you with a reasonable explanation.

by contacting the Athens Experimental High School Data Controller for this online course in athens.expschool.online@gmail.com.

If the Athens Experimental High School's use of your information is pursuant to your consent, you have the right to withdraw consent without affecting the lawfulness of the Athens Experimental High School's use of the information prior to receipt of your request.

If you think your data protection rights have been breached you have the right to lodge a complaint with Athens Experimental High School Data Controller for this online course in athens.expschool.online@gmail.com and/or your national Data Protection Authority (DPA).

Data Subject Concerns and Reporting:

If you have any questions concerning the online course or experience any discomfort related to the online course, please contact the Athens Experimental High School Data Controller for this online course in athens.expschool.online@gmail.com.

Conflict of Interest:

We do not perceive any conflicts of interest in the development of this online course.

Compensation:

There is no compensation for data subjects in this online course.

Confidentiality:

The only people processing your data will be the tutor(s) involved in the Athens Experimental High School ’s online course(s). The tutor(s) undertake to keep any information provided herein confidential, not to let it out of our possession and to report on the findings from the perspective of the entire participating group and not from the perspective of an individual. Please note that confidentiality cannot be guaranteed while data are in transit over the Internet.

Purposes for which the data is being collected and processed:

The data which is collected and processed via the online course in the Course Management System (Moodle) is being used by the Athens Experimental High School to facilitate teaching and learning. For this, online teaching resources are uploaded where the data subjects (students) enroll and study the lecture material at home. The material is in the form of videos, small activities with automatic feedback (online quizzes), and forum discussions. The data subjects (students) can undertake some additional homework online to further check their understanding and extend their learning. Though this online course and via the usage of CMS tools the tutor(s) monitor the data subjects (students) learning process, discover patterns, find indicators for success and indicators for poor marks or drop-out and proceed with recommendations and revisions of the course’s online learning activities and educational resources, aiming to improve data subjects’ (students’) academic performance.

We ensure that the information we collect, process and use is appropriate for these correspondence purposes.

By indicating consent to participate in this online course you also indicate consent for the possible use of data for automated decision making, such as profiling, to identify data subjects' (students') progress against a range of indicators and activities identified to have an impact on data subjects' (students') success in the online course.

Consent to register and participate in the Online Course for the English Language Course of the 9th Grade of Athens Experimental High School

Selecting "YES, I AGREE" below indicates that:

You have read the above information;

You voluntarily agree to participate in this online course;

You understand the procedures described above;

You give consent for the use of your Personal Data for the purposes outlined in this notice;

You give consent for the use of your Sensitive Data for the purposes outlined in this notice;

You are at least 15 years of age.

- ☐ **YES, I AGREE**
- ☐ **NO, I DO NOT AGREE**

For students who are less than 15 years of age, consent from a parent or guardian is necessary

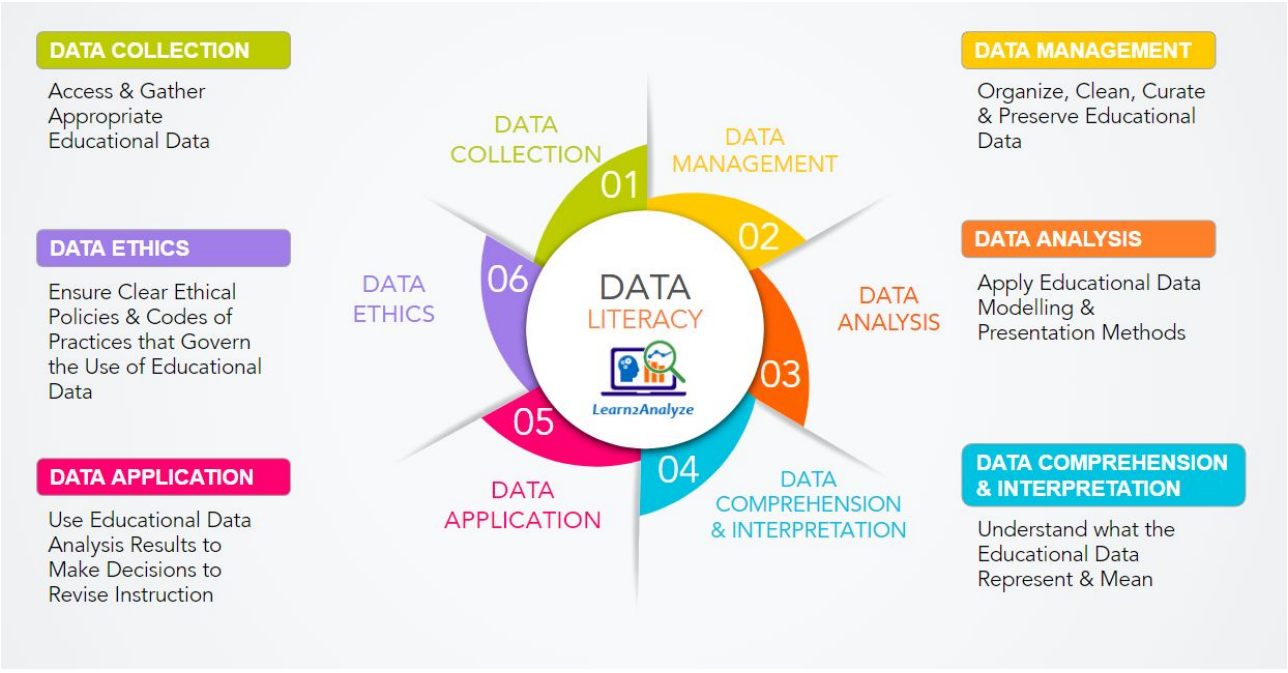
- ☐ **YES, I GIVE CONSENT FOR MY CHILD TO PARTICIPATE IN THE ONLINE COURSE AND AGREE TO THE CONSENT AS NOTED ABOVE.**
- ☐ **NO, I DO NOT GIVE CONSENT FOR MY CHILD TO PARTICIPATE IN THE ONLINE COURSE AND AGREE TO THE CONSENT AS NOTED ABOVE.**

Learn2Analyze

Learn2Analyze
Knowledge Alliances (Key Action 2)
AGREEMENT NUMBER: 2017 - 2733 / 001 – 001
PROJECT NUMBER:
588067-EPP-1-2017-1-EL-EPPKA2-KA

Learn2Analyze MOOC

Learn to Analyze Educational Data and Improve your Blended and Online Teaching



Enroll in the Learn2Analyze MOOC and earn your free Certificate of Achievement in Educational Data Literacy

Co-funded by the Erasmus+ Programme of the European Union

Learn2Analyze

Learn2Analyze
Knowledge Alliances (Key Action 2)
AGREEMENT NUMBER: 2017 - 2733 / 001 – 001
PROJECT NUMBER:
588067-EPP-1-2017-1-EL-EPPKA2-KA

Course Data

Start Date:
October 21th, 2019
End Date:
December 14th, 2019
Pre-Requisites:
None
Duration:
8 weeks
Time Commitment:
68 hours in total
Level:
Introductory
Language: English
Cost: None

Target Audience

✔instructional designers and e-tutors of online and blended courses

✔school teachers of blended learning courses (using the flipped classroom model)

✔university students

The learning outcomes of this course cover the set of competences anticipated by the Learn2Analyze Educational Data Literacy competence framework (L2A EDL-CP).

More information about the project is available at: www.learn2analyze.eu

About the Course

Hello and welcome to the **Learn to Analyze Educational Data and Improve your Blended and Online Teaching** Massive Open Online Course (MOOC).

This MOOC aims to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

It combines

- ***theoretical knowledge*** on core issues related to collecting, analysing, interpreting and using educational data, including ethics and privacy, with
- ***practical experience*** of applying educational data analytics in three different e-learning platforms, namely, Moodle, the eXact Suite and the IMC Learning Suite.

The MOOC is developed by an international Academia-Industry consortium within the action **Learn2Analyze** — *An Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' (Instructional Designers and e-Trainers) Competences in Educational Data Analytics* which is co-funded by the European Commission through the ***Erasmus+ Program*** of the European Union (Cooperation for innovation and the exchange of good practices - ***Knowledge Alliances***, Agreement n. 2017-2733 / 001-001, Project No 588067-EPP-1-2017-1-EL-EPPKA2-KA).

What you will learn

By completing this course you will:

- *know* where to locate useful educational data in different data sources and *understand* their limitations;
- *know* the basics for managing educational data to make them useful, *understand* relevant methods and *be able to use* relevant tools;
- *know* the basics for organising, analysing, interpreting and presenting learner-generated data within their learning context, *understand* relevant learning analytics methods and *be able to use* relevant learning analytics tools;
- *know* the basics for analysing and interpreting educational data to facilitate educational decision making, including course and curricula design, *understand* relevant teaching analytics methods and *be able to use* relevant teaching analytics tools;
- *understand* issues related with educational data ethics and privacy.

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Your Instructors

Module 2 - UPRC
Prof Demetrios Sampson
Sofia Mougiakou
Dimitra Vinatsella

UNIVERSITY OF PIRAEUS RESEARCH CENTER

Module 3 - NTNU
Prof Michael Giannakos
Dr Zacharoula Papamitsiou

NTNU
Norwegian University of Science and Technology

Module 4 - UMA
Prof Dirk Ifenthaler
Marc Egloffstein

UNIVERSITY OF MANNHEIM

Module 5 - eN
Deborah Couëdelo
Mary Jones

Enovation
Your eLearning Partner

Module 6 - LL
Elisabetta Parodi
Laura Brambilla
Maria La Porta

LATTANZIO LEARNING

Module 7 - IMC
Dr Uta Schwertel
Samandar Atoev
Dr Mareike Schmidt

imc.

Course Syllabus

Module 1: Orientation
This module offers the opportunity to become familiar with the MOOC platform, the course structure and the course policies.

Module 2: Educational Data
This module will introduce the concept of educational data as a key success factor for online and blended teaching and learning, present the Learn2Analyze framework for educational data literacy competences and discuss the fundamentals of educational data collection and management, including issues related with ethics and privacy.

Module 3: Learning Analytics
This module will introduce the basics of methods and tools for analysing and interpreting online learners' data to facilitate their personalised support. It will focus on organising, analysing, presenting and interpreting learner-generated data within their learning context, as well as on ethical concerns and policies for protecting learner-generated data from mistreatment and misuse.

Module 4: Teaching Analytics
This module will introduce the basics of methods and tools for analysing and interpreting educational data for facilitating educational decision making, including course and curricula design.

Module 5: Educational Data Analytics with Moodle
This module will present tools for educational data analytics in Moodle and focus on the use of these tools to support school teachers in the design and delivery of their online and blended learning courses.

Module 6: Educational Data Analytics with eXact Suite
This module will present tools for educational data analytics in the eXact Suite and focus on the use of these tools to help instructional designers and e-tutors of online courses in supporting online learners.

Module 7: Educational Data Analytics with IMC Learning Suite
This module will present tools for educational data analytics in the IMC Learning Suite. The focus is on how the tools can support instructional designers of online courses in reflecting on their educational design and re-design the courses. The module also shows how the tools can help e-tutors to support online learners.

Module 8: Concluding the MOOC
This concluding module will allow participants to finalise their assignments, discuss their overall MOOC learning experience with their peers, and reflect on their learning experience by submitting the course feedback survey.

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Certification of Achievement

*If you successfully complete this course you will receive a **Certificate of Achievement**.*

Successful completion of the course requires:

- ✔completing the **Multiple Choice Questions Assessment** with **60% success**
- ✔completing the **Pre-course** and the **Post-course Surveys**

Assessment Method, Grading Policy and Certification

This course is graded as *Pass or Fail*, meaning you will either be given a passing score or a failing score.

In order to successfully complete this course and earn your **Certificate of Achievement** you must gain a mark of **60% or greater** overall to all 100 multiple choice quiz questions.

Your grade in the course is calculated based on your replies to **100 multiple choice questions** distributed to the 6 core modules. The Multiple Choice Questions are included at the end of Module #2 to Module #7 and aim to assess your understanding of the core concepts presented.

You may complete the Multiple Choice Questions Assessment **at any time** as there are no *'due dates'*. Nevertheless, we recommend that you complete them sequentially, after you have completed the relevant module.

We are excited to offer this new course and we do hope you will enjoy learning about analyzing Educational Data to improve your Blended and Online Teaching!

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