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# An evaluation framework for Massive Open Online Courses for Professional Development (MOOCs4PD): The Case of the Learn2Analyze MOOC

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Στον Ανδρέα, τη Μαρία και το Δημήτρη για
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## Abstract

Massive Open Online Courses (MOOCs) can be a valuable tool for professional development (PD) as they can offer flexible and cost-effective opportunities for professional competence development at large scale. Nevertheless, certain shortcomings are reported in the literature for MOOCs4PD, such as low completion rates, limited engagement and social participation and lack of credible assessment, mostly inherited by the design of MOOCs targeting the general audience.

This thesis contributes to the discussion of the evaluation of MOOCs and proposes an evaluation framework for MOOCs4PD based on the learners' perceived competences advancement. The aim of the evaluation is to explore the factors which affect the perceived competence advancement of participants, focusing on the learners' profile and the reported learning experience upon completion. The core question of the evaluation is:

> *"What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the competences of participants?"*

By means of validation, a successful application of this methodological framework is presented. More specifically, the proposed evaluation framework is applied to the case of the Learn2Analyze MOOC, a competence based MOOC4PD for online education professionals, aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning. The delivery of the Learn2Analyze MOOC lasted 12 weeks from October 21, 2019 to January 14, 2020. The study design was a mixed-method evaluation. A pre- course survey collected data on demographic characteristics, motives, background knowledge on the subject matter, and professional experience of 1147 participants. The study revealed three main targeted groups participating in the course, namely eLearning Professionals, School Teachers and Higher Education Students.

The post-course survey, with 235 participants who have completed the course, indicates a perceived competence advancement of one level (from level 2 = advanced beginner to level 3 = competent). The examination of the reported Educational Data Literacy (EDL) competences advancement between the three targeted groups indicates that, although external motives had strong positive relationship to course completion, there was no

relation to EDL competence advancement. On the other hand, it seems that there is a positive relationship between the GRIT score (passion and perseverance for long-term and meaningful goals) and EDL competences advancement. The hours that the participants were planning to spend in the course are very important as they seem to have strong relationship not only with the course completion, but with the EDL competences advancement as well. Furthermore, the examination of the effect of self-confidence (confidence in completing the course on time and confidence in learning the material) indicates positive relationship to EDL competences advancement.

In the post-course survey, the perceived Learning Experience was measured, both per module and through the course, in terms of, content (graphics, videos, complementary material, learning activities, and assessments), workload, level of interaction, platform ease of use, level of satisfaction, confirmation of expectations, and continuance intention. The study indicates strong positive relation of all dimensions of the Overall Learning Experience to the reported EDL competences advancement.

In addition, the post-course survey questionnaire included two open-ended questions so that learners could optionally comment what they liked most and least about taking part in the course. Using Braun and Clark's method for thematic coding five central themes were identified namely (a) course content, (b) instructional design, (c) interaction, (d) assessment, and (e) platform. The analysis of the learner's comments confirms the results of the quantitative research.

**Keywords:** MOOCs for Professional Development; Evaluation of MOOCs; Perceived competenced advancement; Educational Data Literacy Competence
Profile; Learn2Analyze MOOC

# Περίληψη

Τα Μαζικά Ανοικτά Διαδικτυακά Μαθήματα (ΜΑΔΜ) μπορούν να αποτελέσουν ένα πολύτιμο εργαλείο για την ανάπτυξη επαγγελματικών ικανοτήτων σε μαζική κλίμακα. Παρ' όλα αυτά, στη βιβλιογραφία αναφέρονται ως αδυναμίες των ΜΑΔΜ, τα χαμηλά ποσοστά ολοκλήρωσης, η περιορισμένη εμπλοκή και αλληλεπίδραση με την κοινότητα του ΜΑΔΜ και η έλλειψη αξιόπιστης αξιολόγησης κατάκτησης των επαγγελματικών ικανοτήτων.

Η παρούσα έρευνα προτείνει ένα πλαίσιο αξιολόγησης των ΜΑΔΜ για επαγγελματική ανάπτυξη βασισμένο στην επιτευχθείσα ανάπτυξη δεξιοτήτων όπως γίνεται αντιληπτή από τους συμμετέχοντες. Η αξιολόγηση στοχεύει στη διερεύνηση των παραγόντων που επηρεάζουν την ανάπτυξη δεξιοτήτων σε σχέση με το προφίλ των εκπαιδευόμενων και την προσλαμβάνουσα μαθησιακή εμπειρία. Το βασικό ερώτημα είναι:

> *«Ποιες είναι οι πιθανές περιοχές βελτίωσης ενός Μαζικού Ανοιχτού Διαδικτυακού Μαθήματος για επαγγελματική ανάπτυξη, βασισμένου σε πλαίσιο προσόντων, ώστε να βελτιωθεί η μαθησιακή εμπειρία και να επιτευχθεί αποτελεσματικά η ανάπτυξη των επαγγελματικών δεξιοτήτων;»*

Για την επικύρωση του προτεινόμενου πλαισίου αξιολόγησης, παρουσιάζεται η εφαρμογή του στην περίπτωση του Learn2Analyze MOOC, ενός ΜΑΔΜ που στοχεύει στην ανάπτυξη ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων και απευθύνεται σε επαγγελματίες ψηφιακής εκπαίδευσης. Το συγκεκριμένο ΜΑΔΜ υλοποιήθηκε στα πλαίσια ευρωπαϊκού προγράμματος Erasmus+ και είχε συνολική διάρκεια 12 εβδομάδες, από 21 Οκτωβρίου 2019 μέχρι 14 Ιανουαρίου 2020.

Ο σχεδιασμός της έρευνας βασίζεται στη μικτή μέθοδο. Μέσω ενός ερωτηματολογίου πριν την έναρξη του μαθήματος, συγκεντρώθηκαν δεδομένα σε σχέση με τα δημογραφικά χαρακτηριστικά, τα κίνητρα, το εκπαιδευτικό υπόβαθρο και την επαγγελματική εμπειρία 1147 συμμετεχόντων. Από την επεξεργασία των δεδομένων αυτών αναδείχθηκαν τρεις βασικές ομάδες συμμετεχόντων, (α) επαγγελματίες της εξ αποστάσεως εκπαίδευσης, (β) δάσκαλοι/καθηγητές και (γ) φοιτητές.

Το ερωτηματολόγιο που ακολούθησε μετά την ολοκλήρωση του μαθήματος είχε 235 συμμετοχές και υποδεικνύει αντιλαμβανόμενη επιτευχθείσα ανάπτυξη ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων της τάξης της μίας μονάδας (από το επίπεδο 2 = προηγμένοι αρχάριοι στο επίπεδο 3 = ικανοί). Η ανάλυση των δεδομένων των ερωτηματολογίων δείχνει ότι, ενώ τα εξωτερικά κίνητρα έχουν ισχυρά θετική συσχέτιση

με την ολοκλήρωση του μαθήματος, μοιάζουν να μην σχετίζονται με την αντιλαμβανόμενη ανάπτυξη ικανοτήτων. Από την άλλη, φαίνεται ότι υπάρχει θετική συσχέτιση μεταξύ του GRIT σκορ (πάθος και επιμονή για την επίτευξη μακροπρόθεσμων και με νόημα στόχων) και της αντιλαμβανόμενης ανάπτυξης ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων. Οι ώρες που οι συμμετέχοντες σχεδίαζαν αρχικά να αφιερώσουν στο μάθημα είναι πολύ σημαντικές καθώς μοιάζουν να έχουν ισχυρή συσχέτιση όχι μόνο με την ολοκλήρωση του μαθήματος αλλά και με την αντιλαμβανόμενη ανάπτυξη των ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων. Επιπλέον, η εξέταση της επίδρασης της αυτοπεποίθησης των εκπαιδευομένων (αυτοπεποίθηση σε σχέση με την ολοκλήρωση του μαθήματος εντός του προβλεπόμενου χρόνου και αυτοπεποίθηση σε σχέση με την ικανότητα εκμάθησης του εκπαιδευτικού υλικού) υποδεικνύει θετική συσχέτιση σε σχέση με την αντιλαμβανόμενη ανάπτυξη ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων.

Στο ερωτηματολόγιο μετά την ολοκλήρωση του μαθήματος γίνεται αποτίμηση της αντιλαμβανόμενης μαθησιακής εμπειρίας τόσο ανά ενότητα του μαθήματος όσο και συνολικά, σε σχέση με (α) το περιεχόμενο (γραφικά, video, συνοδευτικό υλικό, μαθησιακές δραστηριότητες, δραστηριότητες αξιολόγησης), (β) τον φόρτο εργασίας, (γ) το επίπεδο αλληλεπίδρασης, (δ) την ευχρηστία της πλατφόρμας, (ε) το επίπεδο ικανοποίησης, (στ) την επιβεβαίωση των προσδοκιών και (ζ) την πρόθεση συνέχειας. Η έρευνα υποδεικνύει ισχυρή θετική συσχέτιση όλων των διαστάσεων της μαθησιακής εμπειρίας σε σχέση με την αντιλαμβανόμενη ανάπτυξη ικανοτήτων αξιοποίησης εκπαιδευτικών δεδομένων.

Επιπλέον, το ερωτηματολόγιο αυτό περιείχε και δύο ερωτήσεις ανοιχτού τύπου στις οποίες οι εκπαιδευόμενοι μπορούσαν προαιρετικά να προσθέσουν τα σχόλιά τους σε σχέση με αυτό που τους άρεσε περισσότερο και αυτό που τους άρεσε λιγότερο στο μάθημα. Χρησιμοποιώντας μέθοδο θεματικής ανάλυσης των Braun και Clark, αναγνωρίστηκαν πέντε θεματικές περιοχές: (α) περιεχόμενο του μαθήματος, (β) εκπαιδευτικός σχεδιασμός, (γ) αλληλεπίδραση, (δ) αξιολόγηση και (ε) χρήση της πλατφόρμας. Τα αποτελέσματα της ανάλυσης αυτής επιβεβαιώνουν τα αποτελέσματα της ποσοτικής ανάλυσης.

**Λέξεις κλειδιά:** ΜΑΔΜ για επαγγελματική ανάπτυξη, αξιολόγηση των ΜΑΔΜ, αντιλαμβανόμενη ανάπτυξη ικανοτήτων, πλαίσιο προσόντων αξιοποίησης εκπαιδευτικών δεδομένων, Learn2Analyze MOOC

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# Chapter 1 – Introduction

Massive Open Online Courses (MOOCs) are courses delivered online and designed for theoretically unlimited participation and open access, usually offered free of charge.

## 1.1 Using MOOCs for Professional Development

MOOCs are widely used for professional development, as they are an affordable and, in some cases, low risk and low cost way to improve professional competences in emerging areas (Littlejohn & Milligan, 2015). Typically, MOOCs provide professionals with **open**, **flexible** and **self-directed** access to learning resources and, in some cases, also to **experts** in the profession, as well as, an opportunity to be active in a **global learning community** (Kalz, 2015; Jobe, Östlund, & Svensson, 2014).

Nevertheless, known shortcomings reported in the literature regarding MOOCs include:

- Low completion rates <7% (Jordan, 2014; Bonafini, 2017)
- Lack of interaction and isolation (Hew and Cheung, 2014; Sharif & Magrill, 2015; Hone & El Said, 2016)
- Low motivation and engagement to learning activities (Sinha et al., 2014; Bonafini, 2017)
- Recognition, validation and accreditation of competence-based learning goals (Jobe et al., 2014; Xiong & Suen, 2018)

Evaluation of Massive Open Online Courses (MOOCs) is a key practice for analyzing their performance and benefits and reveal useful insights for the revision of the educational design and/or learning materials, towards enhancing the learning experience and improving learning outcomes.

Much of the literature regarding evaluation of MOOCs, deals with issues related to low completion rates in MOOCs (Egloffstein, Ebner, & Ifenthaler, 2019), exploring factors that affect **retention** in relation to (a) *learners' characteristics* (demographics, academic and professional background, previous experience with MOOCs, motivations and expectations) (Kizilcec, Piech, & Schneider, 2013; Gašević, Kovanović, Joksimović, & Siemens, 2014; Bayeck, 2016; Hood & Littlejohn, 2016; Veletsianos & Shepherdson, 2016; Gil-Jaurena, Callejo-Gallego, & Agudo, 2017; Egloffstein and Schwerer, 2019), and (b) *learning experience* (content, assessment activities, interaction between participants or between participants and instructor, instructional design, connectivity and course

platform) in MOOCs (Ulf-Daniel Ehlers, 2004; Sun et al., 2008; Rienties and Toetenel, 2016; Egloffstein et al., 2019).

## 1.2 Thesis contribution

The purpose of this study is to propose an evaluation framework for MOOCs for Professional Development, aiming to investigate factors that affect the ***perceived competence advancement*** upon completion in relation to (i) the *learners' profile* (demographics, educational and professional background, as well as motives and expectations) and (ii) the reported *learning experience*. The answers of participants collected with pre- and post-course questionnaires, are expected to reveal useful insights for the revision of the evaluated MOOC towards improving learning experience and enhancing competence advancement in MOOCs4PD.

The *core question* of the evaluation framework is:

> "*What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the competences of participants?*"

By means of validating the framework, we will present a successful application of this methodological framework to the Learn2Analyze MOOC, a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning, based on the Learn2Analyze Educational Data Literacy Competence Framework, which comprises of 6 competence dimensions and 17 competence statements.

Learn2Analyze MOOC 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.

In order to validate this initiative and identify areas of possible improvement, pre- and post-course questionnaire-driven online surveys were designed and implemented, within the L2A MOOC Phase A participants**.** Participant characteristics along with their initial motives and competence level were examined in the pre-course survey, while

participant's perception of the course design and the instructional elements along with the achieved competence level were examined in the post-course survey.

## 1.3 Thesis structure

This thesis is divided into six chapters:

- *Chapter 1* is an introduction to the thesis.
- *Chapter 2* includes definitions of MOOCs and MOOC characteristics, highlights the wide use of MOOCs for professional development and reviews common methods and practices for the evaluation of MOOCs.
- *Chapter 3* proposes an evaluation framework for MOOCs4PD aiming to investigate factors that affect the *perceived competence advancement* upon completion in relation to the leaners' profile and the learning experience. In this chapter the main design aspects of the survey (namely the instruments used for the data collection and privacy and ethical issues) as well as the core question and the dimensions of the evaluation framework are presented.
- *Chapter 4* aims to validate the proposed evaluation framework through the successful application of this methodological framework to the Learn2Analyze MOOC, a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning. In this section the Learn2Analyze Educational Data Literacy Competence Profile and the competence-based Learn2Analyze MOOC are presented, as well as the sampling and data analysis methods used.
- *Chapter 5* presents the results of the evaluation of the Learn2Analyze MOOC Phase A, through the analysis of the pre- and post-course surveys, aiming to reveal factors that affect the *perceived competence advancement* upon completion and provide areas and recommendations for possible improvement of the initial L2A MOOC.
- *Chapter 6* summarizes the findings and conclusions, evaluates goal achievement, highlights the limitations of the research, and suggests areas for future research.

# Chapter 2 – Literature Review

## 2.1 Introduction

Massive Open Online Courses (MOOCs) can be a valuable tool for professional development (PD) as they can offer flexible and cost-effective opportunities for professional competence development at large scale. Nevertheless, certain shortcomings are reported in the literature for MOOCs4PD, such as low completion rates, limited engagement and social participation and lack of credible assessment, mostly inherited by the design of MOOCs targeting the general audience. The scope of this chapter is to identify approaches that inform the evaluation of MOOCs in the literature, and provide an in-depth analysis of what is it important to evaluate in a MOOC4PD and why.

## 2.2 MOOC

The concept of Massive Open Online Courses (MOOCs) has been characterized as a disruptive innovation in higher education practice, as it is based on the idea of making educational experiences from well-known universities freely available at large scale (Porter & Beale, 2015), providing access to world-class educational and training resources across geographical and social boundaries (Hone & El Said, 2016).

### 2.2.1 Definitions

The term 'MOOCs' represents open access, global, free, video-based instructional content, videos, problem sets and forums released through an online platform to high volume participants aiming to take the course (Baturay, 2015).

OpenupEd (2015), by conducting a survey in which elements and criteria were tested amongst European institutions, defined MOOCs as:

*"courses designed for large numbers of participants that can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free."* (Brouns et al., 2014)

According to Jamai and Merrilea (2019), MOOCs began in 2011 with 3 courses and now feature courses from some 900 universities. Over the last 5 years, MOOC enrollments have grown 910%. **Figure 1** and **Figure 2** shows the global growth in *MOOC offerings* and *enrolments* accordingly.

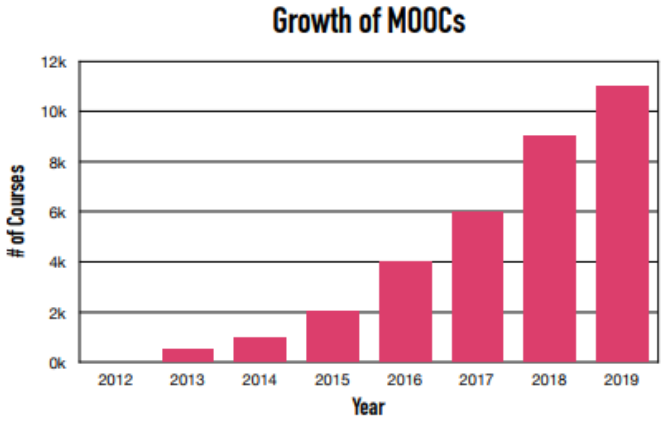


**Figure 1.** Growth in course offerings across major MOOC (source: Shift happens 2, 2019)

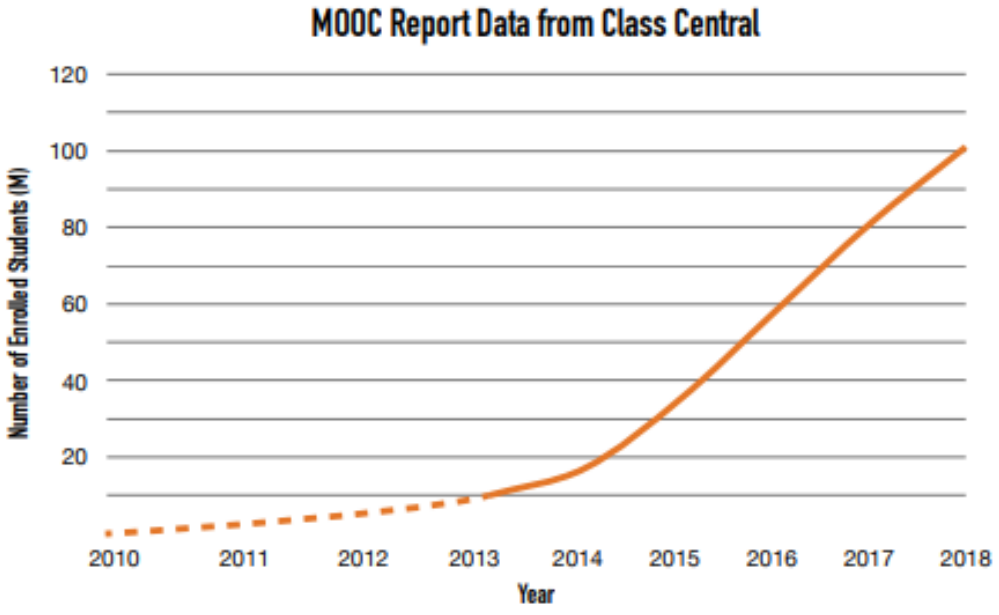


**Figure 2.** Growth in enrollment across major MOOC platforms (source: Shift happens 2, 2019)

### 2.2.2 MOOCs' characteristics

What distinguishes MOOCs from other forms of online courses is the fact that they scale massively and are open and free for participants.

***Massiveness***

MOOCs accommodate an unknown and potentially quite large number of learners. In principle MOOCs have infinite *scalability.* There is technically no limit to their final size because the cost of adding each additional participant is almost zero for MOOC institutions (Bates, 2015). The level of participation can range from as little as 150 participants to as many as a few thousand participants (Sergis, Sampson, & Pellicioni, 2017). Scalability is a course design issue that affects how course content, activities, and assessments are selected and designed.

***Openness***

The development of MOOCs is rooted within the ideals of openness in education, that knowledge should be shared freely, and the desire to learn should be met without demographic, economic, and geographical constraints (Yuan & Powell, 2013). "Openness" relates to the tuition-free registration and participation. Access is free for participants, although an increasing number of MOOCs are charging a fee for assessment leading to a certificate (Bates, 2015). Openness also refers to the absence of entry requirements for participation in courses, as well as the capacity of learners to select their own learning path in terms of the curriculum they wish to follow, based on their own needs and preferences. (Sergis, Sampson, & Pellicioni, 2017).

### 2.2.3 MOOC's challenges

Despite the potential associated with MOOCs, they face significant challenges. Much of the literature deals with issues related to low *completion rates*, low *interaction* and *limited engagement* of the participants to the MOOC activities and the MOOC community, and lack of *credible assessment* of the learning outcomes (Jansen, Rosewell, & Kear, 2017).

***Low completion rates***

Although MOOCs often attract a high volume of participants, only a small percentage of enrolled participants effectively complete the course (Bonafini, 2017). The high dropout rate is a major challenge in MOOCs, as retention rates are on average less than 10%. Katy Jordan (2014) studied 39 courses and found that completion rates range from 0.9% to 36.1%, with a median value of 6.5%. Furthermore, from those enrolled in MOOCs, only 60% even finish the first unit (Greene et al., 2015). Reich and Ruipérez-Valiente (2019) examined all MITx and HarvardX MOOCs taught in EdX (261 courses) and concluded that most MOOC registrants leave soon after enrolment, and attrition typically remains high for the first two weeks of the course. Regarding the retention Hone and El Said (2016) found that, once participants had crossed half-way of the course, they were very unlikely to leave before the end.

MOOC critics are concerned about low overall completion rates, but these rates are typically evaluated without accounting for student *intentions*. Reich (2014) studied nine HarvardX courses, highlighting the relationship between student's intention to complete the course and actual completion (to earn a certificate) and found that it was a stronger predictor of outcome than any demographic variable. However, of those who indicated that they intended to complete a course in this study, only 22% did so (compared to 6% who said they only intended to browse). In the same study, it was estimated that students who intend to earn a certificate are 4.5 times more likely to do so than a students who intend to browse the course and 3.5 times more likely to do so than students who intend to audit a course.

Many of the participants who initially sign-up for a MOOC may do so without intending to participate, so including them in the statistics for calculating retention can be seen as misleading. DeBoer et al (2014) argue that educational variables such as enrolment and dropout need to be redefined for MOOCs.

***Low interaction and engagement to learning activities***

By design, MOOC participants engage with a combination of online reading materials, videos, quizzes, discussion forums, and assessments throughout their learning (Bonafini, 2017). Most of those who attending a MOOC, hardly participate, they are more spectators, choosing some of the educational material, they are not involved in the activities and evaluation, nor are they active in the course forum. Sinha et al. (2014) in their study, found that, out of the 330,000 students who register in MOOC courses at EPFL

(Ecole polytechnique fédérale de Lausanne), 75% show up: 50% of them primarily watch video lectures and the rest 25% additionally work out homeworks and assignments. The main feature of a Massive Open Online Course (MOOC) is lecture videos, but many MOOCs also include activities such as questions for students to answer or problems for them to solve, in some cases with *immediate* online *feedback*. Koedinger et al. (2015) explored the benefits of the use of interactive activities in MOOCs and found that participating in *interactive activities* increases the possibility of taking the final assessment.

In the *discussion forum* participants have the opportunity to establish connections with other participants, to reflect on their learning, uncover misconceptions and to gain from mutual sharing in a community that is being created. Despite the significance of forums in empowering learning, discussion forum participation is limited in MOOCs, typically in the range of 10–20% of registered learners (Sharif & Magrill, 2015).

Hone and El Said (2016) conducted a survey with learners who completed a MOOC in full as well as those who dropped out, to study factors that affect completion, and found that interaction with tutors and peers as well as meaningful feedback, affects course completion. From the comments of participants' who dropped their MOOC, human interaction (instructor or peer) arises as an important issue. Participants described that they have not been motivated due to low interaction and poor feedback.

***Lack of credible assessment***

MOOC providers' shift towards the granting of certificates and digital badges for course accomplishments, indicating the need for proper, secure and accurate assessment results. To ensure accountability, the implementation of efficient and effective assessment is crucial, but assessment in MOOCs is still problematic (Xiong & Suen, 2018).

Multiple assessment methods and tools are used in MOOCs. To respond to the massiveness of MOOCs most tests, and quizzes are computer-graded (Jamai, & Merrilea, 2019). Alternative approaches include automatic essay scoring (AES) or calibrated peer review (Balfour, 2013). 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. Open-ended projects have their own on-demand human graders (usually eTutors) (Jamai, & Merrilea, 2019). Table 1 summarizes the strengths and limitations of assessment methods used in MOOCs.

**Table 1.** Strengths and limitations of assessment methods in MOOCs

| Assessment Format | Example | Learning Outcomes | Strengths | Limitations |
|---|---|---|---|---|
| Automated Multiple-Choice Questions (Xiong & Suen, 2018) | Online final exams | List, state, tell, recall, label | Instant feedback, automated and efficient | Only applicable to certain skills/levels of knowledge<br>Not considered as authentic tasks |
| Automatic essay scoring (AES) (Balfour, 2013) | Assignments | Examine, critically, assess or judge | Immediate feedback, scalable and efficient | Only suitable for assessing the writing |
| Peer Assessment (Xiong & Suen, 2018) | Peers provide feedback to other peers' work (according to exemplary rating based on rubric) | Examine, critically, assess or judge | Immediate feedback, scalable and efficient | Lack of credibility of peer raters |
| Expert Assessment (Xiong & Suen, 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<br>Maximized Credibility | Increased cost and complexity |

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.

## 2.3 MOOCs4PD

Massive Open Online Courses (MOOCs) are widely used by professionals as an affordable and, in some cases, low risk and low cost way to improve their professional competences in emerging areas (Littlejohn & Milligan, 2015). Professional development, along with personal interest and curiosity, are the key motives for those enrolled in MOOCs (Laurillard, 2016). Typically, MOOCs provide professionals with open, flexible and self-directed access to learning resources and, in some cases, also to experts in the profession, as well as, an opportunity to be active in a global learning community (Kalz, 2015; Jobe, Östlund, & Svensson, 2014).

### 2.3.1 MOOCs4PD strengths and limitations

Nowadays, Continuing Professional Development (CPD) is widely delivered via online and blended learning methods and, more recently via MOOCs (Kalz, 2015). MOOCs offer the potential for flexibility and variety of training opportunities to large numbers of participants, in contrast with other traditional CPD courses (Castaño-Muñoz et al., 2018).

MOOCs for professional development (MOOCs4PD) have been widely used for Teachers' CPD. Castaño-Muñoz et al. (2018) have studied the use of MOOCs for Teachers' PD in Spain and identified benefits and barriers. Wang et al. (2018) have analysed participants' behaviour based on data from 20 MOOCs for teachers' PD in China. Laurillard (2016) has conducted a study on a pilot UNESCO CPD MOOC for teachers to assess the potential of MOOCs for addressing the needs for cost-effective, large-scale teachers' training in developing countries.

Although *completion rate* is the most cited MOOCs' shortcoming, it is a remnant of formal educational contexts, where students enroll in courses designed to be completed and achieve the learning outcomes set by the institution (Rabin, Kalman, & Kalz, 2019). Apart from the completion rates, issues related to the recognition, validation and accreditation

of competence-based learning goals are also significant in MOOCs4PD (Jobe et al., 2014). In the same research, the potential benefit of the extended peer professional learning community that can be formed within MOOCs for teachers' CPD is highlighted, but the reality of MOOCs differs: the participants, especially those who drop out the course, report problems with lack of interaction and isolation (Hone & El Said, 2016). Hew and Cheung (2014) have studied the challenges in MOOCs from learner's perspective and reported that the majority of students fail to participate in the online discussions. Due to massiveness in terms of participants and its implications to teaching workload, there is limited student-instructor interaction in the form of tutoring, guidance and feedback (Kop & Fournier, 2011). As a result, the educational design of MOOCs specifically developed and offered for professional development should be paying attention in handling these known limitations.

## 2.4 Evaluation methods for MOOCs4PD

Massive Open Online Courses (MOOCs) are currently a core trend in online education and training (Liyanagunawardena, Adams, & Williams, 2013). Commonly identified issues with the effectiveness of MOOCs are course completion, participation, motivation and retention issues (Egloffstein, Ebner, & Ifenthaler, 2019). The continuous improvement of the quality of MOOCs so that the MOOC participants can get the best possible learning outcomes still remains an open issue. To this end, several good practices for the evaluation of MOOCs have been documented in the literature (Alturkistani, Majeed, Car, & Brindley, 2018).

### 2.4.1 Capturing learners' profile

The collection and analysis of MOOC participants' characteristics is addressed in the majority of research literature on MOOCs (Kizilcec, Piech, & Schneider, 2013; Bayeck, 2016), mainly targeting to improve the design of the MOOCs and hence their quality. Veletsianos and Shepherdson (2016) identify MOOC learners' *demographics, perceptions, preferences* and *motivation* as some of the topics that prevailed across systematic analysis of the empirical MOOC literature published in 2013-2015. As further emphasized, researchers have favored a quantitative approach to MOOC research, preferring the collection of data via surveys and automated methods (Veletsianos & Shepherdson

2016). The collection of learners' self-report features through questionnaire-based surveys, upon enrolling in the MOOC, is also highly recommended in the "*Practical guide for MOOC tutoring and design*" (Castrillo, Martin-Monje, Vázquez-Cano, 2018). In order to capture the profile of the participants, a set of common variables/items are considered/included in most surveys, such as *sociodemographic characteristics* (gender, age, geographical location, employment status), *academic and professional background, previous experience with MOOCs, motivations and expectations* (Gil-Jaurena, Callejo-Gallego, & Agudo, 2017). Most MOOC providers use these findings to understand their learners (Ho et al., 2015) since MOOCs are openly accessible by a wide variety of enrolled participants with diverse demographics, motivations, and backgrounds.

Although there are some studies claiming that MOOCs' participants represent a quite homogeneous population (Shrader, Wu, Owens, & Ana, 2016), the common understanding is that MOOCs are appealing for a diverse mix of participants in terms of cultural and educational background, country of origin, employment status, motivations and learning experiences (Bayeck, 2016; Dillahunt, Chen, & Teasley, 2014; Guo & Reinecke 2014; Hennis, Skrypnyk, De Vries, 2015; Woodgate, Macleod, Scott, & Haywood, 2015).

As per Christensen et al., (2013) "the student population tends to be young, well educated, and employed, with a majority from developed countries." On the other hand, Ho et al., (2015) emphasizes that the "characterization of MOOC participants as a group of college-educated men in their late 20s misrepresents substantial variation, especially across different kinds of courses". With regards to gender literature reports that there is a predominance of male learners in MOOCs (Hennis, Topolovec, Poquet, Vries, 2016), although in the last years there is an increase in female participation (Ho et al., 2015). When it comes to age, as reported by Hennis, Topolovec, Poquet, and Vries (2016), younger students seem more oriented towards receiving a certificate while older students are more work-motivated, keen to acquire new competences which are certified, thus leading them in better performance.

Guo and Reinecke (2014) performed data analysis on the activities of 140,546 students in four edX MOOCs. **Figure 3** shows the distributions of self-reported education levels (top) for all students and certificate earners (bottom) in all four courses; (*) represents an elementary or junior high school graduate. As depicted, certificate earners tend to have more years of education than the general student population.

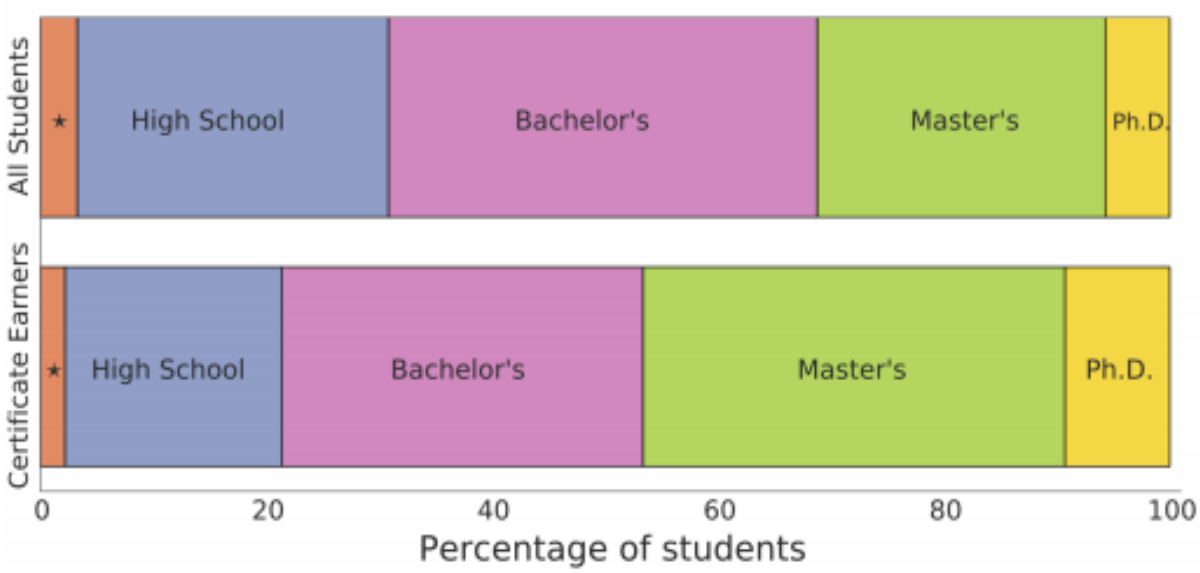


**Figure 3.** MOOC students' education levels (Guo & Reinecke, 2014)

Research studies show that the combination of learners' profiles with behavior within the MOOC can reveal engagement patterns and possibly predict performance. Demographic factors are considered to influence performance (Tempelaar, Rienties, & Giesbers, 2015) and have been used to address multiple research issues ranging from fundamental questions on socioeconomic status and MOOC enrollment (Hansen & Reich, 2015) to differences in how MOOC participants navigate through MOOCs (Guo & Reinecke, 2014). As emphasized by Hood and Littlejohn (2016), "*successful learning in MOOCs is learner driven and learner determined*".

To understand learning in MOOCs it is necessary to more fully investigate the particular motivations and drivers that influence individual learner's behaviour and actions during MOOC study (Gašević, Kovanović, Joksimović, & Siemens, 2014). With regards to **motives**, studies report a much wider range of MOOC participants' motivations for learning compared to conventional courses (Hood & Littlejohn, 2016). According to Hood and Littlejohn (2016) "*motivation determines how a person engages with a learning opportunity both cognitively and behaviorally, and therefore, is a mediating factor in relation to other quality measures*." Many research studies and surveys reflect the diversity of possible intentions of MOOC participants beyond earning a certificate of completion (Hood & Littlejohn, 2016; Shrader, Wu, Owens, & Ana, 2016). Belanger and Thornton, (2013) categorized learners' motivations to participate in MOOCs into four categories:

- To support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement,
- For fun, entertainment, social experience and intellectual stimulation,
- Convenience, often in conjunction with barriers to traditional education options,
- To experience or explore online education.

These MOOC populations tend to redefine the MOOC experience to fit their needs (Shrader, Wu, Owens, & Ana, 2016). Koller, Ng, Do, and Chen (2013) also consider that retention metrics in MOOCs must be defined and interpreted in accordance to the learner's goals. In Egloffstein and Schwerer (2019), initial learning objectives and actual achievement are systematically compared for a large sample of participants in enterprise MOOCs.

To measure MOOC learner motivation, there are several scales incorporated mainly in pre-course questionnaire based-surveys (Wang & Baker, 2018). The *8-item short Grit Scale*, which measures the "*perseverance and passion for long-term goals*" (Duckworth & Quinn, 2009), has been used to assess learners' consistency of interests and perseverance of efforts (Wang & Baker, 2018). As per Wang and Baker (2018) findings, the grit scale "*can predict course completion independently from intention to complete and with comparable strength*". The 8-item short Grit Scale is used by many MOOC providers like www.edX.org for example in the course "PennX: BDE1x "Big Data and Education".

PALS (Patterns of Adaptive Learning Survey) scale is also a well-known and widely used survey measure of goals (Anderman, Urdan, & Roeser, 2005). The Motivated Strategies for Learning Questionnaire (MSLQ) has proven to be a reliable and useful self-report instrument (Duncan & Mckeachie, 2010). The MSLQ when adapted for MOOC learners usually consists of 18 MSLQ motivation assertions and 12 MSLQ assertions about usual learning strategies (Alario-Hoyos, Estévez-Ayres, Pérez-Sanagustín, & Delgado-Kloos, 2017). The motivation assertions are grouped in three categories: IGO (Intrinsic Goal Orientation), TV (Task Value), and SELP (Self-Efficacy for Learning and Performance) and they are used to identify their motivation to participate in the MOOC and their preferences on materials and assignments. Assertions about usual learning strategies which give hints about learners' strengths and weaknesses when facing MOOCs regarding organizational aspects are grouped into two categories: CT (Critical Thinking) and TSE (Time and Study Environment) (Alario-Hoyos et al., 2017).

### 2.4.2 Evaluating participants' learning experiences in MOOCs

The evaluation of the participants' learning experiences in a MOOC is a very wide topic and there are several different perspectives documented in the literature. There is a rich body of literature for the indicators for evaluating learners' experience in Online Courses in general. For example, Ulf-Daniel Ehlers (2004) describes a learner-focused quality concept that consists of thirty dimensions including interaction, information transparency (i.e. clearly stated learning goals), communication, course structure, multimedia, background material, support of learning, feedback.

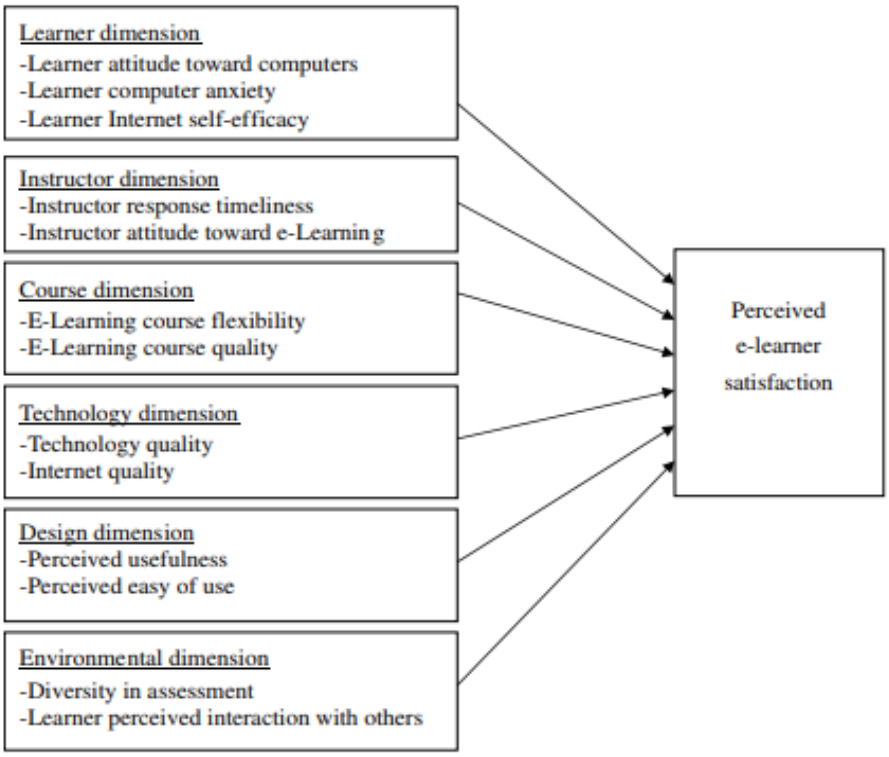


**Figure 4.** Six dimensions of e-Learning from learners' perspective (Sun et al., 2008)

Sun et al. (2008) have condensed six dimensions of e-Learning from learners' perspective that would result in learner's satisfaction (**Figure 4**). These dimensions are: learners, instructors, courses, technology, design, and environment. Jung (2011) recognizes seven dimensions in evaluating the e-learning quality: Interaction, Staff Support, Institutional Quality Assurance Mechanism, Institutional Credibility, Learner Support, Information and Publicity and Learning Tasks.

However it is questionable if those indicators are suitable for MOOCs, due to the unique features of those online courses (Gamage, Fernando & Perera, 2015). Perris (2015)

evaluated the “MOOC on MOOCs” using six dimensions in the online post-course survey, including content, assessment activities, interaction (between participants or between participants and instructor), instructional design (method of course delivery), connectivity (Internet access to course) and course platform. Rienties and Toetenel (2016) reported that the number of assignments, the duration of the course, and the workload had a strong and significant impact on overall learners’ satisfaction: learners who were more satisfied with the quality of teaching materials, assessment strategies and workload were more satisfied with the overall learning experience. Furthermore, long-term goals of learners (i.e., qualifications and relevance of modules with learners’ professional careers) were important predictors for learner satisfaction, in particular at post-graduate level. Gil-Jaurena et al. (2017) examined 17 MOOCs offered in the Spanish National University of Distance Education (UNED) and collected information from a sample of more than 24,000 learners (initial survey) and 2,003 learners (final survey). In their work the dimensions regarding the learning experience include: reasons for enrolling, course expectations, overall level of satisfaction, satisfaction with the platform, satisfaction with the length of the course, satisfaction with the content (videos, complementary material, tests, self-assessments, activities of peers), support from the facilitator, support from peers, future expectations. Egloffstein at al. (2019) have conducted a multi-perspective evaluation of Mannheim Business School’s initial MOOC (MBSx:VBM). The learner-oriented evaluation focused on contextual and motivational variables. Participant characteristics along with the learners’ initial motives were examined in the pre-course survey, while learners’ perceptions of the course design and the instructional elements were examined in the post-course survey.

### 2.4.3 Evaluating participants' achieved learning outcomes in MOOCs4PD

Typically, registration in MOOCs is free and, in the majority of cases, without any pre-requisite qualifications or knowledge. The reasons that one chooses to attend a MOOC may be his interest in the specific subject, the desire to acquire new knowledge or update his or her previous professional development. As a result, dropout rates in MOOCs are much higher than those of the traditional courses. Many of those initially enrolled in a MOOC do not intent to complete the MOOC, so counting them on the dropout rate can be misleading (Hone & El Said, 2016; Egloffstein & Schwerer, 2019). Studies report that less than 7% of the enrolled participants in a MOOC will complete it with a certificate (Jordan, 2014). As Khalil and Ebner (2014) argue, numerous studies deal with how to avoid high attrition rates and why students drop out or fail. Daradoumis et al. (2013) emphasize that measuring the quality of a MOOC only from the dropout rates might not represent

the reality and suggests analyzing further each participant's objectives to evaluate the MOOC's effectiveness. Christian Stracke (2017) proposes the completion of individual goals and intentions by the MOOC learner as a more appropriate quality indicator for evaluating the quality of MOOCs than the traditional drop-out rates. Egloffstein and Schwerer (2019) compare participants' intended learning objectives and actual achievements in Enterprise MOOCs at openSAP to extract more reliable and realistic performance indicators. Wilkowski, Deutsch, and Russell (2014), identified prior experience of participants who registered for the "Mapping with Google" MOOC, using pre-course survey and measured students' self-reported goal achievement on a post-course survey.

In order to measure potential success of a MOOC4PD, instead of concentrating only to simple data such as *certification* and *dropouts*, we are aiming to investigate the perceived achieved *advancement of competences level* as reported by the participants. Thus, the starting competence level for every competence is measured using a pre-course questionnaire. After the MOOC completion, participants are asked to self-assess their learning accomplishment evaluating their current competence level as an indicator of the achieved progress. Usually, the levels used, so that the participants can self-assess their competence, are based on the Dreyfus model of skill acquisition (Dreyfus, 2004), which is widely implemented "*to provide a means of assessing and supporting progress in the development of skills or competencies*" (Lester, 2005).

## 2.5 Conclusions

Massive Open Online Courses (MOOCs) are currently a hype in online education and training. MOOCs are widely used for professional development, as they are an affordable and, in some cases, low risk and low cost way to improve professional competences in emerging areas. Despite their potential, they face significant challenges related to course completion, participation, motivation and credible assessment.

Evaluation of Massive Open Online Courses (MOOCs) is a key practice for analyzing their performance and benefits and reveal useful insights for the revision of the educational design and/or learning materials, towards enhancing the learning experience and improving learning outcomes. Most research examine factors that affect completion rates and ignore the perceived competence advancement. These factors are related to:

- **Learners' profile** (demographics, academic and professional background, previous experience with MOOCs, motivations and expectations), as well as,
- **Learning experience** (content, assessment activities, interaction between participants or between participants and instructor, instructional design, connectivity and course platform)

Based on the environment scan, an evaluation framework for MOOCs4PD is proposed, aiming to investigate the relationship of the *learners' profile* and the reported *learning experience* to the *perceived competence advancement* upon completion. The answers of participants in the pre- and post-course questionnaires, are expected to reveal useful insights for the revision of the evaluated MOOC towards improving learning experience and enhancing competence advancement in MOOCs4PD.

Next we will describe this framework, analyze its components and use it to evaluate the Learn to Analyze Educational Data and Improve your Online Teaching MOOC, a learning initiative aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

# Chapter 3 – Proposed Evaluation Framework for MOOCs4PD

## 3.1 Introduction

Much of the literature deals with issues related to low completion rates in MOOCs, exploring factors that affect retention in relation to (a) learners' characteristics (demographics, academic and professional background, previous experience with MOOCs, motivations and expectations), and (b) learning experience (content, assessment activities, interaction between participants or between participants and instructor, instructional design, connectivity and course platform) in MOOCs.

MOOCs are extensively used for Professional Development (MOOCs4PD) offering an affordable and flexible way for professionals to improve their competences. As competences advancement is the core aim for MOOCs4PD, an evaluation framework for MOOCs4PD, that explore the factors that affect it, would be useful for identifying areas for possible improvement.

## 3.2 Addressing questions

The aim of the current proposed evaluation framework is to explore the factors which affect the *perceived competence advancement* of participants, focusing on the *learners' profile* and the reported *learning experience* upon completion. The answers of participants in the pre- and post-course questionnaires, are expected to reveal useful insights for the revision of the evaluated MOOC, towards improving learning experience and enhancing competence advancement in MOOCs4PD.

## 3.3 Dimensions of the evaluation framework

The evaluation framework, consists of two surveys (pre- and post-course survey). In the pre-course survey, participants' profile is analyzed in term of demographics, educational/professional background, motives and initial competence level. In the post-course survey, participants report their learning experience in the MOOC, their satisfaction, confirmation of expectations and continuance intention, as long as their

achieved competence level. Competence advancement is calculated as the difference between achieved and initial competence level. On the other hand, completion is coded as a dichotomous variable, where 1 = participants that completed the MOOC and 0 = participants that dropped the MOOC.

Learners' characteristics from the pre-course survey will be correlated with their learning experience and achieved learning outcomes collected through a post-course survey to explore the factors that affect course completion and competence advancement.

**Figure 5** shows a schematic representation of the components of the two surveys (pre- and post-course survey).

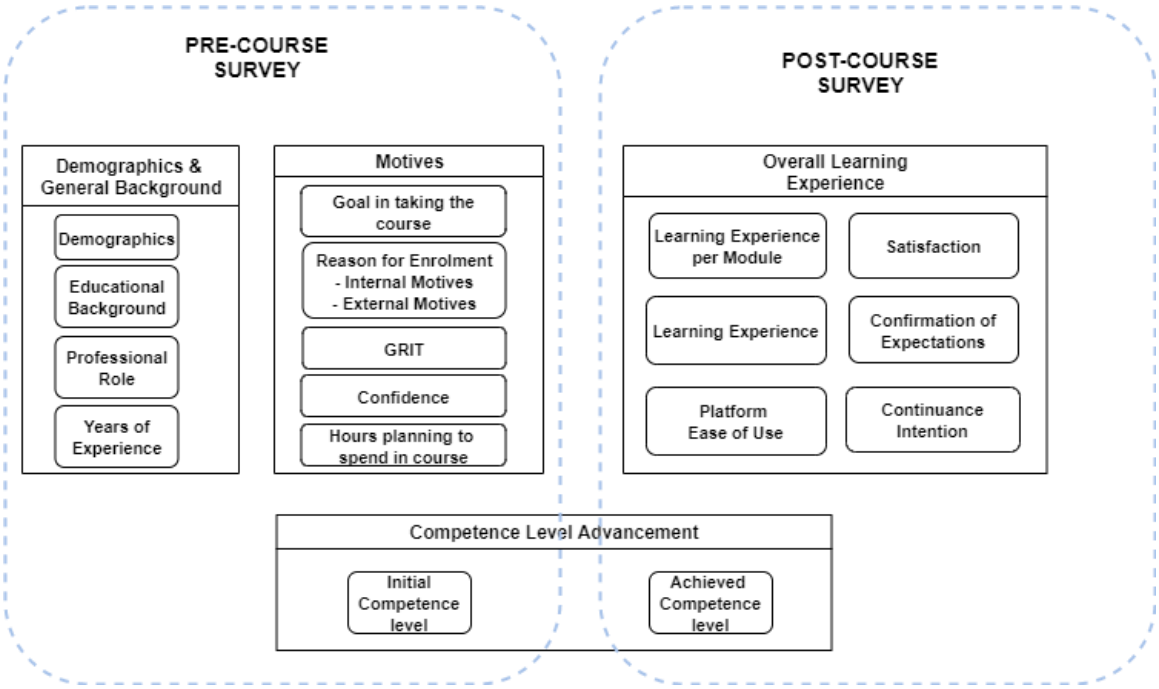


**Figure 5.** Pre- post-course survey elements

### 3.3.1 Learners profile (pre-course survey)

The pre-course survey is trying to capture the learners' profile incorporating questions about Demographics and General background of the participants and investigating their motives, trying to answer the questions "***who our learners are***" and "***why they enroll in the course***" and to identify possible learners' groups.

**Demographics and general background** includes questions around:

- Sociodemographic characteristics (gender, age, geographical location)
- Educational background (academic background, previous experience with MOOCs, language proficiency and comfort with technology)
- Professional background (job sector, professional role and years of experience)

***Motives*** - To measure MOOC learner's motivation, the pre-course survey incorporated 5 sets of questions:

- one item around the Goal in taking the course;
- 8 MOOC-specific motivational items (rated using a 5-point Likert scale plus a "not applicable" option) that are drawn from previous MOOC research studies (Belanger & Thornton, 2013; Wang & Baker, 2015; Barack 2016) asking respondents to rate their reasons for enrollment. Reasons for enrolment are further divided into internal and external motives;
- the short 8-item *GRIT scale* (Duckworth & Quinn, 2009) to assess learner's consistency of interests and perseverance of efforts, rated in a 5-point Likert scale; GRIT is passion and perseverance for long-term and meaningful goals. It is the ability to persist in something you feel passionate about and persevere when you face obstacles (Duckworth & Quinn, 2009).
- two items around *self-confidence* (in learning the material and in course completion), rated in a 5-point Likert scale;
- one item about the *hours per week* planning to spend in the course.

***Initial competence level*** - participants are asked to select self-assess their initial level of competence (per competence dimension/statement) from 5 possible levels, namely: Novice, Advanced Beginner, Competent, Proficient and Expert their competence, based on the Dreyfus model of skill acquisition (Dreyfus, 2004).

### 3.3.2 Overall Learning Experience (post-course survey)

Overall Learning Experience is measured, both per module and through the course, in terms of, content (graphics, videos, complementary material, learning activities, and assessments), workload, level of interaction, platform ease of use, level of satisfaction, confirmation of expectations, and continuance intention.

- Learning experience per module

- Overall learning experience
- Platform ease of use
- Satisfaction
- Confirmation of Expectations
- Continuance intention

### 3.3.3 Competence advancement

Competence level advancement is the self-reported advancement of competence level of participants, calculated from the reported initial and achieved competence level.

To match the answers of the participants in pre- and post-course surveys, we ask the participants to produce and provide an easy to remember and reproduce, and very difficult to decode Unique ID Code, based on their answers to the following questions:

1. The first letter of your first name (e.g. U)
2. The last 2 digits of your cell phone (if none use 00) (e.g. 17)
3. Your month of birth (e.g. 03)
4. The first letter of your middle name (if none, use X) (e.g. M)
5. The first letter of city/town you were born in (e.g. V)

(The above example would generate the unique code ID: U1703MV)

Next, we summarize the key design aspects.

## 3.4 Pre- and Post-course survey implementation

The main design aspects of the surveys are:

- the *instruments* used for the data collection, namely invitation letter and pre- and post-course questionnaires,
- privacy and ethical issues, namely, the *consent form* used.

Instruments:

The instruments used for the implementation of the surveys are presented in Appendix 2

Pre-course survey:

The ***invitation letter*** mentioning the description of the study and its objectives and guidelines for completing the survey, see Appendix 2

The ***consent form*** with all the information needed (purpose and procedure, potential benefits, potential risk or discomforts, storage of data, anonymity and confidentiality, right to withdraw, conflict of interest, compensation, participant concerns and reporting) for the participants to consent or not in the survey. The consent form follows the guidelines of the General Data Protection Regulation (EU) 679/2016 ('GDPR') [Section 2 of the Online Questionnaire, see Appendix 2

The ***questionnaire*** in a web form (google form) to collect the participants' responses. Appendix 2 presents the full online questionnaire and Appendix 3 – Coding of Questions provides the coding of the different types of questions.

## 3.5 Research Questions

The *core question* of the evaluation framework is:

> *"What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the competences of participants?"*

The core question is investigated at the following *dimensions*:

1. What are the main *targeted groups* (per professional role) of participants in the MOOC and what is their profile? What are the individual characteristics and key differences of targeted professional groups in relation to their motives, self-confidence, GRIT and initial competence level?
2. What characteristics of participants' profile are related to the *course completion*?
3. How do the characteristics of participants profile affect their *competences advancement*?
4. What is the perceived *learning experience* per module as reported by participants that completed the MOOC? What is the perceived overall learning experience per targeted professional group?

5. How does the overall learning experience affect *competences advancement*?
6. Which are the *areas and recommendations* for possible improvement.

**Table 2** summarizes the main research questions of the proposed evaluation plan.

**Table 2.** Research questions

| Variables | Research Questions |
|---|---|
| DEMOGRAPHICS & GENERAL BACKGROUND<br>**DEM**: Demographics<br>**GB**: General Background<br>**ROLE**: Professional Role<br>**YoE**: Years of Experience in Digital Teaching and Learning<br><br>MOTIVES<br>**GOAL**: Goal in taking the course<br>**RfE**: Reasons for Enrolment (8 MOOC-specific motivational items)<br>**MOT.INT**: Internal motives<br>**MOT.EXT**: External motives<br>**GRIT**: 8 items short GRIT scale<br>**SelfConf**: Confidence in completing the course (learn the material and complete the course on time) | Learners profile<br>1. What is the difference in Motives between the professional roles?<br>**Variables:** Goal in taking the course [GOAL], Reasons for Enrolment [RfE], GRIT score [GRIT], Confidence in completing the course [SelfConf], Hours per week planning to spend in the course [HpW]<br>**Groups:** Professional roles<br><br>2a. What is the difference in Course Completion between the professional roles?<br>**Variable:** Competence Level Advancement [EDL]<br>**Groups:** Professional roles<br>2b. What is the relationship of Motives on Course Completion amongst MOOC Participants?<br>**Dependent Variable:** Course Completion (certificate)<br>**Independent Variables:** Goal in taking the course [GOAL], Reasons for Enrolment [RfE], GRIT score [GRIT], Confidence in completing the course [SelfConf], Hours per week planning to spend in the course [HpW]<br>**Group:** MOOC Participants<br>Participants' Learning experience<br><br>3a. What is the difference in Competence Level Advancement between the professional roles?<br>**Variable:** Competence Level Advancement [EDL]<br>**Groups:** Professional roles |

| | |
|---|---|
| **HpW:** Hours per week planning to spend in the course<br><br>OVERALL LEARNING EXPERIENCE<br>**LXM**: Learning experience per module<br>**LX**: Learning Experience<br>**PEoU**: Platform Ease of Use<br>**SAT**: Satisfaction<br>**CONF**: Confirmation of expectations<br>**INT**: Continuance Intention<br><br>COMPETENCE LEVEL ADVANCEMENT<br>**EDL**: Competence Level Advancement = Achieved Competence Level - Initial Competence Level | 3b. What is the relationship of Motives on Competence Level Advancement amongst MOOC Participants?<br>**Dependent Variable:** Competence Level Advancement<br>**Independent Variables:** Goal in taking the course [GOAL], Reasons for Enrolment [RfE], GRIT score [GRIT], Confidence in completing the course [SelfConf], Hours per week planning to spend in the course [HpW]<br>**Groups:** MOOC Participants<br><br>4a. What is the perceived overall learning experience per module as reported by participants that completed the MOOC?<br>**Variables:** Overall Learning Experience [LXM+LX+PEoU+SAT+CONF+INT]<br>**Groups:** MOOC Participants<br>4b. What is the perceived overall learning experience per professional role?<br>**Variables:** Overall Learning Experience [LXM+LX+PEoU+SAT+CONF+INT]<br>**Groups:** Professional roles<br>EDL Level Advancement<br><br>5. How does the Overall Learning Experience affect Competences Level Advancement?<br>**Dependent Variable:** Competence Level Advancement [EDL]<br>**Independent Variables:** Learning Experience[LX], Platform Ease of Use[PEoU], Satisfaction[SAT], Confirmation of expectations[CONF], Continuance Intention[INT]<br>**Group:** MOOC Participants |

## 3.6 Hypotheses Development

To address different aspects of the research questions we analyze each question to hypotheses as per below.

1. ***What is the difference in Motives between the professional roles?*** [Figure 6]

**Variables:** Goal in taking the course [GOAL], Reasons for Enrolment [RfE], GRIT score [GRIT], Confidence in completing the course [SelfConf], Hours per week planning to spend in the course [HpW]
**Groups:** Professional roles

$H1.1_0$: Reasons for Enrolment does not differ significantly between Professional roles
$H1.1_1$: Reasons for Enrolment differs significantly between Professional roles

$H1.2_0$: Goal in taking the course does not differ significantly between Professional roles
$H1.2_1$: Goal in taking the course differs significantly between Professional roles

$H1.3_0$: GRIT score does not differ significantly between Professional roles
$H1.3_1$: GRIT score differs significantly between Professional roles

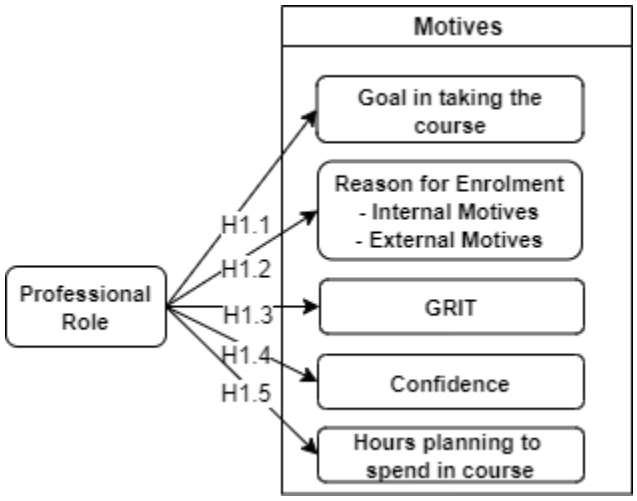


**Figure 6.** Motives per professional role

$H1.4_0$: Confidence in completing the course does not differ significantly between Professional roles
$H1.4_1$: Confidence in completing the course differs significantly between Professional roles
$H1.5_0$: Hours per week planning to spend in the course does not differ significantly between Professional roles
$H1.5_1$: Hours per week planning to spend in the course differs significantly between Professional roles

If significant difference is revealed, further examination will take place between the different groups

***2a. What is the difference in Course Completion between the professional roles?*** [**Figure 7**]

**Variables:** Course Completion

**Groups:** Professional roles

$H2.1_0$: Course completion does not differ significantly between Professional roles $H2.1_1$: Course completion differs significantly between Professional roles

***2b. What is the relationship of Motives on Course Completion amongst MOOC Participants?*** [Figure 7]

Dependent Variable: Course Completion

**Independent Variables:** Goal in taking the course, Reasons for Enrolment, GRIT Score, Confidence in completing the course, Hours per week planning to spend in the course

**Group:** MOOC Participants

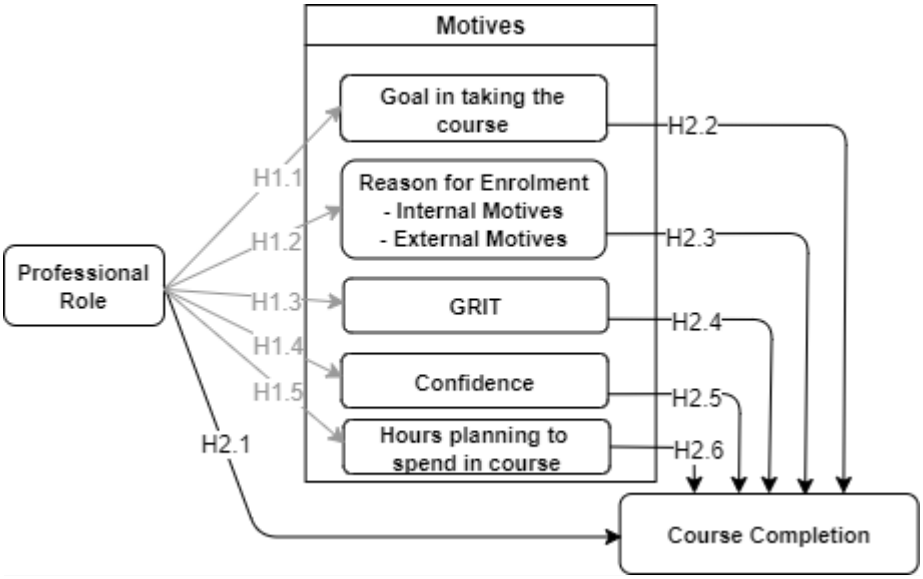


**Figure 7.** Motives to course completion

$H2.2_0$: Course completion is not related to the Goal in taking the course amongst MOOC participants

$H2.2_1$: Course completion is related to the Goal in taking the course amongst MOOC participants

$H2.3_0$: Course completion is not related to the Reason for Enrolment amongst MOOC participants
$H2.3_1$: Course completion is related to the Reason for Enrolment amongst MOOC participants

$H2.4_0$: Course completion is not related to the GRIT score amongst MOOC participants
$H2.4_1$: Course completion is related to the GRIT score amongst MOOC participants

$H2.5_0$: Course completion is not related to the Confidence in completing the course amongst MOOC participants
$H2.5_1$: Course completion is related to the Confidence in completing the course amongst MOOC participants

$H2.6_0$: Course completion is not related to the hours per week planning to spend in the course amongst MOOC participants
$H2.6_1$: Course completion is related to the hours per week planning to spend in the course amongst MOOC participants

***3a. What is the difference in Competence Level Advancement between the targeted professional groups?*** [**Error! Reference source not found.**]
**Variables:** Competence Level Advancement
**Groups:** Professional roles
$H3.1_0$: Competence Level Advancement does not differ significantly between Professional roles
$H3.1_1$: Competence Level Advancement differs significantly between Professional roles

If significant difference is revealed, further examination will take place between the different groups

***3b. What is the relationship of Motives on Competence Level Advancement amongst MOOC Participants?*** [**Figure 8**]
**Dependent Variable:** Competence Level Advancement

**Independent Variables:** Goal in taking the course [GOAL], Reasons for Enrolment [RfE], GRIT Score [GRIT], Confidence in completing the course [SelfConf], Hours per week planning to spend in the course [HpW]
**Group:** MOOC Participants

$H3.2_0$: Competence Level Advancement is not related to the Goal in taking the course amongst MOOC participants
$H3.2_1$: Competence Level Advancement is related to the Goal in taking the course amongst MOOC participants

$H3.3_0$: Competence Level Advancement is not related to the Reason for Enrolment amongst MOOC participants
$H3.3_1$: Competence Level Advancement is related to the Reason for Enrolment amongst MOOC participants

$H3.4_0$: Competence Level Advancement is not related to the GRIT score amongst MOOC participants
$H3.4_1$: Competence Level Advancement is related to the GRIT score amongst MOOC participants

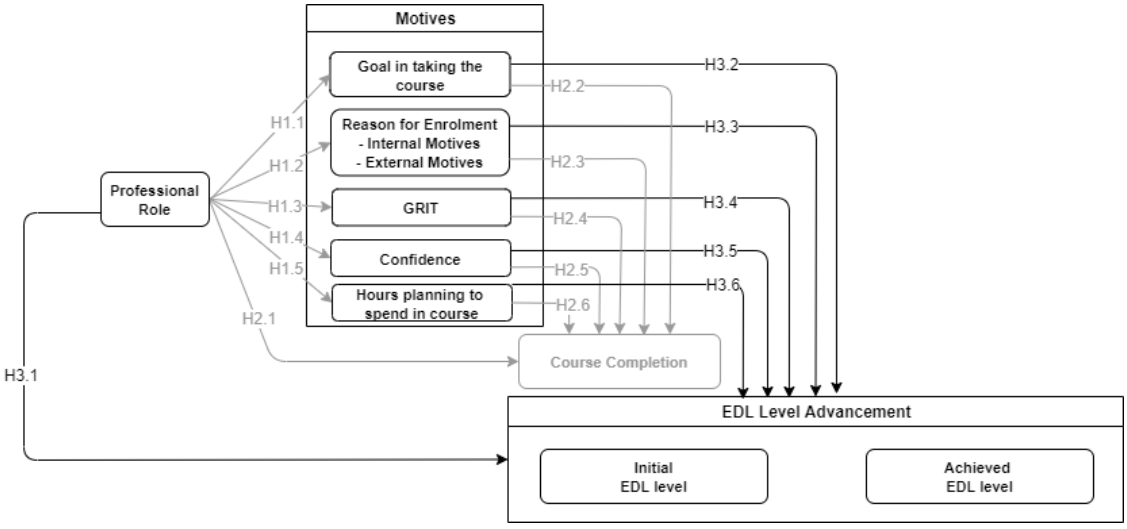


**Figure 8.** Motives to Competence Level Advancement

$H3.5_0$: Competence Level Advancement is not related to the Confidence in completing the course amongst MOOC participants

$H3.5_1$: Competence Level Advancement is related to the Confidence in completing the course amongst MOOC participants

$H3.6_0$: Competence Level Advancement is not related to the hours per week planning to spend in the course amongst MOOC participants
$H3.6_1$: Competence Level Advancement is related to the hours per week planning to spend in the course amongst MOOC participants

***4a. What is the perceived overall learning experience per module as reported by participants that completed the MOOC?*** **Figure 9**
Descriptive statistics

***4b. What is the perceived Overall Learning Experience per targeted professional group?*** [**Figure 9**]
**Variables:** Learning Experience [LX], Platform Ease of Use [PEoU], Satisfaction [SAT], Confirmation of expectations [CONF], Continuance Intention [INT]
**Groups:** Professional roles

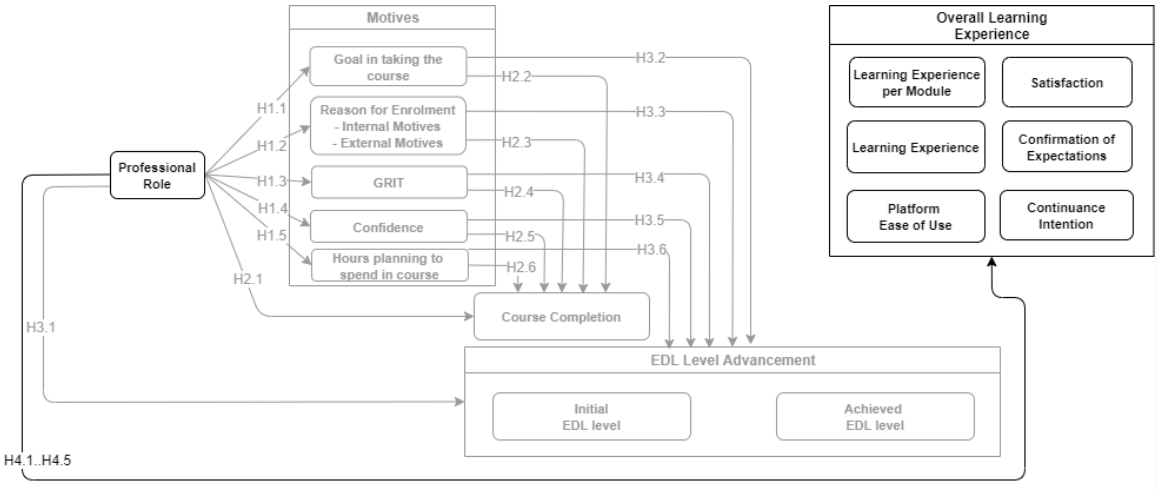


**Figure 9.** Learning Exprience per targeted professional group

$H4.1_0$: Learning Experience does not differ significantly between Professional roles
$H4.1_1$: Learning Experience differs significantly between Professional roles

$H4.2_0$: Platform Ease of Use does not differ significantly between Professional roles
$H4.2_1$: Platform Ease of Use differs significantly between Professional roles

$H4.3_0$: Satisfaction does not differ significantly between Professional roles
$H4.3_1$: Satisfaction differs significantly between Professional roles

$H4.4_0$: Confirmation of expectations does not differ significantly between Professional roles
$H4.4_1$: Confirmation of expectations differs significantly between Professional roles

$H4.5_0$: Continuance Intention does not differ significantly between Professional roles
$H4.5_1$: Continuance Intention differs significantly between Professional roles

If significant difference is revealed, further examination will take place between the different groups

***5. How does the Overall Learning Experience affect Competences Level Advancement?*** [**Figure 10**]
**Dependent Variable:** Competence Level Advancement
**Independent Variables:** Learning Experience [LX], Platform Ease of Use [PEoU], Satisfaction [SAT], Confirmation of expectations [CONF], Continuance Intention [INT]
**Group:** MOOC Participants

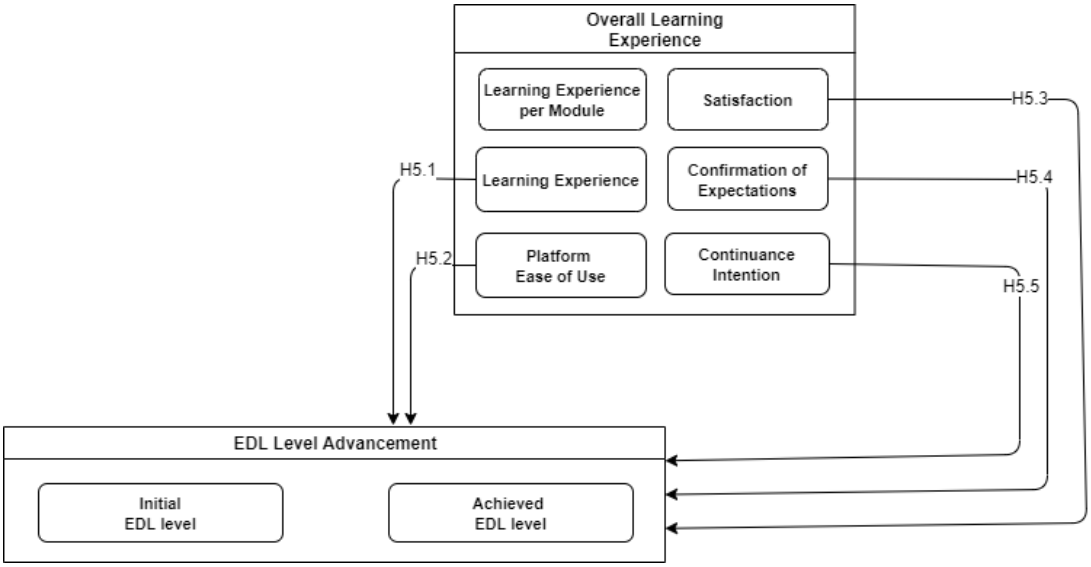


**Figure 10.** Learning Experience to Competences Level Advancement

$H5.1_0$: Competence Level Advancement is not related to the Learning Experience amongst MOOC participants

$H5.1_1$: Competence Level Advancement is related to the Learning Experience amongst MOOC participants

$H5.2_0$: Competence Level Advancement is not related to the Platform Ease of Use amongst MOOC participants
$H5.2_1$: Competence Level Advancement is related to the Platform Ease of Use amongst MOOC participants

$H5.3_0$: Competence Level Advancement is not related to the Satisfaction amongst MOOC participants
$H5.3_1$: Competence Level Advancement is related to the Satisfaction amongst MOOC participants

$H5.4_0$: Competence Level Advancement is not related to the Confirmation of Expectations amongst MOOC participants
$H5.4_1$: Competence Level Advancement is related to the Confirmation of Expectations amongst MOOC participants

$H5.5_0$: Competence Level Advancement is not related to the Continuance Intention amongst MOOC participants
$H5.5_1$: Competence Level Advancement is related to the Continuance Intention amongst MOOC participants

## 3.6 Summary

In this chapter, an evaluation framework for MOOCs4PD, that explores the factors that affect competences advancement, is proposed, aiming to be useful for identifying areas for possible improvement. Our goal is to leverage the outcomes for improving the educational design of the course, the learning environment and thus to better meet the learning needs of MOOC participants in future versions.

To measure success, we focus on whether the MOOC4PD contributed to the advancement of the competence level of the participants. Thus, the starting competence is measured using a pre-course questionnaire. After the course completion, learners are asked to self-assess their learning accomplishment evaluating their current competence level to reveal the achieved progress.

Figure 11 is a schematic representation of the proposed evaluation framework.

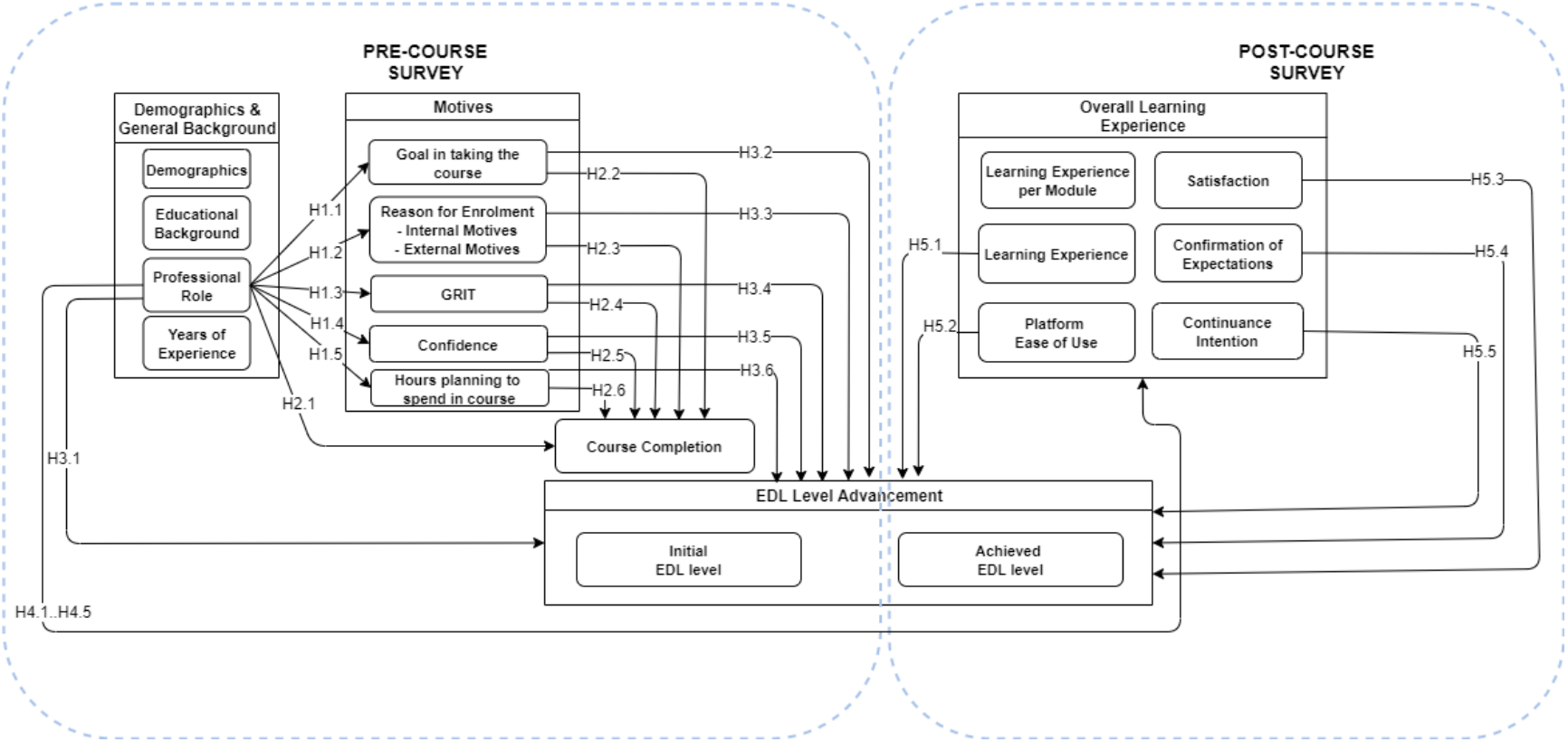


**Figure 11.** Evaluation framework

By means of validating the framework, we will present a successful application of this methodological framework to the Learn2Analyze MOOC, a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

# Chapter 4 - Validation of the proposed Evaluation Framework

## 4.1 Introduction

In chapter 3 a methodological framework for evaluating MOOCs4PD was presented, using pre- and post-course surveys to identify factors that affect competence level advancement in MOOCs for professional development (MOOCs4PD).

We will use **case study** research to test the proposed evaluation framework to real world situation and investigate if it works in real-life context. Case study is a descriptive and exploratory analysis of a person, group or event in order to explore the causes and underlying principles (Cohen et al., 2007).

We will employ the evaluation framework to real massive dataset collected from the first run of the Learn2Analyze MOOC, a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

## 4.2 The case of the Learn2Analyze MOOC

The scope of this study is to propose an evaluation framework for MOOCs4PD (Chapter 3) and validate it through the evaluation of the Learn2Analyze MOOC.

### 4.2.1 Presentation of the Learn2Analyse project

Learn2Analyze (L2A) is an Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' (Instructional Designers and e-Trainers) Competences in Educational Data Analytics, 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) for the period 2018-2020.

The scope of the Learn2Analyze project is to:

- Enhance existing competence frameworks for instructional designers and e-trainers of online courses with new Educational Data Literacy competences for using emerging Educational Data Analytics methods and tools.

- Develop and evaluate a series of professional development **Massive Open Online Courses (MOOCs)** for cultivating these competences with emphasis to combining theory and practice in the form of authentic work-oriented tasks.

This is important since, existing professional competence frameworks and professional development programs for instructional designers and e-trainers of online courses, almost ignore the dimension of Educational Data Literacy, missing out the potential of using emerging Educational Data Analytics methods and tools in effective online professional training.

To this end, the Learn2Analyze project aims to produce and evaluate:

- a comprehensive proposal for an **Educational Data Literacy Competence Framework** for instructional designers and e-trainers of online courses.
- A series of professional development **Massive Open Online Courses** to cultivate these competences combining **Educational Data Analytics** theory and practice (through the use of existing educational data analytics tools from world market leaders)

### 4.2.2 Educational data literacy

**Data-Driver Decision Making** in Education is very high at the agenda of National, European and International Education Policies (mainly for external accountability purposes and data-based evidence collection, but also for taking more informed decisions for day2day teaching and learning), highlighting the importance for educators to ground decisions based on data and evidence, aiming to boost the effectiveness and the efficiency of the education systems (Mandinach & Gummer, 2016).

**Personalized learning** repeatedly appears to be one of the major educational challenges of 21st century and effective use of data generated during teaching and learning is needed for educators to tailor instruction to meet the needs of the increasingly diverse student cohort, as per 2017 Horizon Report (Freeman, 2017) and to provide their students with a personalised learning experience and better feedback, and thus help them meet their educational goals (Sclater, Peasgood, & Mullan, 2016)

A recent advancement in online and blended teaching and learning is **Educational Data Analytics (EDA)**, that is, the use of educational data generated during teaching and learning (including assessment) to better support individual learners' in online and blended courses. Educational Data Analytics (Teaching and Learning Analytics) empower teachers to reveal useful insights (Sergis & Sampson, 2017), support teachers to use student-generated data to

assess learning progress, to predict learning performance, to detect and identify potentially harming behaviours and to act upon the findings.

Most Course Management Systems are now incorporating Educational Data Analytics tools. However, *these tools are not widely used* because of the low **Educational Data Literacy** (EDL) competences of the professionals that could be using them. Educational Data Literacy (EDL) is the ethically responsible collection, management, analysis, comprehension, interpretation, and application of data from educational contexts.

The Digital Learning Industry has recognized two important professions namely: (a) Instructional Designers, who design and develop online courses and (b) e-Trainers who support the delivery of these online courses. Given the evident importance of these job roles in designing and delivering high quality and effective competence-based online professional training courses, professional competence frameworks have been developed to define their competence needs, supported by professional development initiatives for cultivating them. However, emerging and promising advancements in Digital Learning related to the use of data-driven evidence from Educational Data Analytics are scarcely, if at all, addressed by existing competence frameworks and, by extend, professional development programs. Therefore, there is a need for extending existing competence frameworks with new competences for both professions, to accommodate these emerging fields. Furthermore, innovative professional development programs are also required to develop these new competences.

In this context, Learn2Analyze project has designed and developed:

(a) two new competence profiles for e-learning professionals and

(b) one competence-based European MOOC addressing at cultivating these innovative instructional designers' and e-trainers' competences for exploiting educational data analytics in online professional workplace development.

### 4.2.3 Learn2Analyze Educational Data Literacy Competence Profile (L2A EDL-CP)

The **Learn2Analyze project** has developed a comprehensive proposal for an **Educational Data Literacy Competence Framework** to enhance existing competence frameworks for instructional designers and e-trainers of online courses with new Educational Data Literacy competences.

The Learn2Analyze Educational Data Literacy Competence Framework comprises of 6 competence dimensions and 17 competence statements, as captured below.

Figure 12. Competence Dimensions of L2A-EDL-CP presents the six Competence Dimensions of Learn2Analyze Educational Data Literacy Competence Profile.

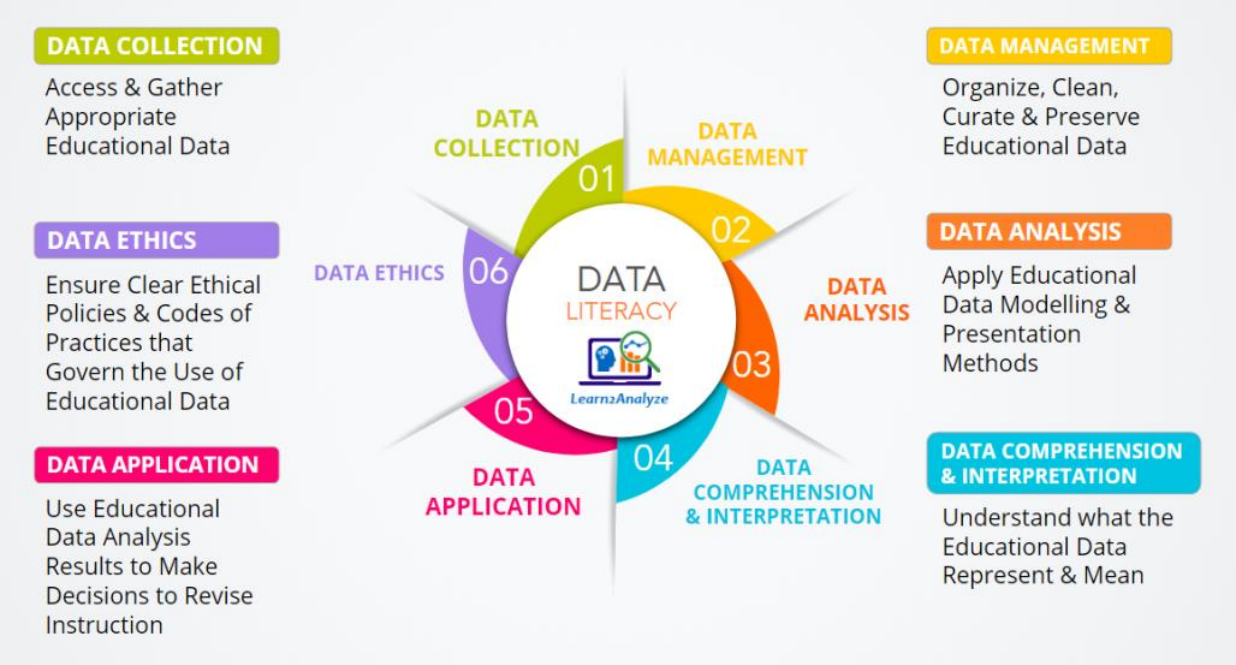


**Figure 12.** Competence Dimensions of L2A-EDL-CP

***Competence Statements of L2A-EDL-CP***

In **Table 3** the six dimensions of the Learn2Analyze EDL Competence Profile (Data Collection, Data Management, Data Analysis, Data Comprehension & Interpretation, Data Application, and Data Ethics) are analyzed to 17 competence statements.

**Table 3 .** Learn2Analyze Educational Data Literacy Competence Profile

| L2A-EDL-CP Dimensions | L2A-EDL-CP Statements |
|---|---|
| **1. Data Collection** | 1.1 **Know – understand – be able to** obtain, access and gather the appropriate data and/or data sources<br>1.2 **Know – understand – be able to** apply data limitations and quality measures (e.g., validity, reliability, biases in the data, difficulty in collection, accuracy, completeness) |
| **2. Data Management** | 2.1 **Know – understand – be able to** apply data processing and handling methods (i.e., methods for cleaning and changing data to make it more organized – e.g., duplication, data structuring)<br>2.2 **Know – understand – be able to** apply data description (i.e., metadata)<br>2.3 **Know – understand – be able to** apply data curation processes (i.e., to ensure that data is reliably retrievable for future reuse, and to determine what data is worth saving and for how long)<br>2.4 **Know – understand – be able to** apply the technologies to preserve data (i.e., store, persist, maintain, backup data), e.g., storage mediums/services, tools, mechanisms |
| **3. Data Analysis** | 3.1 **Know – understand – be able to** apply data analysis and modeling methods (e.g. application of descriptive statistics, exploratory data analysis, data mining).<br>3.2 **Know – understand – be able to** apply data presentation methods (e.g., pictorial visualization of the data by using graphs, charts, maps and other data forms like textual or tabular representations) |
| **4. Data Comprehension & Interpretation** | 4.1 **Know – understand – be able to** interpret data properties (e.g., measurement error, outliers, discrepancies within data, key take-away points, data dependencies)<br>4.2 **Know – understand – be able to** interpret statistics commonly used with educational data (e.g., randomness, central tendencies, mean, standard deviation, significance)<br>4.3 **Know – understand – be able to** interpret insights from data analysis (e.g., explanations of patterns, identification of hypotheses, connection of multiple observations, underlying trends)<br>4.4 **Be able to** elicit potential implications/links of the data analysis insights to instruction |
| **5. Data Application** | 5.1 **Know – understand – be able to** use data analysis results to make decisions to revise instruction<br>5.2 **Be able to** evaluate the data-driven revision of instruction |
| **6. Data Ethics** | 6.1 **Know – understand – be able to** use the informed consent<br>6.2 **Know – understand – be able to** protect individuals' data privacy, confidentiality, integrity and security<br>6.3 **Know – understand – be able to** apply authorship, ownership, data access (governance), re-negotiation and data-sharing |

### 4.2.4 L2A MOOC

Learn2Analyze MOOC aims to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

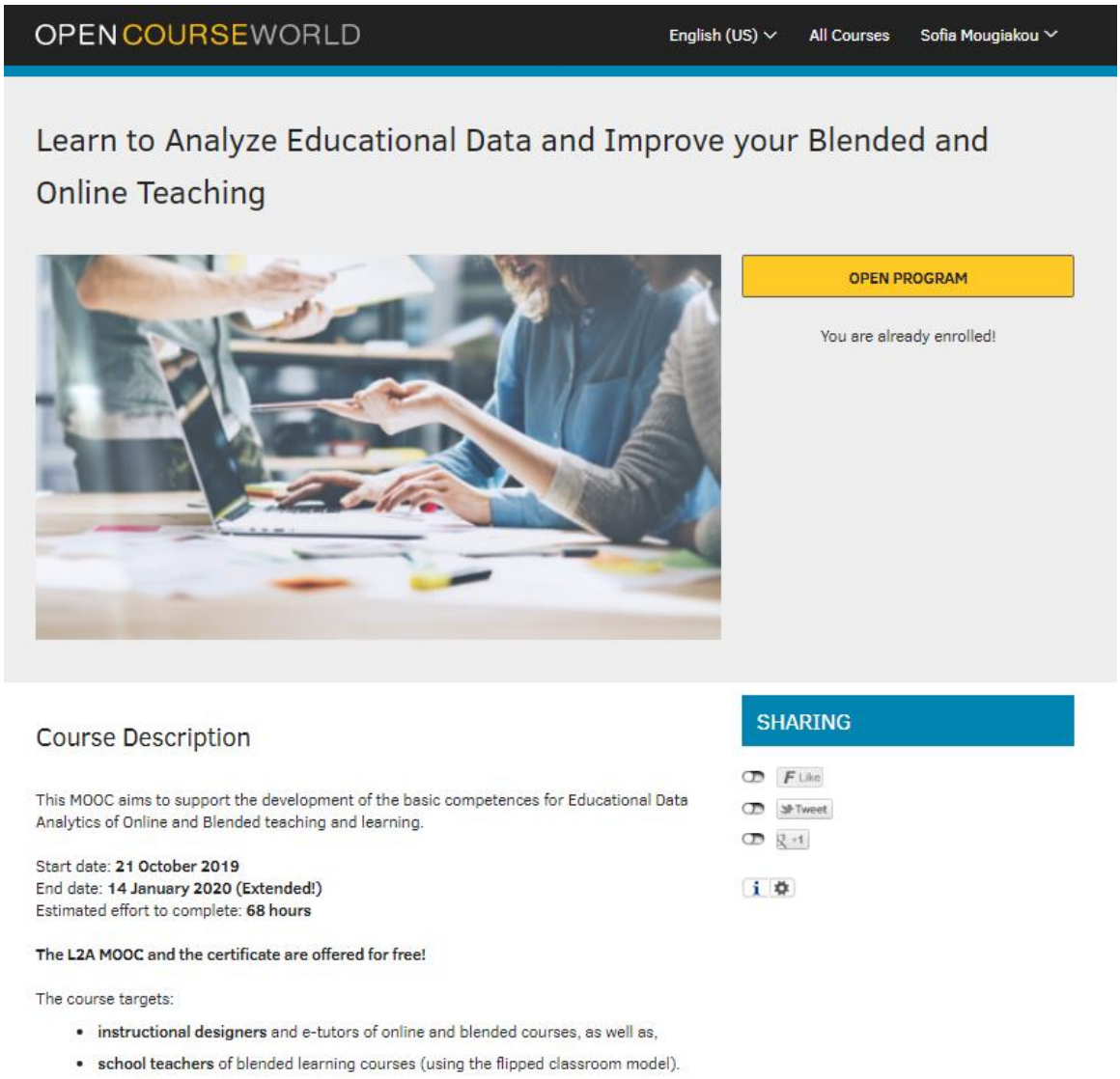


**Figure 13.** L2A MOOC in OpenCourseWorld Platform

***Course Description***

The primary targeted groups of the Learn2Analyze MOOC are:

- e-Learning Professionals, in particular Instructional Designers, Instructors / Tutors and Managers of online and blended learning courses,
- Higher Education Students,
- University and School Teachers interested to further develop their Educational Data Literacy, as well as

- Academics, Researchers and Professionals involved in Educational Data Literacy and Educational Data Analytics.

Nevertheless, the Learn2Analyze MOOC will be open to all audiences free of charge and there will be no formal prerequisites, except for a reasonable knowledge of the English language.

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.

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

***Course objectives***

By completing this course participants 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 organizing, 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.

The learning outcomes of this course cover the set of competences anticipated by the Learn2Analyze Educational Data Literacy competence framework.

***Course Duration***

Start Date: 21 October 2019
End Date: 14 January 2020

Following the xMOOC-model, the Learn2Analyze MOOC content is organized into six self-contained modules: Educational Data, Learning Analytics, Teaching Analytics, Educational Data Analytics with Moodle, Educational Data Analytics with eXact Suite, Educational Data Analytics with IMC Learning Suite, plus an Orientation and a Concluding module.

The anticipated course duration is 8 weeks with an estimated time commitment of 8 hours on average per week. The Learn2Analyze MOOC promotes self-directed learning with video pages, HTML (Text & Graphics) pages and activities (polls, forums). The individual learning progress will be monitored with automated-assessment quizzes at the end of each module as well as at the end of the MOOC. Participants earn a free-of-charge certificate upon successful completion of the entire MOOC.

***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 introduces the concept of educational data as a key success factor for online and blended teaching and learning, presents the Learn2Analyze framework for educational data literacy competences and discusses the fundamentals of educational data collection and management, including issues related with ethics and privacy.

**Module 3 - Learning Analytics**

This module introduces the basics of methods and tools for analysing and interpreting online learners' data to facilitate their personalised support. It focuses 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 introduces 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 presents tools for educational data analytics in Moodle and how these tools can support instructional designers and e-tutors in the design and delivery of their online courses.

**Module 6 - Educational Data Analytics with eXact Suite**

This module presents 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 presents 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 / Final Assessment**

The concluding module together with the Final Assessment 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.

***Certificate***

In order to successfully complete this MOOC and receive a Certificate of Achievement participants must gain a mark of 60% or greater overall to the 100 quiz questions.

## 4.3 Sampling

Non-probability sampling is used to collect data and in particular we used **convenience sampling**, as the samples were selected based on their availability and willing to answer the surveys. **Table 4** describes the sampling procedure.

**Table 4 .** Sampling procedure

| | |
|---|---|
| 1. | @ IMC's MOOC Platform:<br>Course Registration and Enrolment<br>Module 1 including a prompt and a link to the Pre-Course Survey @ Google Drive |
| 2. | @ Google Drive<br>Pre-Course Survey Consent Form<br>If the participant agrees to participate<br>2.1 he/she answers the Pre-Course Survey Questionnaire and submits the form @Google Drive.<br>2.2 After the submission of the Pre-Course Survey, the participant will receive an email with the "verification code", which verifies his/her participation to the Pre-Course Survey. This code will be used @ IMC's MOOC Platform<br>If he/she does not agree to participate<br>2.3 he/she continues to the L2A MOOC @ IMC's MOOC Platform |
| 3. | @ IMC's MOOC Platform<br>3.1 The participant completes the 8 weeks L2A MOOC<br>3.2 The participant takes the Final Assessment Quiz.<br>If the score is below 60%<br>he/she can retake the Final Assessment Quiz<br>If the score in the Final Assessment Quiz is over 60% then<br>A prompt and a link to the Post-Course survey @ Google Drive is revealed. |
| 4. | @Google Drive<br>Post-Course Survey Consent Form<br>If the participant agrees to participate:<br>4.1 he/she answers the Post-Course Survey Questionnaire and submits the form @Google Drive.<br>4.2 After submitting the Post-Course Survey the participant will receive an email with the "verification code", which verifies his/her participation to the Post-Course Survey. This code will be used @ IMC's MOOC Platform |
| 5. | @ IMC's MOOC Platform<br><br>Participants earn a free-of-charge certificate upon successful completion of the entire MOOC.<br><br>Successful completion of the course requires:<br><br>• completing the Multiple Choice Questions Assessment with 60% success<br>• completing the Pre-course and the Post-course Surveys<br>If the participant does not have the verification code (of the pre- or post-course survey) then he/she is prompt to follow the link to complete the Pre-/Post-Course Survey. |

## 4.4 Instruments

### 4.4.1 Pre- and Post-course survey implementation

The main design aspects of the survey were:

- the instruments used for the data collection, namely invitation letter and pre- and post-course questionnaires,
- privacy and ethical issues, namely, the consent form used.

### 4.4.2 Instruments

The instruments used for the implementation of the survey were:

**Pre-course survey** includes**:**

The ***invitation letter*** mentioning the description of the project and its objectives, guidelines for completing the survey and receiving the key to unlock the L2A MOOC content [Section 2 of the Online Questionnaire, see Appendix 2.

The ***consent form*** with all the information needed (purpose and procedure, potential benefits, potential risk or discomforts, storage of data, anonymity and confidentiality, right to withdraw, conflict of interest, compensation, participant concerns and reporting) for the participants to consent or not in the survey. The consent form follows the guidelines of the General Data Protection Regulation (EU) 679/2016 ('GDPR') [Section 2 of the Online Questionnaire, see Appendix 2

The ***questionnaire*** in a web form (google form) to collect the participants' responses using the Likert scale. The questionnaire consists of 7 sections and will need approximately 20 minutes to be filled in. More specifically the online questionnaire consists of the following sections:

- Section 1 provides information about the project.
- Section 2 includes the **consent form.**
- Section 3 provides guidelines to the participant in order to create and provide his/her **Unique Code ID**. This code is used both in the pre- and post- course surveys to match the answers of the participants.
- Section 4 includes 12 items on demographics and general background, namely:
  1. Year of birth

2. Gender
3. Country of residence
4. Highest level of education completed
5. Current job sector
6. Definition of professional role (from a given list)
7. Years involved in this role
8. Years involved in the field of Digital Teaching and Learning
9. English proficiency
10. Comfort with technology
11. Number of MOOCs enrolled in the past
12. Number of MOOCs completed

- Section 5 includes questions about the **motives for enrolling** in the L2A MOOC
  1. Goal in taking the course – Participants are asked to select from 7 statements or provide an alternative answer.
  2. Reasons for enrolment – Participants are asked to rate 8 statements from "Not at all true" to "Very True" plus a "Not applicable" choice to identify their internal and external motives.
  3. Self-Confidence – Participants are asked to rate in a 5-items likert scale their confidence in learning the material and their confidence in completing the course according to the time commitment defined in the syllabus.
  4. Hours per week planning to spend.
  5. 8-items GRIT scale –Participants are asked to rate 8 statements from "Very much like me" to "Not at all like me" in order to identify their **passion and perseverance for long-term and meaningful goals.**
- Section 6 includes 17 statements in 6 EDL Competence Dimensions where participants are asked to select their initial level of competence from 5 possible levels, namely: Novice, Advanced Beginner, Competent, Proficient and Expert.
- Section 7 includes instructions to unlock the L2A MOOC content.

Appendix 2 presents the full online questionnaire and Appendix 3 – Coding of Questions provides the coding of the different types of questions.

**Post-course survey** includes:

The ***invitation letter*** mentioning the description of the project and its objectives, guidelines for completing the survey and receiving the key to unlock the L2A MOOC Certificate of Achievement [Section 2 of the Online Questionnaire, see Appendix 2

The ***consent form*** with all the information needed (purpose and procedure, potential benefits, potential risk or discomforts, storage of data, anonymity and confidentiality, right to

withdraw, conflict of interest, compensation, participant concerns and reporting) for the participants to consent or not in the survey. The consent form follows the guidelines of the General Data Protection Regulation (EU) 679/2016 ('GDPR') [Section 2 of the Online Questionnaire, see Appendix 2

The ***questionnaire*** in a web form (google form) to collect the participants' responses using the Likert scale. The questionnaire consists of 7 sections and will need approximately 20 minutes to be filled in. More specifically the online questionnaire consists of the following sections:

- Section 1 provides information about the project.
- Section 2 includes the **consent form.**
- Section 3 provides guidelines to the participant in order to create and provide his/her **Unique Code ID**. This code is used both in the pre- and post- course surveys to match the answers of the participants.
- Section 4 includes 13 items in order to rate the Learning experience per module (using 5 point likert scale).
- Section 5 includes 20 items to rate (using 5 point likert scale).
    1. the Overall Learning Experience
    2. the Platform Ease of Use
    3. the Satisfaction
    4. the Confirmation of Expectations
    5. the Continuance Intention
- Section 6 includes 17 statements in 6 EDL Competence Dimensions where participants are asked to select their achieved level of competence (after attending the course) from 5 possible levels, namely: Novice, Advanced Beginner, Competent, Proficient and Expert.
- Section 7 includes instructions to unlock the L2A MOOC Certificate of Achievement.

Appendix 2 – Instruments presents the full online questionnaire and Appendix 3 – Coding of Questions provides the coding of the different types of questions.

### 4.4.3 Privacy and ethical issues

In the consent forms, privacy and ethical issues are treated according to the guidelines of the General Data Protection Regulation (EU) 679/2016 (GDPR)[1]. To this end participants are informed, in clear and plain language, about:

- the **name** of the consortium that is processing their personal data (including the contact details);
- the **purposes** for which the consortium will use their personal data;
- the categories of **personal data** concerned;
- the **length of time** for which their data will be stored;
- their **basic rights** in the field of data protection (for example, the right to have their data removed, right to access personal data);
- the right to **withdraw** their consent at any time;
- the right to lodge a complaint with a **Data Protection Authority** (DPA);
- whether their personal data will be **transferred** outside the EU;
- other companies/organisations that will **receive** their data;
- the **legal basis** for processing their personal data;

## 4.5 Data analysis

### 4.5.1 Completeness

As all questions in the pre- and post-course survey were obligatory the data set has no missing values. There are only two "free text" questions in the post course survey, where participants were asked to report what they liked best and least in the course where some participants left them blank, but these questions are used in the qualitative analysis.

[1] http://eur-lex.europa.eu/eli/reg/2016/679/oj

### 4.5.2 Matching data

To match the answers of the participants in pre- and post-course surveys, we asked the participants to produce and provide an easy to remember and reproduce, and very difficult to decode Unique ID Code, based on their answers to the following questions:

1. The first letter of your first name (e.g. U)
2. The last 2 digits of your cell phone (if none use 00) (e.g. 17)
3. Your month of birth (e.g. 03)
4. The first letter of your middle name (if none, use X) (e.g. M)
5. The first letter of city/town you were born in (e.g. V)

(The above example would generate the unique code ID: U1703MV)

### 4.5.3 Deduplication

Some participants submitted two or more times the pre- or post-course survey. These submissions were identified through the Unique ID Code and duplicates were removed (the last submission was kept).

### 4.5.4 Coding of Questions

Appendix 3 – Coding of Questions provides the coding of the different types of questions in the pre- and post-course surveys.

### 4.5.5 Normality test

Normality tests on data from the pre- and post-course survey suggest that our data follow the normal distribution so we can use parametric tests on them. **Appendix 10 – Tests of Normality** contains the results from normality test on data from the pre-course survey.

### 4.5.6 Reliability analysis

***Reasons for Enrolment***

Participants are asked to rate 8 statements from “Not at all true” to “Very True” plus a “Not applicable” choice to identify their internal and external motives for taking the course.

Reliability analysis of the closed questions of Reasons for Enrolment of the Pre-course Questionnaire is conducted by calculating Cronbach’s alpha coefficient which provides a measure of the internal consistency of the set of scale questions.

**Table 5.** Conbach's Alpha for Reasons for Enrolment

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,809 | ,849 | 11 |

As commonly accepted, the values of the Cronbach’s alpha index greater than 0.7 are considered satisfactory.

**Table 6.** Cronbach's Alpha for Reasons for Enrolment (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| M2.1 | ,396 | ,801 |
| M2.2 | ,345 | ,805 |
| M2.3 | ,506 | ,791 |
| M2.4 | ,559 | ,785 |
| M2.5 | ,482 | ,794 |
| M2.6 | ,458 | ,799 |
| M2.7 | ,355 | ,807 |
| M2.8 | ,306 | ,834 |
| INTmot | ,824 | ,776 |
| EXTmot | ,755 | ,771 |
| MOT | ,999 | ,767 |

The calculation of the reliability Cronbach's alpha index produces a matrix (**Table 6** column "Corrected Item-Total Correlation"). This column shows how well each item correlates with the overall questionnaire score. Correlations less than 0.3 indicate that the item may not belong to the scale. We see that all items have a correlation coefficient bigger than 0.3 (see **Table 6**). Furthermore we calculate the Cronbach's alpha coefficient if we delete an item (see **Table 6** column "Cronbach's Alpha if Item Deleted"). If this score goes up after the removal of the item this is an indication that the item should be deleted. In our analysis there is no such indication.

***Self-Confidence***

Participants are asked to rate in a 5-items likert scale their confidence in learning the material and their confidence in completing the course according to the time commitment defined in the syllabus.

**Table 7.** Cronbach's Alpha Self-confidence

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,855 | ,869 | 3 |

Cronbach's alpha index greater than 0.7

**Table 8.** Cronbach's Alpha Self-confidence (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| ConfAbility | ,607 | ,907 |
| ConfTime | ,635 | ,897 |
| SelfConf | 1,000 | ,564 |

We calculate the Cronbach's alpha coefficient if we delete an item (see **Table 8** column "Cronbach's Alpha if Item Deleted"). The score goes up after the removal of each item and we decide to analyse these items separately.

8-items GRIT scale

Participants are asked to rate 8 statements from “Very much like me” to “Not at all like me” in order to identify their **passion and perseverance for long-term and meaningful goals.**

**Table 9.** Cronbach's Alpha for GRIT

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,817 | ,838 | 9 |

Cronbach’s alpha index greater than 0.7 (see **Table 9**)

**Table 10.** Cronbach's Alpha for GRIT (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| G6.1 | ,398 | ,815 |
| G6.2 | ,241 | ,833 |
| G6.3 | ,541 | ,796 |
| G6.4 | ,477 | ,804 |
| G6.5 | ,574 | ,792 |
| G6.6 | ,586 | ,790 |
| G6.7 | ,555 | ,794 |
| G6.8 | ,524 | ,798 |
| GRIT | 1,000 | ,765 |

We calculate the Cronbach’s alpha coefficient if we delete an item (see **Table 10Table 8** column “Cronbach's Alpha if Item Deleted”). If this score goes up after the removal of the item this is an indication that the item should be deleted. In our analysis there is no such indication.

***Initial EDL competence level***

In section 6 of the pre-course survey participants are asked to rate in 17 statements in 6 EDL Competence Dimensions their initial level of competence from 5 possible levels, namely: Novice, Advanced Beginner, Competent, Proficient and Expert.

**Table 11.** Initial EDL competence level Cronbach's Alpha

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,984 | ,984 | 24 |

Cronbach’s alpha index greater than 0.7

**Table 12.** Cronbach's Alpha Initial EDL competence level (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| D1S1a | ,802 | ,983 |
| D1S2a | ,840 | ,983 |
| D2S1a | ,842 | ,983 |
| D2S2a | ,821 | ,983 |
| D2S3a | ,847 | ,983 |
| D2S4a | ,761 | ,984 |
| D3S1a | ,840 | ,983 |
| D3S2a | ,801 | ,983 |
| D4S1a | ,869 | ,983 |
| D4S2a | ,818 | ,983 |
| D4S3a | ,860 | ,983 |
| D4S4a | ,861 | ,983 |
| D5S1a | ,829 | ,983 |
| D5S2a | ,840 | ,983 |
| D6S1a | ,784 | ,984 |
| D6S2a | ,756 | ,984 |
| D6S3a | ,783 | ,984 |
| D1a | ,868 | ,983 |
| D2a | ,912 | ,983 |
| D3a | ,891 | ,983 |
| D4a | ,917 | ,983 |
| D5a | ,857 | ,983 |
| D6a | ,838 | ,983 |
| InitEDL | ,999 | ,982 |

The calculation of the reliability Cronbach's alpha index produces a matrix (**Table 12** column "Corrected Item-Total Correlation"). This column shows how well each item correlates with the overall questionnaire score. We see that all items have a correlation coefficient much bigger than 0.3 (see **Table 12**). Furthermore we calculate the Cronbach's alpha coefficient if we delete an item (see **Table 12** column "Cronbach's Alpha if Item Deleted"). If this score goes up after the removal of the item this is an indication that the item should be deleted. In our analysis there is no such indication.

***Learning Experience***

**Table 13.** Cronbach's Alpha Learning Experience

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,872 | ,881 | 8 |

Cronbach's alpha index greater than 0.7

**Table 14.** Cronbach's Alpha Learning Experience (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| LX1 | ,465 | ,872 |
| LX2 | ,658 | ,854 |
| LX3 | ,703 | ,848 |
| LX4 | ,703 | ,848 |
| LX5 | ,659 | ,854 |
| LX6 | ,547 | ,865 |
| LX7 | ,441 | ,872 |
| LX | 1,000 | ,830 |

Cronbach's Alpha does not go up after the removal of each item and this is an indication that no item should be deleted (**Table 14**)

***Platform Ease of Use***

**Table 15.** Cronbach's Alpha Platform Ease of Use

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,872 | ,883 | 6 |

Cronbach's alpha index greater than 0.7

**Table 16.** Cronbach's Alpha Platform Ease of Use (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| PEoU1 | ,656 | ,853 |
| PEoU2 | ,708 | ,843 |
| PEoU3 | ,690 | ,847 |
| PEoU4 | ,728 | ,840 |
| PEoU5 | ,377 | ,869 |
| PEoU | 1,000 | ,807 |

Cronbach's Alpha does not go up after the removal of each item and this is an indication that no item should be deleted (**Table 16**)

***EDL competence advancement***

EDL competence advancement is calculated from the initial and achieved EDL competence level. It is calculated per dimension of the EDL-CP

**Table 17.** Cronbach Alpha's EDL competences advancement

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,956 | ,958 | 7 |

Cronbach's alpha index greater than 0.7

**Table 18.** Cronbach Alpha's EDL competences advancement (if item deleted)

| | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|
| D1adv | ,784 | ,955 |
| D2adv | ,850 | ,949 |
| D3adv | ,800 | ,953 |
| D4adv | ,874 | ,947 |
| D5adv | ,828 | ,951 |
| D6adv | ,836 | ,951 |
| EDLadv | 1,000 | ,939 |

Cronbach's Alpha does not go up after the removal of each item and this is an indication that no item should be deleted (**Table 18**).

### 4.5.7 Validity analysis

#### *4.5.7.1 Content validity*

Pre-course and post-course surveys consist of items that are largely used in research, namely the 8 MOOC-specific motivational items (Belanger & Thornton, 2013; Wang & Baker, 2015; Barack 2016) and the short 8-item *GRIT scale* (Duckworth & Quinn, 2009) that already have been validated, as well as the Educational Data Literacy Competence Profile, whose sentences and dimensions have been validated in Result 3 Learn2Analyze Project.

Thus, we assume that the questionnaires are valid according to content validity.

### *4.5.7.2 Criterion validity*

We will test the **criterion validity** of the questionnaire using **Spearman's Correlation coefficient**. The Validity test is calculated by correlating each item questionnaire scores with the total score. Item questionnaire that significantly correlated with total score indicates that the items are valid.

#### 4.5.7.2.a Pre-course survey

i. Reasons for Enrolment

**Table 19.** Reasons for Enrolment correlations

| Spearman's rho | | M2.1 | M2.2 | M2.3 | M2.4 | M2.5 | M2.6 | M2.7 | M2.8 |
|---|---|---|---|---|---|---|---|---|---|
| MOT | Correlation Coefficient | ,456** | ,381** | ,617** | ,656** | ,635** | ,630** | ,456** | ,236** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

ii. Internal Motives

**Table 20.** Internal Motives Correlations

| Spearman's rho | | M2.1 | M2.2 | M2.5 | M2.6 | M2.8 |
|---|---|---|---|---|---|---|
| INTmot | Correlation Coefficient | ,508** | ,449** | ,727** | ,693** | ,368** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

iii. External Motives

**Table 21.** External Motives Correlations

| Spearman's rho | | M2.3 | M2.4 | M2.7 |
|---|---|---|---|---|
| EXTmot | Correlation Coefficient | ,817** | ,795** | ,581** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

iv. GRIT score

**Table 22.** GRIT score correlations

| Spearman's rho | | G6.1 | G6.2 | G6.3 | G6.4 | G6.5 | G6.6 | G6.7 | G6.8 |
|---|---|---|---|---|---|---|---|---|---|
| GRIT | Correlation Coefficient | ,559** | ,422** | ,654** | ,572** | ,678** | ,706** | ,679** | ,655** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

v. Initial EDL competence level

Dimension 1 – Data Collection

**Table 23.** Initial EDL competence level Dimension 1 – Data Collection

| Spearman's rho | | D1S1a | D1S2a |
|---|---|---|---|
| D1a | Correlation Coefficient | ,950** | ,949** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Dimension 2 – Data Management

**Table 24.** Initial EDL competence level Dimension 2 - Data Management

| Spearman's rho | | D2S1a | D2S2a | D2S3a | D2S4a |
|---|---|---|---|---|---|
| D2a | Correlation Coefficient | ,924** | ,905** | ,912** | ,878** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Dimension 3 – Data Analysis

**Table 25.** Initial EDL competence level Dimension 3 - Data Analysis

| Spearman's rho | | D3S1a | D3S2a |
|---|---|---|---|
| D3a | Correlation Coefficient | ,919** | ,936** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Dimension 4 – Data Comprehension and Interpretation

**Table 26.** Initial EDL competence level Dimension 4 – Data Comprehension and Interpretation

| Spearman's rho | | D4S1a | D4S2a | D4S3a | D4S4a |
|---|---|---|---|---|---|
| D4a | Correlation Coefficient | ,925** | ,935** | ,947** | ,915** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Dimension 5 – Data Application

**Table 27.** Initial EDL competence level Dimension 5 - Data Application

| Spearman's rho | | D5S1a | D5S2a |
|---|---|---|---|
| D5a | Correlation Coefficient | ,979** | ,972** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

Dimension 6 – Data Ethics

**Table 28.** Initial EDL competence level Dimension 6 - Data Ethics

| Spearman's rho | | D6S1a | D6S2a | D6S3a |
|---|---|---|---|---|
| D6a | Correlation Coefficient | ,924** | ,945** | ,911** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

All dimensions

**Table 29.** Initial EDL competence level

| Spearman's rho | | D1a | D2a | D3a | D4a | D5a | D6a |
|---|---|---|---|---|---|---|---|
| InitEDL | Correlation Coefficient | ,884** | ,909** | ,900** | ,914** | ,871** | ,855** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

**4.5.7.2.b Post-course survey**

i. Learning Experience

**Table 30.** Learning Experience Correlations

| Spearman's rho | | LX1 | LX2 | LX3 | LX4 | LX5 | LX6 | LX7 |
|---|---|---|---|---|---|---|---|---|
| LX | Correlation Coefficient | ,550** | ,758** | ,798** | ,780** | ,724** | ,611** | ,568** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

ii. Platform Ease of Use

**Table 31.** Platform Ease of Use Correlations

| Spearman's rho | | PEoU1 | PEoU2 | PEoU3 | PEoU4 | PEoU5 |
|---|---|---|---|---|---|---|
| PEoU | Correlation Coefficient | ,760** | ,822** | ,783** | ,822** | ,599** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

iii. Confirmation of Expectations

**Table 32.** Confirmation of Expectations correlations

| Spearman's rho | | CONF1 | CONF2 |
|---|---|---|---|
| CONF | Correlation Coefficient | ,845** | ,858** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

iv. Satisfaction

**Table 33.** Satisfaction correlations

| Spearman's rho | | SAT1 | SAT2 |
|---|---|---|---|
| SAT | Correlation Coefficient | ,912** | ,901** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

v. Continuance Intention

**Table 34.** Continuance Intention correlations

| Spearman's rho | | INT1 | INT2 |
|---|---|---|---|
| INT | Correlation Coefficient | ,908** | ,906** |
| | Sig. (2-tailed) | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

vi. EDL competence level advancement

**Table 35.** Achieved EDL competence level advancement

| Spearman's rho | | D1adv | D2adv | D3adv | D4adv | D5adv | D6adv |
|---|---|---|---|---|---|---|---|
| EDLadv | Correlation Coefficient | ,834** | ,884** | ,840** | ,897** | ,868** | ,874** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

## 4.6 Summary

In this chapter, the evaluation framework, proposed in chapter 3, is employed in real dataset collected from the first run of the Learn2Analyze MOOC, a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning.

First, a brief presentation of the Learn2Analyze MOOC was given, focusing on the professional development character of the MOOC, with emphasis to the competence-based design. Next the data sampling along with the instruments used were introduced (namely the invitation letter and consent forms, along with the questionnaires for pre- and post-course survey) as well as the coding of the questions. Finally, in the data analysis section, the preparation of data is presented, namely missing values handling, data matching, deduplication, reliability and validity analysis.

According to data analysis, data collected from the first run of the L2A MOOC, passed reliability and validity tests (content validity, criterion validity).

In the next chapter the results of the evaluation of the Learn2Analyze MOOC are presented, aiming to answer the core question:

> *"What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the competences of participants?"*

# Chapter 5 – Results

## Introduction

### 5.1.1 Scope

The scope of this evaluation study is to validate and provide areas of possible improvement of the Learn2Analyze MOOC Phase A. This is done through pre- and post-course questionnaire-based surveys with the participants of the first implementation of the L2A MOOC which were conducted from the 3rd of September 2019 – when the enrolment process started - through 14th of January 2020 when the L2A MOOC Phase A ended.

This chapter presents the analysis of the pre- and post-course surveys and provides recommendations for improvement of the initial L2A MOOC.

### 5.1.2 Background

Learn2Analyze (L2A) (http://learn2analyze.eu) is an Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' Competences in Educational Data Literacy, co-funded by the European Commission through the Erasmus+ Program of the European Union. The key objectives of the Learn2Analyze (L2A) initiative are (i) to develop comprehensive proposal for an Educational Data Literacy Competence Framework for instructional designers and e-trainers of online and blended learning courses, and (ii) to design, develop and offer a competence-based Professional Development MOOC for cultivating these competences. To this end, the initial version of the L2A MOOC consists of 8 modules combining EDL theory (Modules 2-4) and practice with EDL tools in 3 widely used Course Management Systems, namely, Moodle, the Exact Suite and the IMC Learning Suite (Modules 5-7) following a self-directed MOOC educational design.

### 5.1.3 Synopsis of evaluation method

In order to validate this initiative and identify areas of possible improvement, **pre- and post-course questionnaire-driven online surveys** were designed and implemented, within the L2A MOOC Phase A participants**.** Participant characteristics along with their initial motives were

examined in the pre-course survey, while participant' perception of the course design and the instructional elements examined in the post-course survey.

Our first goal was to profile the L2A MOOC Phase A participants to better understand the learners' cohort, so as to make better sense of their experience with the L2A MOOC. The findings e.g. in relation to their performance can help us identify and interpret trends and potential common issues, such as the underperformance of different subgroups of participants with different characteristics.

To this end, we collected data on demographic characteristics, motives, and background knowledge on the subject matter, using questionnaire-based surveys (pre-course survey). These data provide us insights into "***who our learners are***" and "***why they enroll in the course***" and it will be correlated with their learning experience and achieved learning outcomes collected through a post-course survey.

**Learning experience** is measured, both per module and through the course, in terms of the overall level of satisfaction, satisfaction with the platform, the workload, the level of interaction, the content (graphics, videos, complementary material, learning activities, and assessments), and the continuance intention. Our goal is to leverage the outcomes for improving the educational design of the course, the learning environment and thus to better meet the learning needs of our MOOC participants in future versions.

To measure success in the L2A MOOC, instead of considering only simple data such as ***certification*** and ***dropouts***, we focus on whether the L2A MOOC contributed to the advancement of the educational data literacy competence level of the participants. Thus, the starting competence level for every statement of the L2A Educational Data Literacy Competence Profile, was measured using a pre-course questionnaire. After the course completion, learners were asked to self-assess their learning accomplishment evaluating their current competence level to reveal the achieved progress.

The overall evaluation plan is graphically represented in Appendix 1 – Evaluation plan.

The core question of this study is:

- What are the areas of possible improvement for the offered competence-based Professional Development L2A MOOC to better the quality of the learning experience and effectively cultivate the Educational Data Literacy Competences that are described in the L2A EDL competence profile?

The core question is investigated at the following dimensions:

1. What are the main targeted groups of participants in the L2A MOOC and what is their profile? What are the individual characteristics and key differences of targeted participants groups in relation to their motives, self-confidence, GRIT and initial EDL competence?
2. What characteristics of participants' profile are related to the course completion?
3. How do the characteristics of participants profile affect their EDL competences advancement?
4. What is the perceived learning experience per module as reported by participants that completed the L2A MOOC? What is the perceived overall learning experience per targeted group?
5. How does the overall learning experience affect competences advancement?
6. Which are areas and recommendations for possible improvement.

### 5.1.4 Description of the evaluation process

Pre- and Post-course survey implementation

The main design aspects of the survey were:

- the instruments used for the data collection, namely invitation letter and pre- and post-course questionnaires,
- privacy and ethical issues, namely, the consent form used.

Appendix 2 presents the full online questionnaire and Appendix 3 – Coding of Questions provides the coding of the different types of questions.

## 5.2 Analysis of Participants' Profile

### 5.2.1 Scope

The scope of this section is to describe the participants' profile, identify the **main targeted groups** participated in the L2A MOOC and describe their profile, highlighting their individual characteristics and **key differences** in relation to their motives, self-confidence, GRIT and initial EDL competence.

### 5.2.2 Background

Learn2Analyze MOOC started on October 21$^{st}$, 2019 and was open until January 15$^{th}$, 2020. During this time frame, **1920** users enrolled from **85** countries. Of these, **1147** participants answered the pre-course survey and started the MOOC. These participants were distributed

in **75** countries (Appendix 5). We consider that the enrolled user has "started the MOOC" only if s/he submits the Pre-course survey to unlock Modules 2-8. **Table 36** shows the different categories of enrolled users.

**Table 36.** Enrolled users

| Enrolled users | frequency | percent |
|---|---|---|
| Started the MOOC: Enrolled users that submitted the pre-course survey | 1147 | 59.74 |
| Enrolled in the MOOC but never accessed Module 1 | 565 | 29.42 |
| Started Module 1 but dropped without Pre-course | 208 | 10.84 |
| Total Enrolments | 1920 | 100 |

### 5.2.3 Participants profile

This section describes the overall participants' profile as derived from the answers of the 1147 participants that answered the pre-course survey.

#### *5.2.3.1 Demographics*

First we use descriptive statistics for the **demographic data analysis,** re to: Age, Gender, and Country of Residence. This aims to confirm the distribution of participants across all anticipated demographic elements.

#### *5.2.3.1.a Gender and Age*

One half of the participants were between 18 and 41 years old, while 75% fell between 18 and 49 (Table 37). Age of participants follows the normal distribution with mean value 40,68 and standard deviation 10,51 (Figure 14).

**Table 37.** Distribution of participants per Age

| Age | frequency | percent |
|---|---|---|
| 18-30 | 218 | 19,01 |
| 31-40 | 337 | 29,38 |
| 41-50 | 360 | 31,39 |
| 51-60 | 214 | 18,66 |
| >60 | 18 | 1,57 |
| Total | 1147 | 100 |

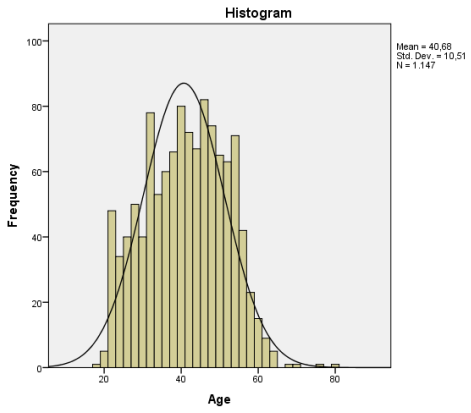


**Figure 14.** Distribution of participants per Age

Although approximately 2,61% of participants chose not to respond to the question related to gender, participants were almost evenly split in terms of gender with 41,67% male and 55,72% female (Table 38).

**Table 38.** Distribution of participants per Gender

| Gender | frequency | percent |
|---|---|---|
| I prefer not to answer | 30 | 2,61 |
| Female | 640 | 55,72 |
| Male | 477 | 41,67 |
| Total | 1147 | 100 |

The distribution of the participants is well balanced in terms of age and gender.

### *5.2.3.1.b Geographical distribution*

Although participants are distributed in 75 countries around the world (Figure 15), the majority (86%) comes from Europe (Table 39), mainly from Greece (n=492), Germany (n=220) and Italy (n=110), which are the core Learn2Analyse partners' countries. (Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level)

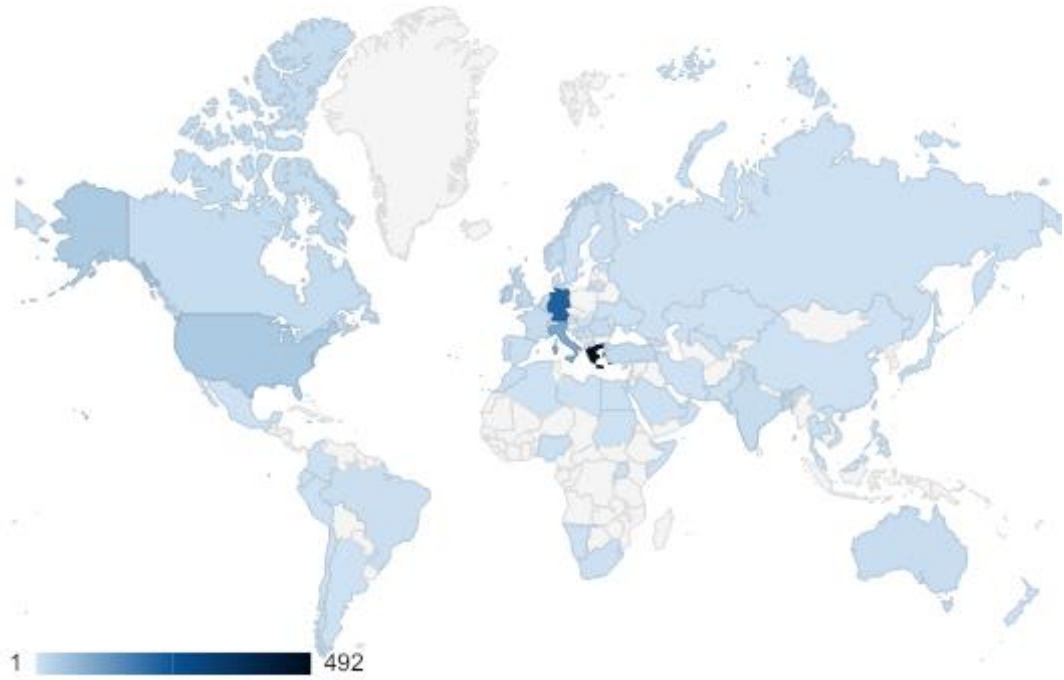


**Figure 15**. Participants' geographical distribution

**Table 39.** Distribution of participants per continent

| Continent | frequency | percent |
|---|---|---|
| Europe | 987 | 86.0 |
| North & South America | 73 | 6.4 |
| Asia-Pacific | 54 | 4.7 |
| Africa | 33 | 2.9 |
| Total | 1147 | 100 |

### *5.2.3.2 General Background*

Next, we analyze the **general background** of the participants, in terms of educational background and professional experience.

#### *5.2.3.2.a Educational background*

Of the 1147 participants 52,30% (n=600) holds a Master's Degree while 16,70% (n=192) holds a Doctoral Degree. (Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level). In reference to their English proficiency, 69% reported high (n=360) and very high level (n=431), while 84,13% reported comfort (n=414) and much comfort (n=551) with technology. When asked about their previous experience with MOOCs 30,60% (n=351) reported they have never enrolled in a MOOC before and 41,85% (n=480) that they have never completed a MOOC before.

#### *5.2.3.2.b Professional experience*

Examining the current job sector of participants, we can notice that 68,87% (n=790) of them reported they work in K12 and Higher Education while 16,83% (n=193) come from the Industry/Business, with 8,98% (n=103) from Large enterprises>100 employees and 7,85% (n=90) from SMEs. Only 5,32 (n=61) reported Self-employed and 3,92% (n=45) reported Not-employed. (Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level). Table 40 summarizes the answers of participants regarding the current job sector in relation to their reported professional role.

**Table 40.** Reported Current Job Sector in relation to the reported Professional role

| Job Sector | | Professional Role eLearning Professionals (IDs, eTutors) | Higher Education Students | School Teachers | Others | Total f | % |
|---|---|---|---|---|---|---|---|
| K12, Higher Education | | 174 | 90 | 370 | 156 | 790 | 68.87 |
| Industry | | 105 | 8 | 12 | 68 | 193 | 16.83 |
| Self Employed/Not Employed | | 42 | 29 | 18 | 17 | 106 | 9.24 |
| Other | | 16 | 6 | 19 | 17 | 58 | 5.06 |
| Total | f | 337 | 133 | 419 | 258 | 1147 | |
| | % | 29.38 | 11.59 | 36.54 | 22.49 | 100 | |

Participants were asked to describe their professional role selecting multiple answers from a list of roles which are summarized in Appendix 4 - Groups of Professional Roles. As we can see, all possible answers are grouped in 6 categories. A total of 29,38% (n=337) of participants fall in the first professional role (eLearning Professionals), while 11,59% (n=133) are Higher Education Students and 36,53% (n=419) are School Teachers.

Figure 16 shows the distribution of L2A MOOC participants according to their professional role.

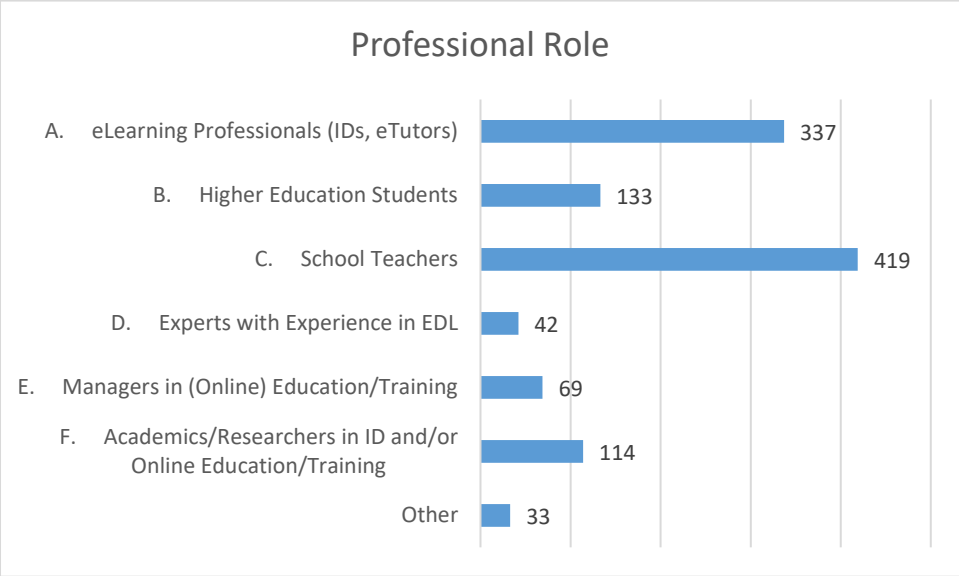


**Figure 16.** Distribution of participants per professional role

The distribution of the participants in professional roles, reveals three **major targeted groups** of participants:

A. eLearning Professionals (IDs, eTutors)
B. Higher Education Students
C. School Teachers

As calculated in Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level participants reported **9.99** years of experience in professional role on average and **7.44** years of experience in online teaching and learning on average.

#### *5.2.3.3 Motives*

We continue the description of participants' profile exploring the motives that drives them to participate in the course.

##### *5.2.3.3.a Goal in taking the course*

Participants were asked to define their goal in taking the course from a list of possible answers. Most of the participants (66% - n=757) answered they are "*Planning to follow the course schedule and complete all activities to earn a certificate of completion*" (Appendix 5).

##### *5.2.3.3.b Reasons for taking the course*

Participants were asked to rate from "Not at all true" (1) to "Very true" (5) their agreement in 8 statements regarding the reasons for taking the course. Figure 17 shows the distribution of participants' ratings.

Taking the course "*To extend my current knowledge of the topic*" and for "*personal development*" were characterized as true or very true from over 75% of the participants. On the other hand, being "*advised or ordered to take part in the course*" was true or very true only for 15,69% of the participants.

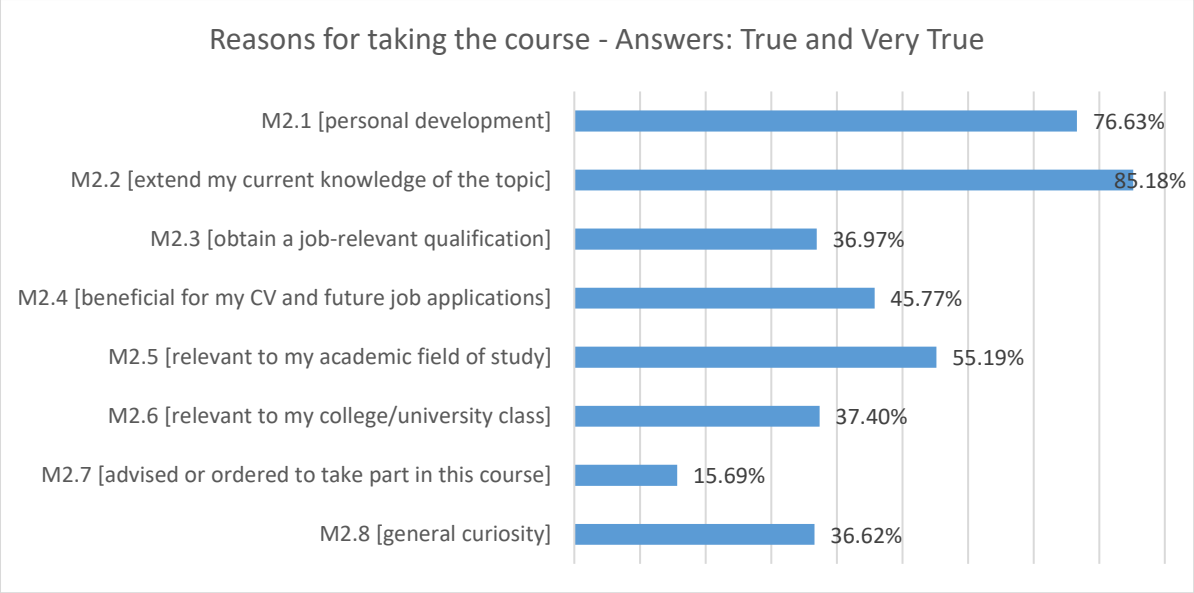


**Figure 17.** Reasons for taking the course

Participants had the option "Not applicable" if a proposed reason for enrolment was irrelevant. Taking part in the course because it is "*relevant to my college/university class*" and "*being advised or ordered to take part in the course*" were the reasons with the most "Not applicable" answers.

*5.2.3.3.c GRIT score*

GRIT is passion and perseverance for long-term and meaningful goals. It is the ability to persist in something you feel passionate about and persevere when you face obstacles. (Duckworth, 2016) Short-grit scale consists of 8 questions:

G.1 New ideas and projects sometimes distract me from previous ones.
G.2 Setbacks don't discourage me.
G.3 I have been obsessed with a certain idea or project for a short time but later lost interest.
G.4 I am a hard worker.
G.5 I often set a goal but later choose to pursue a different one.
G.6 I have difficulty maintaining my focus on projects that take more than a few months to complete.
G.7 I finish whatever I begin.
G.8 I am diligent.

To calculate the GRIT Score we follow the steps below:

1. For questions 2, 4, 7 and 8 assign the following points: 5 = Very much like me 4 = Mostly like me 3 = Somewhat like me 2 = Not much like me 1 = Not like me at all

2. For questions 1, 3, 5 and 6 assign the following points: 1 = Very much like me 2 = Mostly like me 3 = Somewhat like me 4 = Not much like me 5 = Not like me at all

3. Add up all the points and divide by 8. The maximum score on this scale is 5 (extremely gritty), and the lowest score on this scale is 1 (not at all gritty).

Mean GRIT score of all participants answered the pre-course questionnaire was **3.64** with standard deviation **0.615** which is about average (rates to 50$^{th}$ percentil) (Duckworth, 2016)

*5.2.3.3.d Self-Confidence*

In the question "How confident are you in your ability to learn the material in this course?" 62,1% (n=712) answered "Very confident" and "Extremely confident", while in the question "How would you rate your possibility of finishing this course according to the anticipated time commitment as defined in the syllabus?" 61,9% (n=710) answered "Very confident" and "Extremely confident" (see Appendix 5). This can be a good indicator for the actual course completion as students who complete MOOCs tend to have high self-efficacy and self-confidence in their ability to complete the course (Wang and Baker, 2015)

*5.2.3.4 Initial EDL Competences*

In the pre-course survey, participants self-evaluate their initial EDL competence level, from Novice (1) to Expert (5).

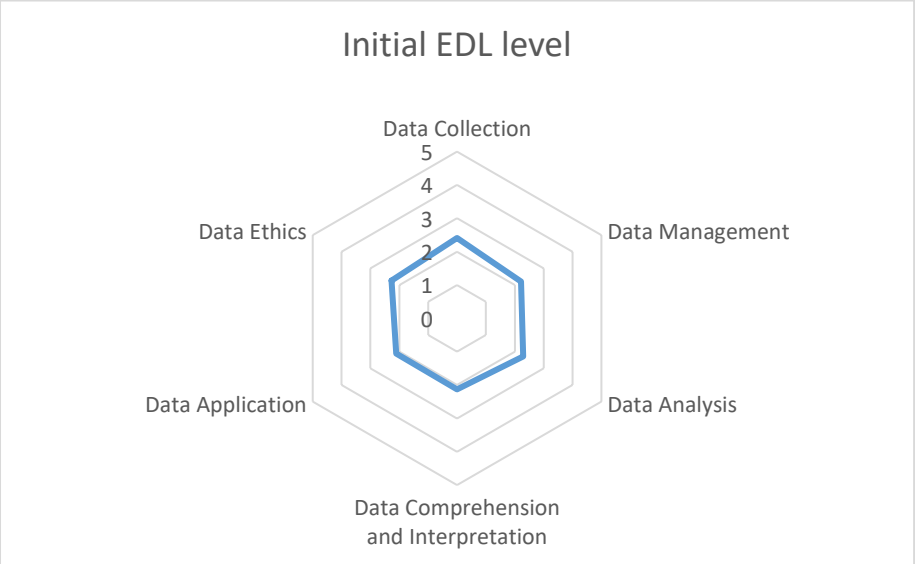


**Figure 18.** Initial EDL Competences Profile

In Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level, mean grades are calculated per EDL competence statements and dimensions as reported from

participants in the pre-course survey. As shown in **Figure 18**, the initial EDL competence level for all dimensions is approximately *2=Advanced beginner*.

### 5.2.4 Participants profile per targeted group (eLearning Professionals, School Teachers, Higher Education Students)

#### *5.2.4.1 Scope*

The scope of this section is to describe the profile for each targeted group (eLearning Professionals, School Teachers, Higher Education Student) by highlighting their individual characteristics and key differences in relation to their motives, self-confidence, GRIT and initial EDL competence.

#### *5.2.4.2 Background*

In the previous section we described the participants' profile that is formed from the answers of the 1147 participants of the L2A MOOC in the pre-course survey and identified three major targeted groups, namely eLearning Professionals, School Teachers and Higher Education Student. In this section we will investigate the differences between these targeted groups.

#### *5.2.4.3 Difference in Demographics between the targeted groups*

Mean and standard deviation for the age of participants are calculated for the major targeted groups, namely eLearning Professionals, Higher Education Students and School Teachers (Table 41).

**Table 41.** Mean age per targeted group

| Professional Role | Mean Age | N | Std. Deviation |
|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | 41,46 | 337 | 9,621 |
| Higher Education Students | 29,27 | 133 | 9,122 |
| School Teachers | 44,62 | 419 | 9,243 |
| Others | 39,13 | 258 | 9,696 |
| Total | 40,68 | 1147 | 10,510 |

Mean age differs significantly between the targeted groups, as Higher Educational Students are much younger that the other targeted groups.

### *5.2.4.4 Difference in General Background between the targeted groups*

Difference in mean years of experience between the targeted groups

Mean and standard deviation for the years of experience in professional role is calculated for the targeted groups, namely eLearning Professionals, School Teachers and Higher Education Students (Appendix 6). **Table 42** illustrates the distribution of the years of experience per targeted group, where School Teachers have significantly higher experience than eLearning professionals and Higher Education Students.

**Table 42.** Distribution of participants' years involved in their professional role per role

| Years of experience in professional role | n | Mean Value | Standard deviation |
|---|---|---|---|
| A. eLearning Professionals (IDs, eTutors) | 337 | 7.13 | 5.66 |
| B. Higher Education Students | 133 | 4.47 | 4.08 |
| C. School Teachers | 419 | 15.74 | 7.51 |
| All participants | 1147 | 7.44 | 5.98 |

Table 43 summarizes the means and standard deviation of years of experience in Digital T & L per targeted group, where School Teachers report longer experience in Digital T & L than the other two groups.

**Table 43.** Distribution of participants' years involved in Digital T & L per professional role

| Years of experience in Digital T & L | n | Mean Value | Standard deviation |
|---|---|---|---|
| A. eLearning Professionals (IDs, eTutors) | 337 | 7.82 | 5.78 |
| B. Higher Education Students | 133 | 4.03 | 3.14 |
| C. School Teachers | 419 | 8.40 | 6.43 |
| All participants | 1147 | 7.44 | 5.98 |

### *5.2.4.5 Difference in Motives between the targeted groups*

### *5.2.4.5.a. Goal in taking the course*

All three groups of participants reported, at a rate of 62% and higher, that their goal in taking the course is "*… to follow the course schedule and complete all activities to earn a certificate of completion*" (**Appendix 6** - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence).

### *5.2.4.5.b. Reasons for Enrolment*

Participants were prompt to rate from "Not at all true" to "Very true" eight statements/reasons for enrolment. They also had the option to choose "Not applicable". Mean rating per reason for enrolment for each targeted group is calculated in **Appendix 6** - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence.

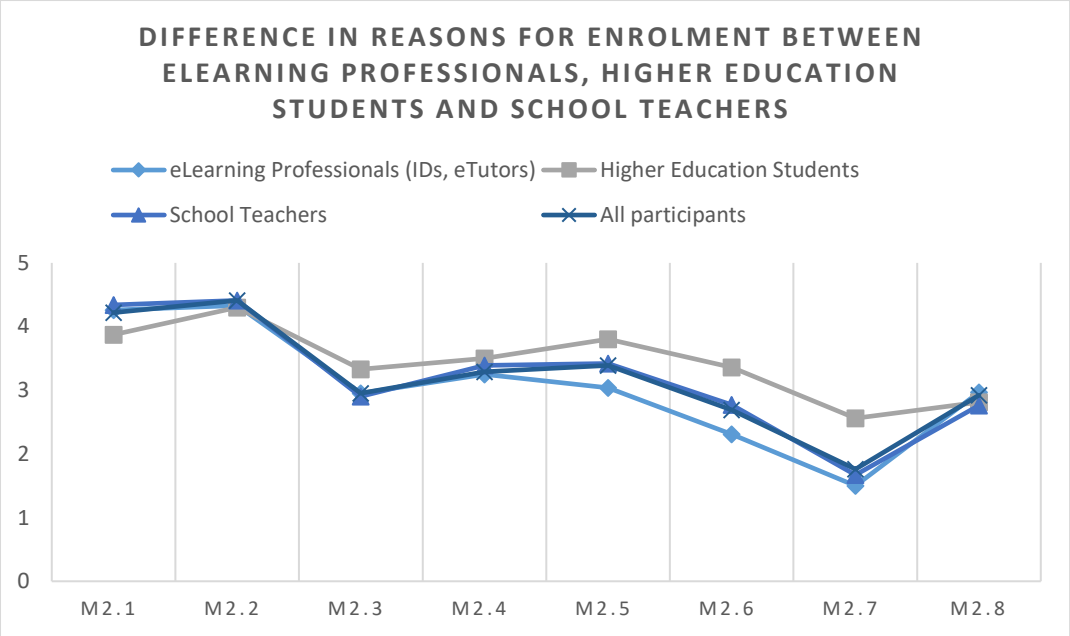


**Figure 19.** Difference in reasons for enrolment per targeted group

Figure 19 shows the difference in reasons for enrolment per targeted group. The comparison of the mean rating of Reasons for Enrolment (Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence) for each targeted group shows that there is no significant difference for M2.2 [extend my current knowledge of the topic], M2.4 [beneficial for my CV and future job applications] and M2.8 [general curiosity] among the groups.

Furthermore, there is no significant difference between eLearning Professionals and School Teachers for M2.1, M2.4, M2.7, while School Teachers report higher mean rating in reasons M2.5 and M2.6.

On the other hand, Higher Education Students report significantly lower mean rating for M2.1 comparing both with eLearning Professionals and School Teachers. They also report significantly higher mean rating for M2.3, M2.6, M2.7 comparing with eLearning Professionals and School Teachers. Table 44 summarizes the significant differences between the eight reasons for enrolment among the three targeted groups as calculated in Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence.

**Table 44.** Difference in reasons for enrolment between targeted groups

| Reasons for Enrolment | eLearning Professionals-Higher Education Students | | eLearning Professionals-School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| M2.1 | ,386 | ,001 | No significant difference | | -,464 | ,000 |
| M2.2 | No significant difference | | | | | |
| M2.3 | -,378 | ,016 | No significant difference | | ,433 | ,003 |
| M2.4 | No significant difference | | | | | |
| M2.5 | -,755 | ,000 | -,376 | ,002 | ,379 | ,009 |
| M2.6 | -1,055 | ,000 | -,465 | ,000 | ,590 | ,000 |
| M2.7 | -1,052 | ,000 | No significant difference | | ,883 | ,000 |
| M2.8 | | | No significant difference | | | |

Thus, it is useful to separate the reasons for enrolment, based on their relevance to **Internal Motives** (M2.1, M2.2, M2.5, M2.6, and M2.8) and **External Motives** (M2.3, M2.4, and M2.7). In Figure 20 mean values for internal and external motives for the three targeted groups are displayed.

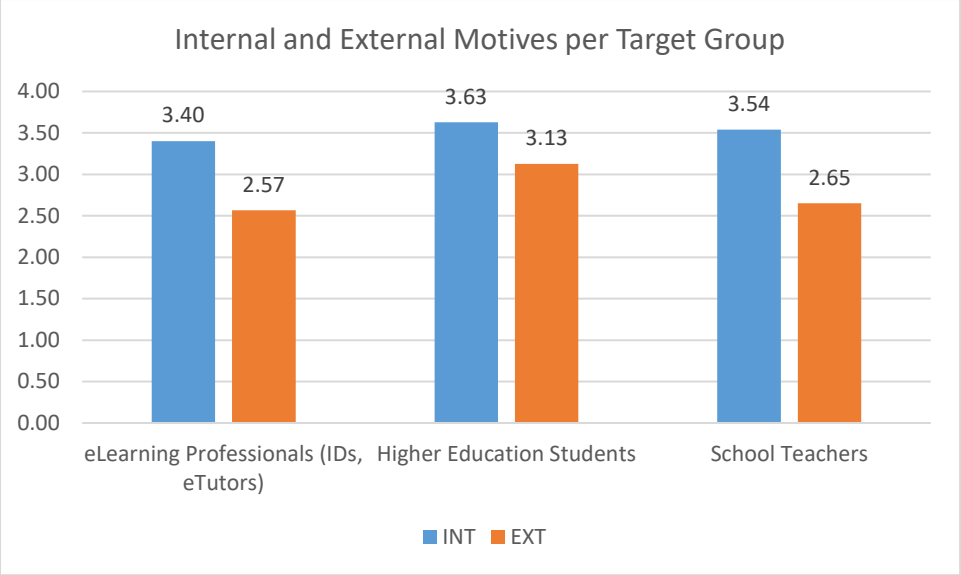


**Figure 20.** Internal and External Motives per Targeted Group

Table 45 summarizes the significant differences in internal and external motives among the targeted groups.

**Table 45.** Difference in internal and external motives per targeted group

| | eLearning Professionals-Higher Education Students | | eLearning Professionals-School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| INTmot | -,22620 | ,008 | -,13557 | ,022 | No significant difference | |
| EXTmot | -,56006 | ,000 | No significant difference | | ,47547 | ,000 |

**INTmot:** Internal Motives = (M2.1 + M2.2 + M2.5 + M2.6 + M2.8)/5
**EXTmot:** External Motives = (M2.3 + M2.4 + M2.7)/3

The comparison of mean rating for Internal (average of M2.1, M2.2, M2.5, M2.6, and M2.8) and External Motives (average of M2.3, M2.4, and M2.7) among targeted groups, shows that (Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence) **external motives score significantly higher among Higher Educational Students** compared to eLearning Professionals and School Teachers.

*5.2.4.5.c. GRIT score*

GRIT score is a measure for the tendency to sustain interest in and effort toward very long-term goals. It is calculated through an 8-items (GRIT statements) scale, where participants rate themselves from "Not at all like me" to "Very much like me" (Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence). Table 46 summarizes the differences in GRIT score between the targeted groups.

**Table 46.** Difference in GRIT score between the targeted groups

| GRIT score | eLearning Professionals-Higher Education Students | | eLearning Professionals-School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| GRIT | No significant difference | | -,22076 | ,000 | -,31438 | ,000 |

School Teachers reported higher GRIT score than eLearning Professionals and Higher Education Students while the GRIT score between the last groups does not differ significantly.

5.2.4.5.d. Self-Confidence

Participants rated from 1 to 5 their confidence in their ability to learn the material in the course (ConfAbility), and the possibility of finishing this course according to the anticipated time commitment as defined in the syllabus (ConfTime).

**Table 47.** Difference in confidence between targeted groups

| | eLearning Professionals (IDs, eTutors) - Higher Education Students | | eLearning Professionals (IDs, eTutors) - School Teachers | | Higher Education Students School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| ConfAbility | .479 | .000 | .108 | .005 | -.311 | .000 |
| ConfTime | No significant difference | | -.266 | .000 | -.363 | .000 |
| SelfConf | .28834 | .000 | No significant difference | | -.33712 | .000 |

**ConfAbility:** How confident are you in your ability to learn the material in this course?
**ConfTime:** How would you rate your possibility of finishing this course according to the anticipated time commitment as defined in the syllabus?
**SelfConf** = (ConfAbility+ConfTime)/2

The significance of difference in mean values of confidence are calculated in Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence and the results are summarized in Table 47.

E-learning professionals are more confident in learning the material while School Teachers are more confident in completing the course on time. On the other hand, Higher Education Students report significantly lower confidence than the other two groups.

5.2.4.5.e. Hours planning to spend in the course

Participants were asked how much time they plan to spend per week in the course and the mean hours per week were calculated (Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence) per targeted group. E-learning professionals intend to spend less hours per week (3.46) on average than Higher Education Students (4.17) and School Teachers (4.07), while the recommended time from the L2A MOOC designers was 8 hours per week.

### *5.2.4.6 Difference in Initial EDL competences level between the targeted groups*

The initial EDL competences level for each dimension of the L2A EDL-CP, as well as the overall initial EDL competence level are calculated per targeted group (eLearning Professionals, School Teachers, Higher Education Students) in Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence.

Figure 21 shows the initial EDL competences level for the three targeted groups. Note that for perspicuity reasons, min and max values for the y axis are set to 1 and 3 respectively.

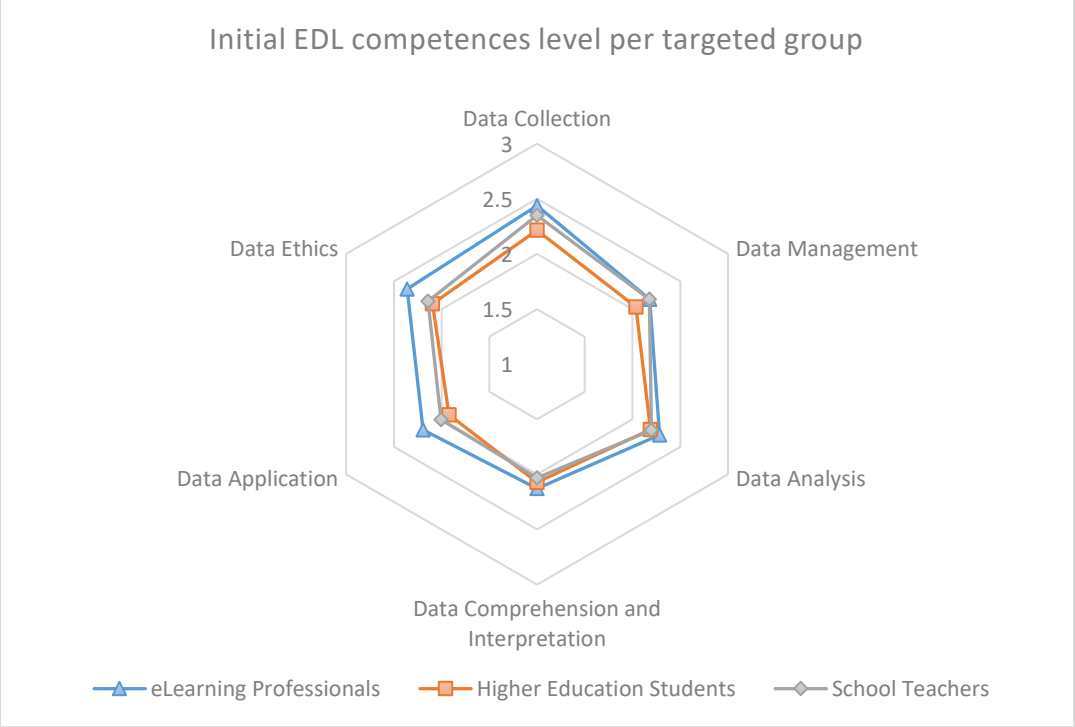


**Figure 21.** Initial EDL competences level per targeted group

**Table 48.** Differences in initial EDL competences level between targeted groups

| Differences in initial EDL competences level between targeted groups | eLearning Professionals (IDs, eTutors) - Higher Education Students | | eLearning Professionals (IDs, eTutors) - School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean difference | Sig. | Mean difference | Sig. | Mean difference | Sig. |
| D1. Data Collection | ,028 | ,22340 | No significant difference | | | |
| D2. Data Management<br>D3. Data Analysis<br>D4. Data Comprehension and Interpretation | No significant difference | | | | | |
| D5. Data Application | 008 | 27183 | ,010 | ,18572 | No significant difference | |
| D6. Data Ethics | ,010 | ,26579 | ,004 | ,21863 | | |
| InitEDL | ,042 | 17607 | No significant difference | | | |

The initial level of EDL competences in all dimensions does not differ significantly between School Teachers and Higher Education Students. On the other hand, eLearning Professionals reported higher initial EDL competence level in Data Collection, Data Application and Data

Ethics. There is no significant difference in initial EDL competence level in dimensions D2, D3 and D4 between these three targeted groups (Table 48).

### 5.2.5 Conclusions

Our scope was to identify the main targeted groups participated in the L2A MOOC and to describe their profile, highlighting their individual characteristics and key differences.

By analyzing data from the Pre-Course survey we were able to identify three major groups of participants:

a. eLearning Professionals (n=337) with 7.13 years of experience (mean value),
b. Higher Education Students (n=133) with 4.47 years of experience (mean value), and
c. School Teachers (n=419) with 15.74 years of experience (mean value).

In order to describe the participants' profile for each targeted group and identify significant differences between the groups, we examined the difference in (i) reported goal in taking the course, (ii) the internal and external motives for enrolment, as well as (iii) the self-confidence for learning the material and finishing the course on time, and (iv) the passion and perseverance for long-term and meaningful goals (GRIT) between eLearning Professionals (IDs, eTutors), Higher Education Students and University and School Teachers. We also examined the initial EDL competence level per targeted group (EDL).

We can conclude that there is small mean difference in internal motives for enrolling between the targeted groups with eLearning Professionals holding the lowest rating, but there is significantly higher mean rating in external motives among Higher Education Students. Overall, Higher Education Students are more motivated than the other groups of participants, possibly since the L2A MOOC has been recommended as part of the formal HE program requirements. School teachers, on the other hand, reported significantly higher GRIT score than eLearning Professionals and higher than the Education Students. Regarding the self-confidence, Higher Education Students are significantly less confident in completing the course and learning the material than the other two groups, while eLearning professionals are more confident in learning the material and School teachers are more confident in completing the course on time. All groups of participants reported that they "*plan to follow the course schedule and complete all activities to earn a certificate of completion*" at a rate of 62% and higher, although they plan to spend only 3.72 hours per week on average (while the estimated workload is 8 hours per week), with eLearning Professionals planning to spend the less hours per week on average (3.36) than the other two groups. Regarding the initial EDL competence level, we concluded that Higher Education Students reported the lower initial

EDL competence level, very close to School Teachers, while eLearning Professionals reported significantly higher EDL level in Data Collection, Data Application and Data Ethics dimensions of the L2A EDL-CP.

In Figure 22 the three targeted groups are presented in a 5D bubble chart, where x, y, z axis represent the mean values in Self-confidence, Reasons for enrolment and GRIT while the initial EDL Level per group is presented by the color of each bubble. The size of the bubble is defined by the number of participants of each targeted group.

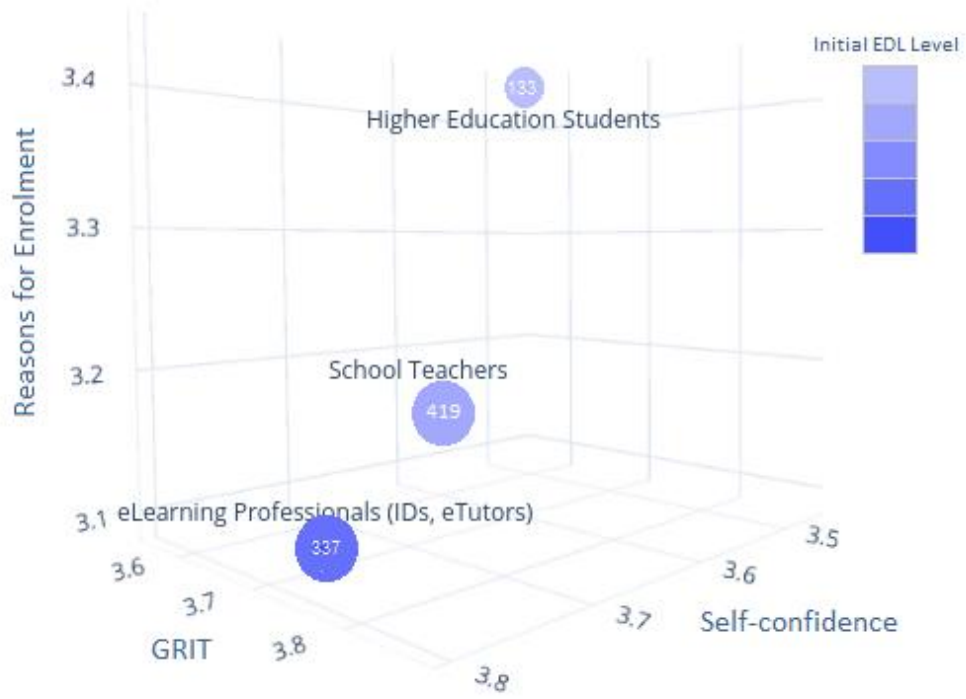


**Figure 22.** 5D bubble chart of the three major targeted groups

To summarize, we identified the following characteristics of participants' profile that differ significantly among eLearning Professionals, School Teachers and Higher Education Students:

- Age
- Reasons for enrolment: mainly External Motives (EXT)
- GRIT Score
- Self-confidence: both confidence in the ability to learn the material (ConfAbility) and to complete the course on time (ConfTime)
- Hours planning to spend in the course
- Initial EDL competence level

Next we will examine how these characteristics affect the completion rate and the EDL competences advancement.

## 5.3 Characteristics of participants' profile that are related to Course Completion

### 5.3.1 Scope

The scope of this section is to identify the **characteristics of participants' profile** that are related to course completion.

### 5.3.2 Background

Learn2Analyze MOOC started on October 21st, 2019 and was open until January 15th, 2020. During this time frame, 1920 users enrolled from 85 countries. Of these, 1147 participants answered the pre-course survey and *started the MOOC*, while 244 passed the final assessment and 235 of them answered the post-course survey to receive their certificate of achievement.

Passed the Final Assessment = 21.27%
Received the Certificate of Achievement = 20.45%

We consider that a participant has **completed the course** when s/he has received the certificate of achievement (i.e succeeded the final assessment and submitted both pre- and post-course surveys).

Completion Rate = 20.45%

To match the participants' answers in pre- and post-course surveys, participants were prompt to produce and provide an, easy to remember and difficult to decode, Unique ID Code.

In previous section we identified that the three targeted groups (eLearning Professionals, Higher Education Students and School Teachers) differ significantly in:

a. Reasons for enrolment (mainly external motives),
b. GRIT score,
c. Self-confidence and
d. The hours they intended to spend in the course.

Next we will describe the profile of participants that completed the course, calculate the completion rate for the different targeted groups of participants and examine how these

above characteristics (reasons for enrolment, GRIT score, self-confidence and hours intended to spend in the course) are related to course completion.

### 5.3.3 Profile of participants that completed the course

The scope of this section is to describe the profile of participants that completed the course in terms of demographics and general background.

#### *5.3.3.a Age*

Figure 23 shows the distribution of age between participants that completed the course. The distribution is skewed to the right as younger participants have higher completion rate than the older ones.

One half of the participants that completed the course were 35 years old, while the mean value of age were 37,78 year with standard deviation 11,386.

The mean age of participants that completed the course is significantly lower than the mean age of those that did not complete the course (Appendix 7 – Characteristics of participants' profile that are related to the course completion).

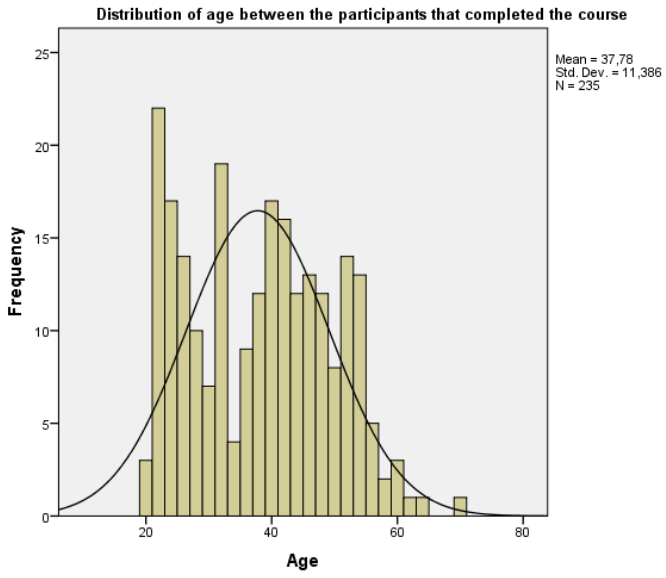


**Figure 23.** Distribution of age between participants that completed the course

### *5.3.3.b Gender*

60% (n=141) of participants that completed the course were female (completion rate: 22%) and 37% (n=88) male (completion rate: 18%). Among the participants that selected not to report their gender, 6 completed the course (completion rate: 18%) (Appendix 7 – Characteristics of participants' profile that are related to the course completion).

### *5.3.3.c Geographical distribution*

The participants that completed the course were distributed in 27 countries (Appendix 7 – Characteristics of participants' profile that are related to the course completion). Although most of the participants that completed the course were form Greece (126 participants - 53,62%) followed by Germany (71 participants - 30,21%), the participants from Germany had higher completion rate (30,59%). Figure 24 shows the completion rates of the 10 most reported countries of residence in the pre-course survey.

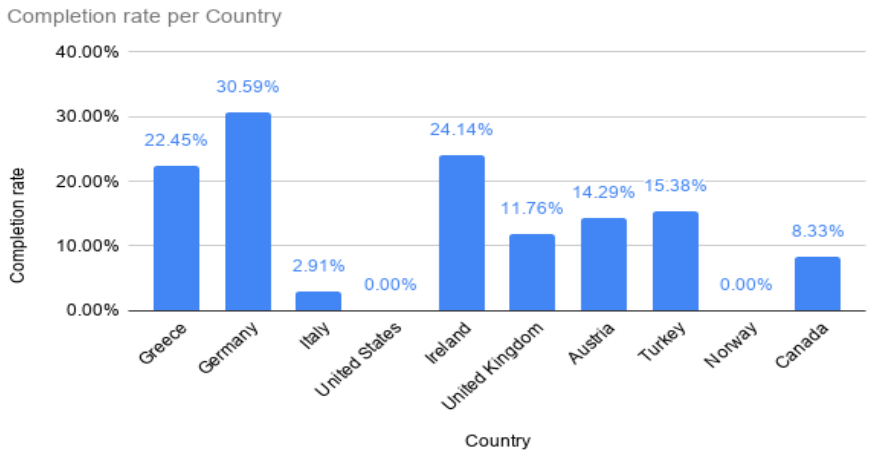


**Figure 24.** Completion rate per Country

### *5.3.3.d Distribution of participants that completed the course per highest level of Education*

According to the reported highest level of education, 13% (n=31) of the participants that completed the course holds a Doctoral Degree, 45% (n=106) a Master's Degree and 20% (n=48) has a Bachelor's Degree (Appendix 7 – Characteristics of participants' profile that are related to the course completion). The highest completion rate (44%) is among participants that report High School Diploma as their highest level of education (that is, Higher Education Students).

### *5.3.3.e Participants that completed the course per Job Sector*

Although completion rates for participants coming from the Industry is lower than the other job sectors (Figure 25), there is no significant difference for the completion rates between the job sector groups (Appendix 7 – Characteristics of participants' profile that are related to the course completion).

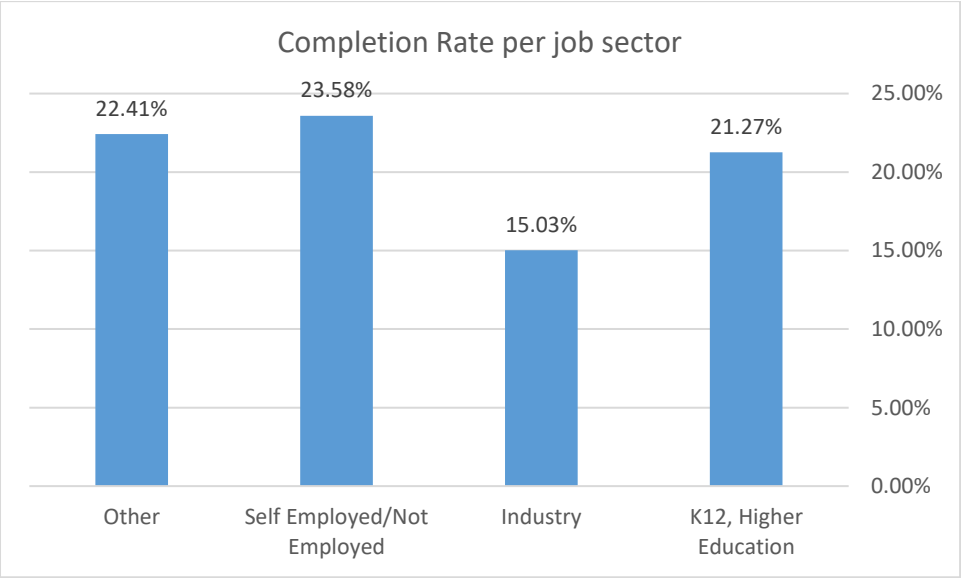


**Figure 25.** Completion rates per job sector

## 5.3.4 Course completion per targeted group

In previous section we identified three major targeted groups of participants that differ significantly:

a. eLearning Professionals (IDs, eTutors),
b. Higher Education Students and
c. School Teachers

Figure 26 shows the completion rate among these targeted groups.

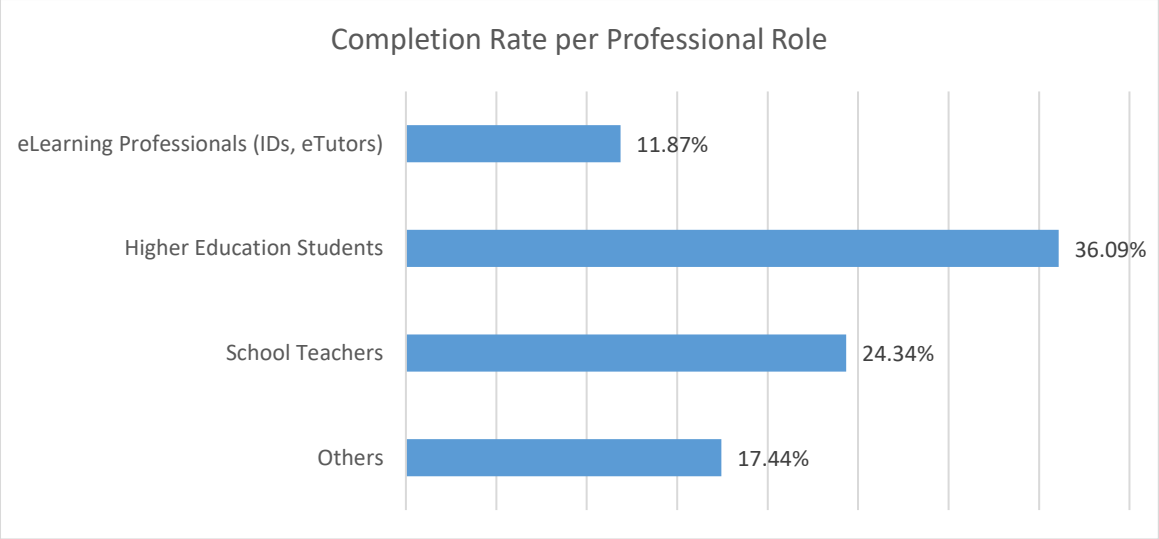


**Figure 26.** Completion rate among targeted groups

E-Learning professionals' completion rate is significantly lower than the completion rate of School Teachers and Higher Education Students, while Higher Education Students have significantly higher completion rate than the other two targeted groups (Appendix 7 – Characteristics of participants' profile that are related to the course completion).

Regarding the years of experience in professional role and in digital teaching and learning, participants that completed the course reported 9.91 years on average involved in professional role (standard deviation 7.52) and 6.43 years on average involved in digital teaching and learning (standard deviation 5.22) (see Appendix 7 – Characteristics of participants' profile that are related to the course completion).

Next we will examine if reasons for enrolment and especially external motives for enrolment, grit score, self-confidence in learning the material and in completing the course on time, as well as the hours a participant is planning to spend in the course, are related to course completion.

### 5.3.5 Relationship between participants' characteristics and course completion

The three targeted groups of participants (namely eLearning Professionals, School Teachers and Higher Education Students) differ significantly in:

a. Reasons for enrolment (mainly external motives),
b. GRIT score,
c. Self-confidence and
d. The hours per week they intended to spend in the course.

The scope of this section is to examine how reasons for enrolment, grit score, self-confidence does and hours per week intended to spend in the course are related to course completion.

### *5.3.5.a Reasons for Enrolment*

As we can see in Figure 27 some reported reasons for enrolment (2.4 - "It would be beneficial for my CV and future job applications" and 2.7 - "I was advised or ordered to take part in this course", as well as EXT - External motives) show significantly higher mean grade among participants that completed the course, compared with participants that dropped it. On the other hand, the internal motives for taking the course does not demonstrate any difference in rating between participants that completed the course and participants that dropped it (Appendix 7 – Characteristics of participants' profile that are related to the course completion).

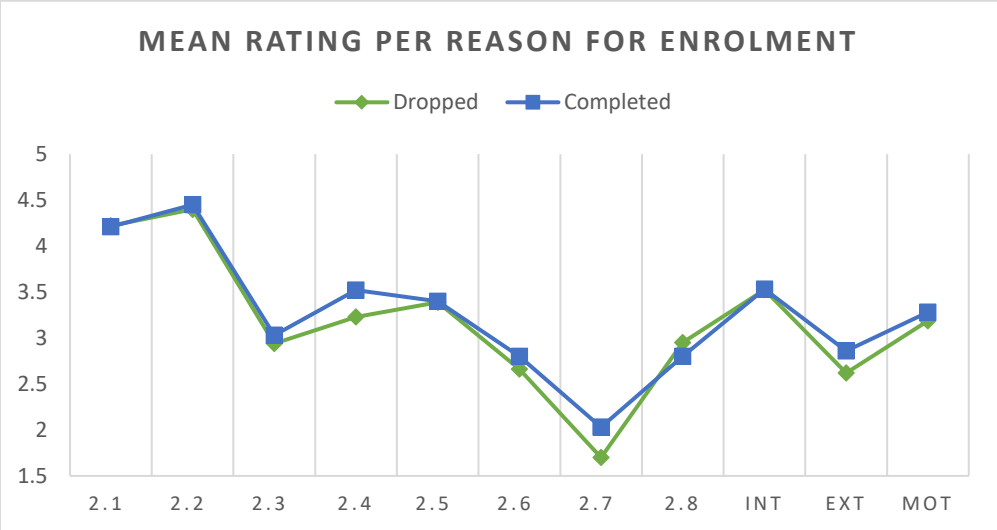


**Figure 27.** Relationship of "Reason for Enrolment" on course completion

Reasons for enrolment

2.1 For personal development.
2.2 To extend my current knowledge of the topic.
2.3 To obtain a job-relevant qualification.
2.4 It would be beneficial for my CV and future job applications.
2.5 It is relevant to my academic field of study.
2.6 It is relevant to my college/university class.
2.7 I was advised or ordered to take part in this course.
2.8 General curiosity.

INT (internal motives/reasons for enrolment): 2.1, 2.2, 2.5, 2.6, 2.8
EXT (external motives/reasons for enrolment): 2.3, 2.4, 2.7
MOT (internal + external motives)

We can conclude that external motives are related to course completion (Figure 29), as opposed to internal motives that do not appear to be relevant (**Figure 28**).

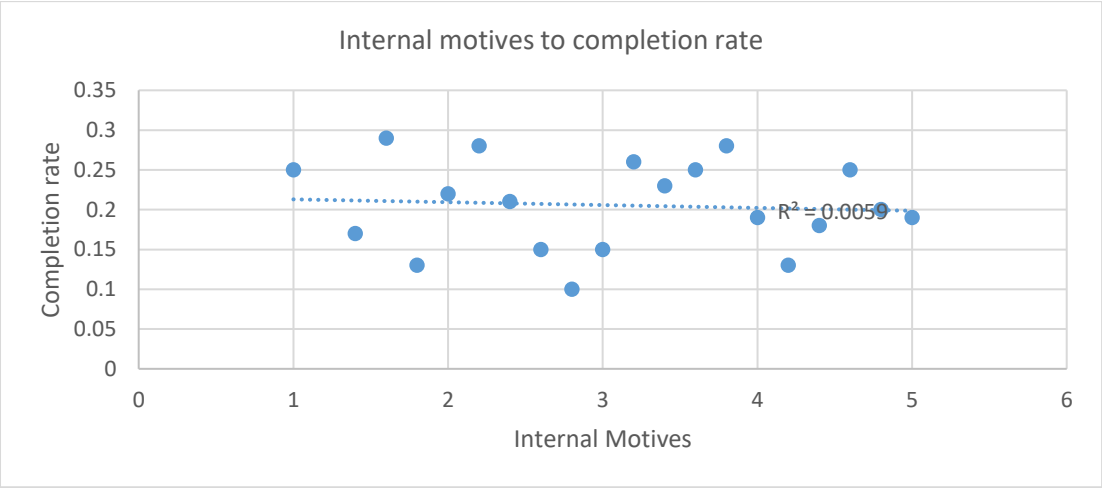


**Figure 28.** Relation of Internal Motives to Course completion

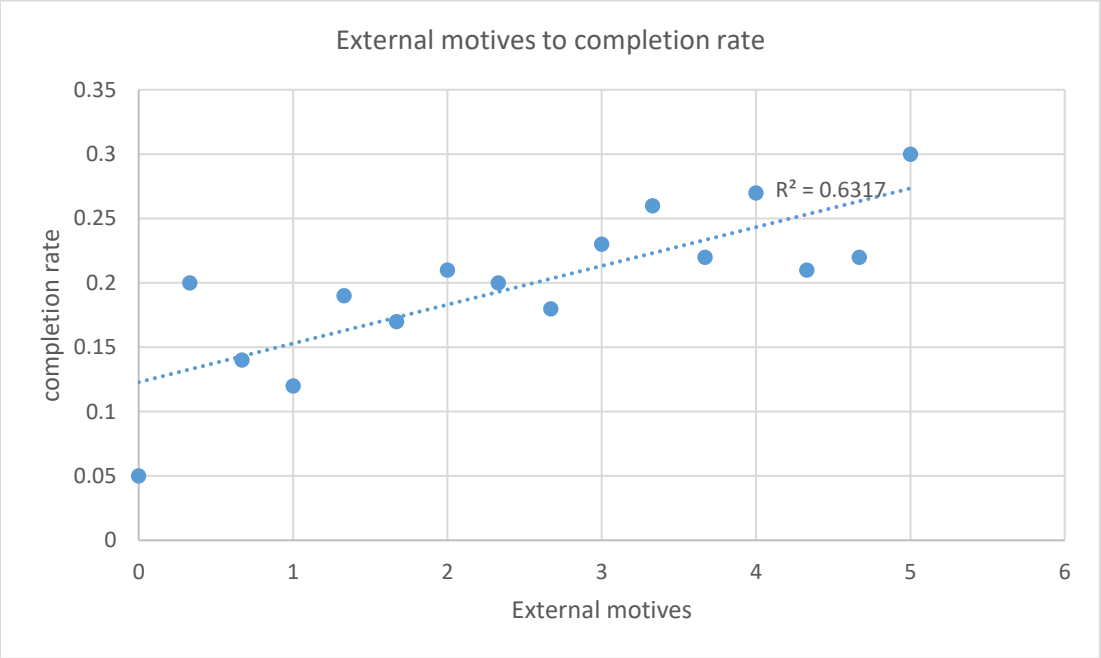


**Figure 29.** Relationship between external motives and course completion

### *5.3.5.b GRIT score*

GRIT score marginally differs between participants that completed the course and those who dropped it, while the GRIT statement 6.7 – "I finish whatever I begin" differs significantly among them. (Appendix 7 – Characteristics of participants' profile that are related to the course completion). Participants that completed the course rated the statement "I finish whatever I begin" with mean rating 4.03, while those that did not completed the course with 3.76.

### *5.3.5.c Self-confidence*

Confidence in learning the material has week negative correlation to course completion, while confidence in completing the course on time seems to have strong positive correlation to course completion. Figure 30 and Figure 31 show the relationship between the two types of self-confident variables and course completion.

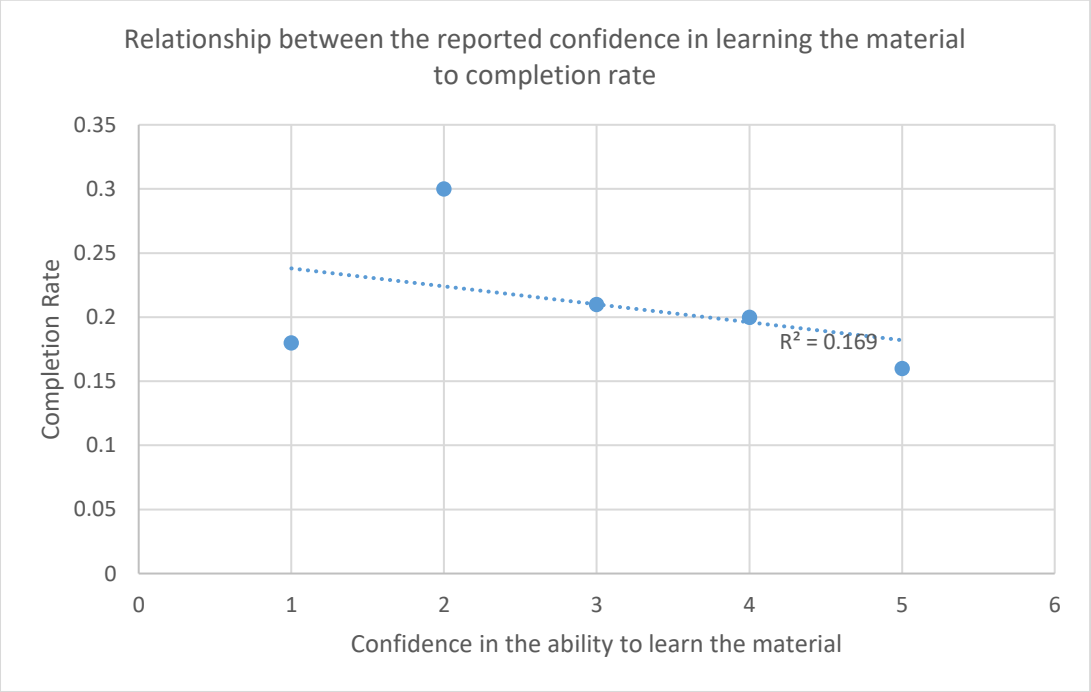


**Figure 30.** Relationship between the reported ability to learn the material and course completion

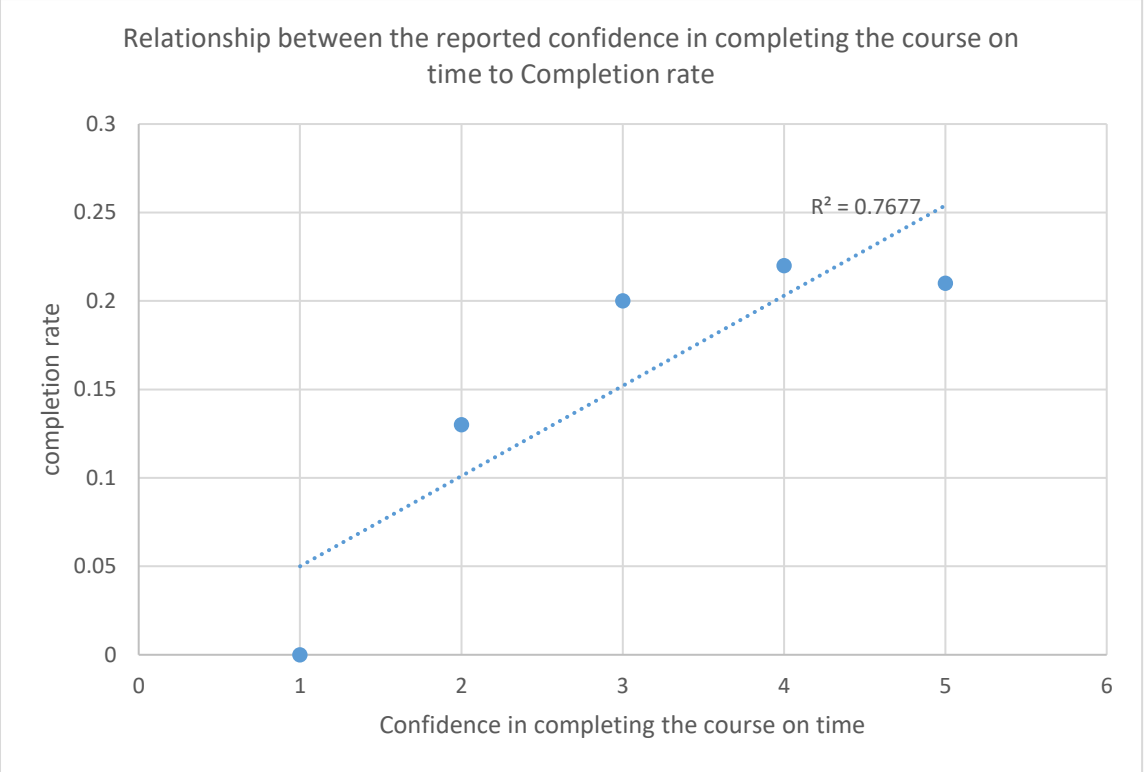


**Figure 31.** Relationship between the reported Confidence in finishing the course according to the anticipated time commitment and Course completion

### *5.3.5.d Hours per week planning to spend in the course*

Participants that completed the course reported they plan to spend in the course 4,65 hours per week on average (std. deviation 1.94), while the participants that dropped the course were planning to spend 3.8 hours per week (std. deviation 1.76). Figure 32 shows the strong positive relationship between the hours per week the participant was planning to spend in the course and the course completion.

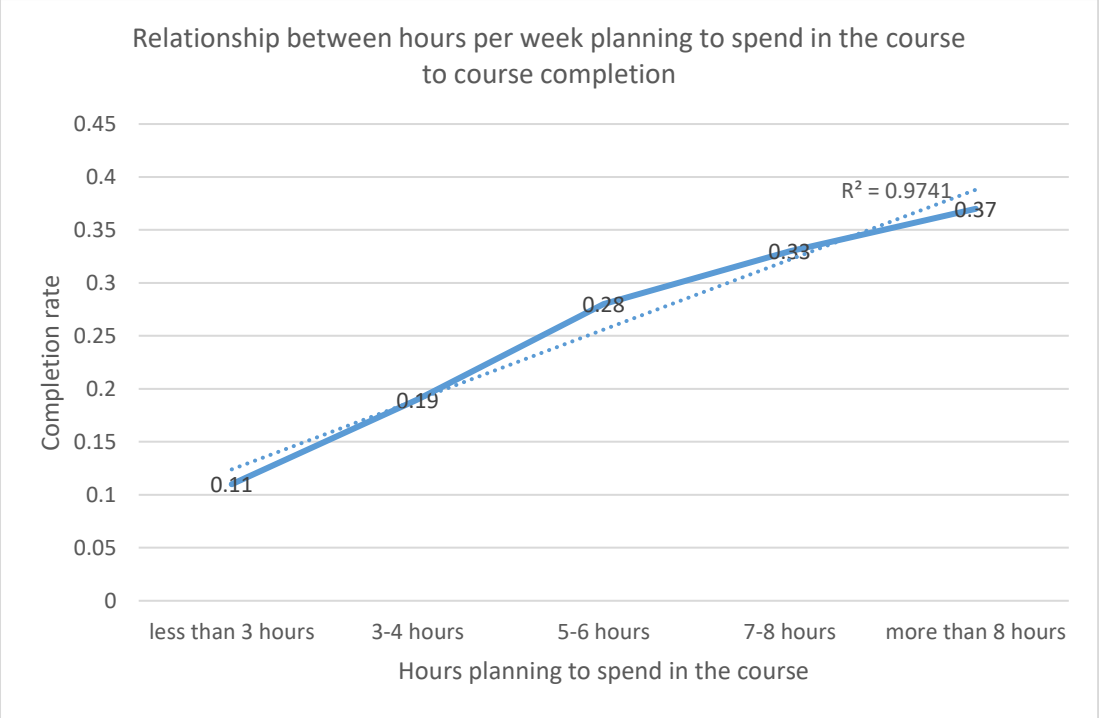


**Figure 32.** Relationship between the hours per week the participant is planning to spend in the course and Course completion

### 5.3.6 Conclusions

The scope of this section was to identify the characteristics of participants' profile that are related to course completion.

Completion rate seems to differ significantly among the targeted groups, as Higher Education Students comes first with 36%, while eLearning professionals' completion rate is only 11%. External motives could be the reason for this difference as they are positively related to course completion and HE students had significantly higher mean value (3,13) in external motives than the other two groups (section 2.2.3). Time scheduling also appears important for the course completion as we identified strong relationship between the hours per week the participant was planning to spend in the course and the completion rate. Furthermore, it seems that course completion is also related to the reported confidence in finishing this course according to the anticipated time commitment as defined in the syllabus.

Next we will examine the level of competence advancement that participants have attained completing the course.

## 5.4 EDL competences advancement

### 5.4.1 Scope

The scope of this section is to analyze the competence advancement the participants have achieved after the successful completion of the L2A MOOC.

### 5.4.2 Background

Participants of the L2A MOOC, in the pre-course survey, were prompt to rate their initial level of competence in the 17 competence statements distributed in the 6 dimensions of the L2A EDL-CP, namely:

- Data Collection
- Data Management
- Data Analysis
- Data Comprehension and Interpretation
- Data Application and
- Data Ethics

among five levels of competence:

- Novice
- Advanced beginner
- Competent
- Professional
- Expert

After the course completion, in the post-course survey, participants are asked to rate their achieved level of competence. The difference between the initial and achieved level of competence define the competence advancement.

In this section we will calculate the overall competence advancement for each EDL-CP dimension for the participants that completed the course and compare the competence advancement between the three targeted groups, eLearning Professional, School Teachers, and Higher Education Students.

In previous section we identified that the three targeted groups (eLearning Professionals, Higher Education Students and School Teachers) differ significantly in:

a. Reasons for enrolment (mainly external motives),
b. GRIT score,
c. Self-confidence and
d. The hours they intended to spend in the course.

Next we will examine how these above characteristics (reasons for enrolment, grit score, self-confidence and hours intended to spend in the course) are related to competence advancement.

### 5.4.3 EDL competences advancement for the participants that completed the course

In this section we will calculate the overall competence advancement per EDL-CP dimension for all participants that completed the course.

In Appendix 8 - Characteristics of participants' profile that are related to the EDL competences advancement mean grades are calculated per EDL competence statement and dimension as reported from participants that completed the course in the pre- and post-course survey. As shown in Figure 33, the initial EDL competence level for all dimensions is approximately 2=Advanced beginner and the achieved EDL competence level is approximately 3=Competent. Thus, completing the course results to one-level advancement of competences for each EDL competence dimension.

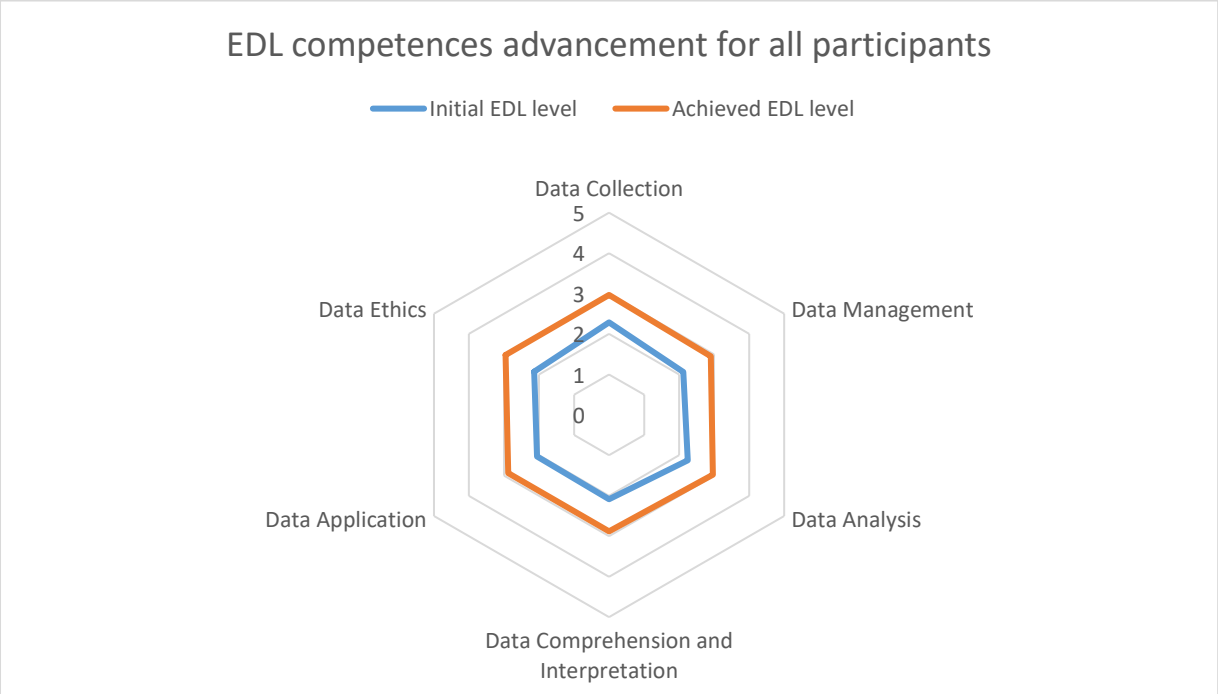


**Figure 33.** EDL competence advancement for all participants that completed the course

### 5.4.4 EDL competences advancement per targeted group

In this section we will compare the competence advancement per EDL-CP dimension between the three major targeted groups, eLearning Professional, Higher Education Students and School Teachers.

Regarding the initial EDL competence level, we concluded that Higher Education Students reported the lower initial EDL competence level, very close to School Teachers, while eLearning Professionals reported significantly higher EDL level in Data Collection, Data Application and Data Ethics dimensions of the L2A EDL-CP.
Examining the initially EDL competence level for the 1147 participants who started the course we found that Higher Education Students reported the lower initial EDL competence level, very close to School Teachers, while eLearning Professionals reported significantly higher EDL level in Data Collection, Data Application and Data Ethics dimensions of the L2A EDL-CP.
We continue with the calculation of the achieved EDL competence level for each of the six dimensions of EDL-CP for the participants that completed the course. Initial and achieved levels of competences for eLearning Professionals, Higher Education Students and School Teachers are presented in Figure 36. Note that for perspicuity reasons, min and max values for the y axis are set to 1 and 4 respectively.

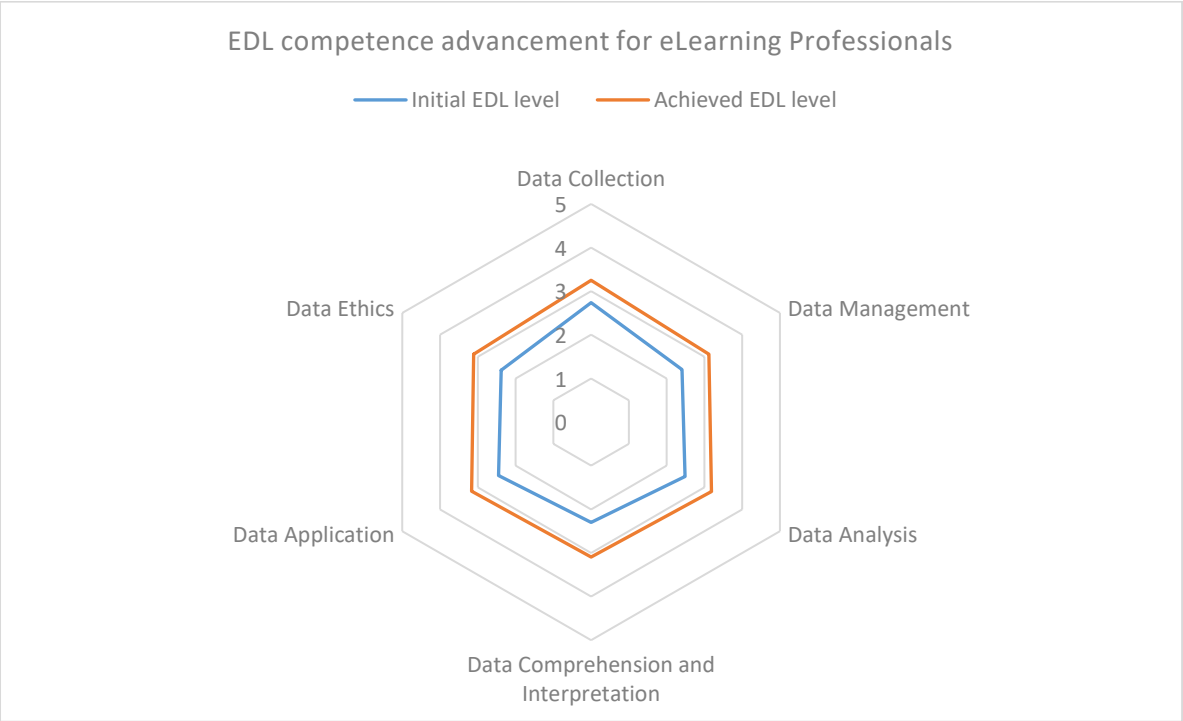


**Figure 34.** EDL competence advancement for eLearning Professionals

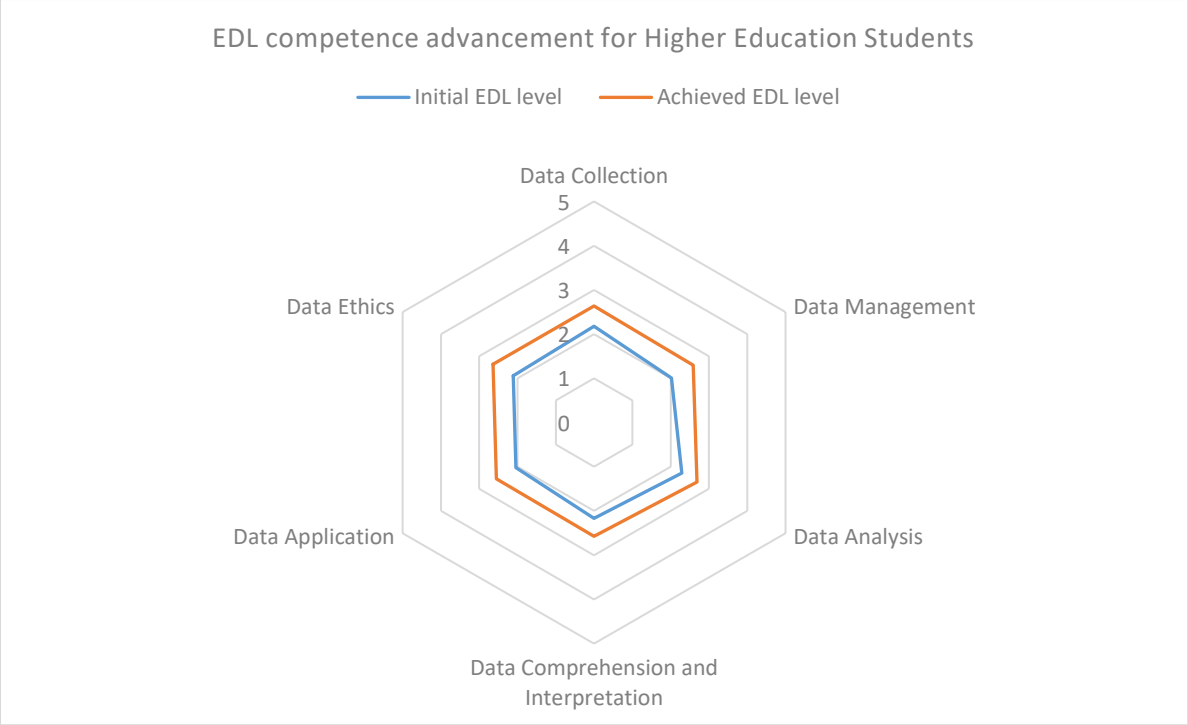


**Figure 35.** EDL competence advancement for Higher Education Students

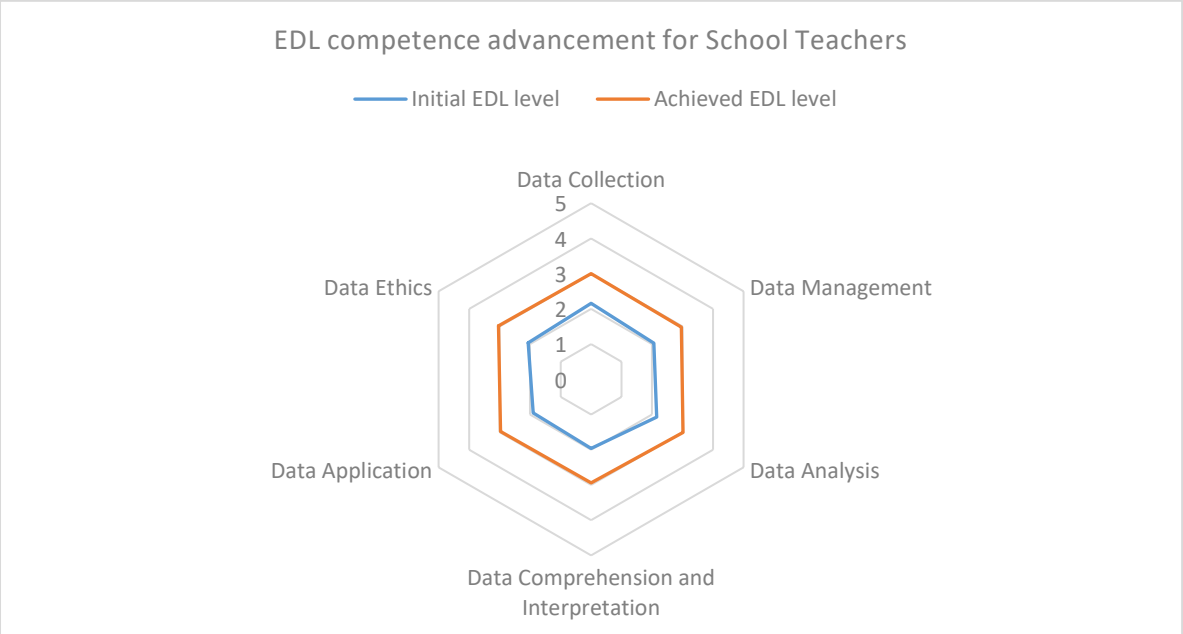


**Figure 36.** EDL competence advancement for School Teachers.

As illustrated in Figure 36, Higher Education Students reported lower achieved level in all dimensions and School Teachers achieved the higher competence advancement.

In Appendix 8 - Characteristics of participants' profile that are related to the EDL competences advancement significant mean differences for EDL competences between the targeted groups

are calculated. Using ANOVA we conclude that significant mean differences in competence advancement are displayed only in two EDL dimensions:

- D4 (Data Comprehension and Interpretation)
- D5 (Data Application)

and in the overall EDL competence advancement.

The results from the T-tests between the targeted groups are presented in Table 49. Higher Education Students and School Teachers differ significantly in D4 (Data Comprehension and Interpretation), D5 (Data Application) and in the overall EDL competence advancement. E-learning professionals and Higher Education Students differ significantly only in D4 competence advancement, while eLearning Professional and School Teachers do not differ significantly in EDL competence advancement in any EDL dimension.

**Table 49.** Significant differences in mean EDL competences advancement between targeted groups

<table>
<tr><th></th><th colspan="2">eLearning Professionals – Higher Education Students</th><th colspan="2">eLearning Professionals – School Teachers</th><th colspan="2">Higher Education Students – School Teachers</th></tr>
<tr><td></td><td>Difference</td><td>Sig.</td><td>Difference</td><td>Sig.</td><td>Difference</td><td>Sig.</td></tr>
<tr><td>D1adv</td><td colspan="6">No significant difference between targeted groups</td></tr>
<tr><td>D2adv</td><td colspan="6">No significant difference between targeted groups</td></tr>
<tr><td>D3adv</td><td colspan="6">No significant difference between targeted groups</td></tr>
<tr><td>D4adv</td><td>,38750</td><td>,043</td><td colspan="2" rowspan="2">No significant difference between targeted groups</td><td>-,57169</td><td>,000</td></tr>
<tr><td>D5adv</td><td colspan="2">No significant difference between targeted groups</td><td>-,.55821</td><td>,002</td></tr>
<tr><td>D6adv</td><td colspan="6">No significant difference between targeted groups</td></tr>
<tr><td>EDLadv</td><td colspan="4">No significant difference between targeted groups</td><td>-,45992</td><td>,003</td></tr>
</table>

Next we will examine if reasons for enrolment, grit score and self-confidence, as well as the hours a participant is planning to spend in the course, are related to the achieved EDL competence advancement.

### 5.4.5 Relationship between participants characteristics and EDL competences advancement

The scope of this section is to investigate the role of participant's profile (especially reasons for enrolment, grit score and self-confidence, as well as the hours a participant is planning to spend in the course) in EDL competence advancement.

#### *5.4.5.a Reasons for enrolment*

In the pre-course survey, participants were asked to rate, from "Not at all true" (1) to "Very true" (5), eight statements regarding the reasons for enrolment. These statements are divided into Internal Motives and External Motives for enrolment. In previous section, we found that Internal Motives had no effect on course completion, while External Motives are strongly positively related to course completion. In

Figure 37 we can see there is no relation between internal motives and EDL competence advancement, as well.

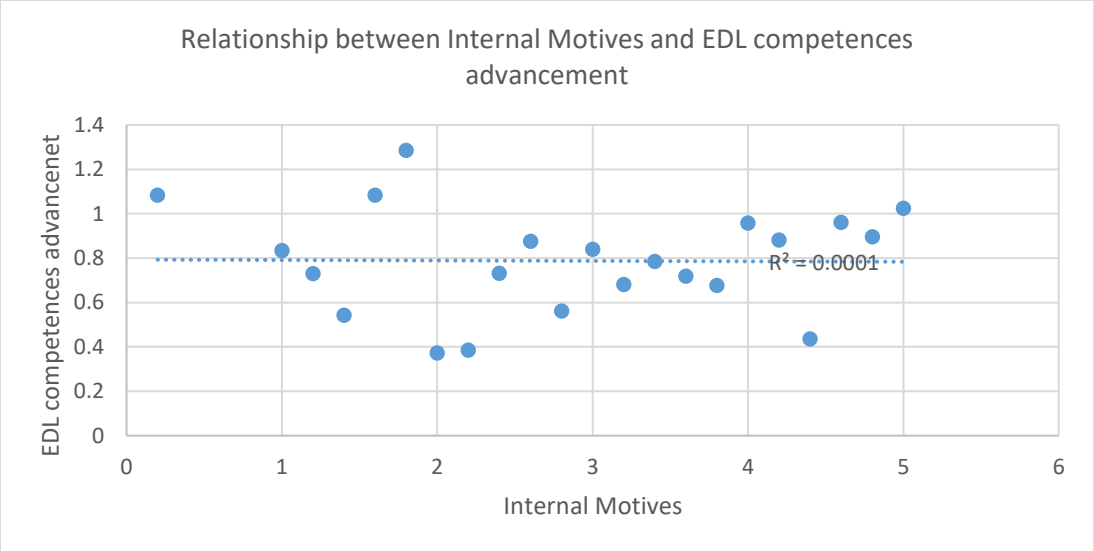


**Figure 37.** Relationship between Internal Motives and EDL competences advancement

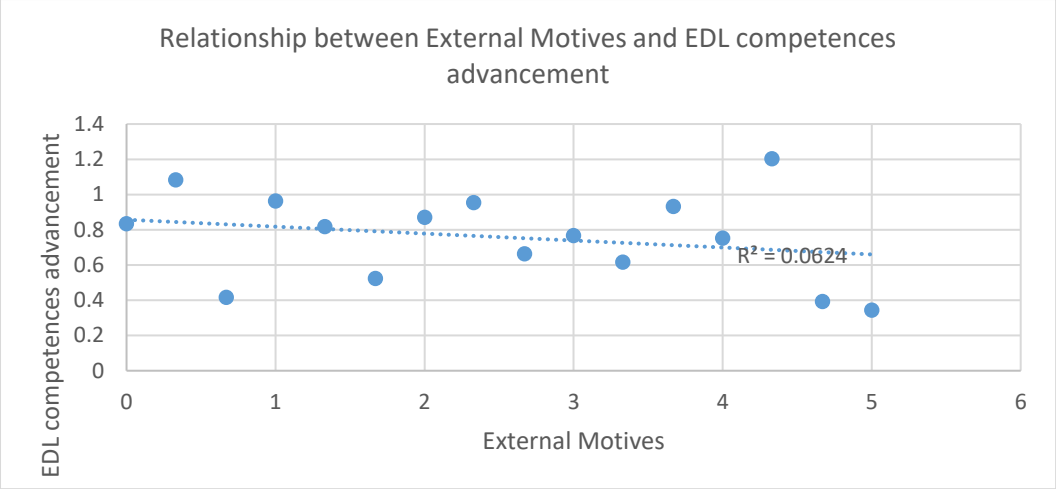


**Figure 38.** Relationship between External Motives and EDL competences advancement

Although we found that External Motives have strong positive relation to course completion, we cannot conclude the same for their relation to EDL competence advancement. There is no relationship between external motives and EDL competence advancement (Figure 38).

### *5.4.5.b GRIT score*

GRIT score is a measure for perseverance for long-term goals. In previous section we found that only one statement of the 8-items GRIT scale differ significantly between participants that completed the course and those who didn't.

Figure 39 demonstrates positive relationship between the GRIT score and EDL competences advancement.

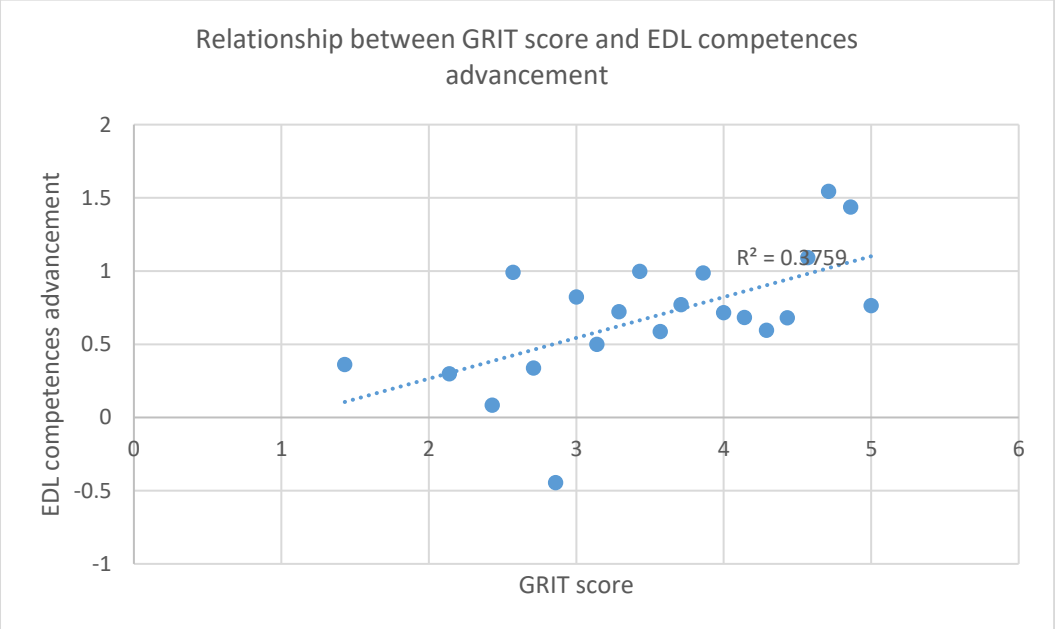


**Figure 39.** Relationship between GRIT score and EDL competences advancement

### *5.4.5.c Self-confidence*

Participants in the pre-course survey were asked two questions regarding their self-confidence:

1. How confident are you in your ability to learn the material in this course?
2. How would you rate your possibility of finishing this course according to the anticipated time commitment as defined in the syllabus?

Examining their effect to EDL competence advancement we can conclude that there is positive relationship between self-confidence and EDL competence advancement (Figure 40).

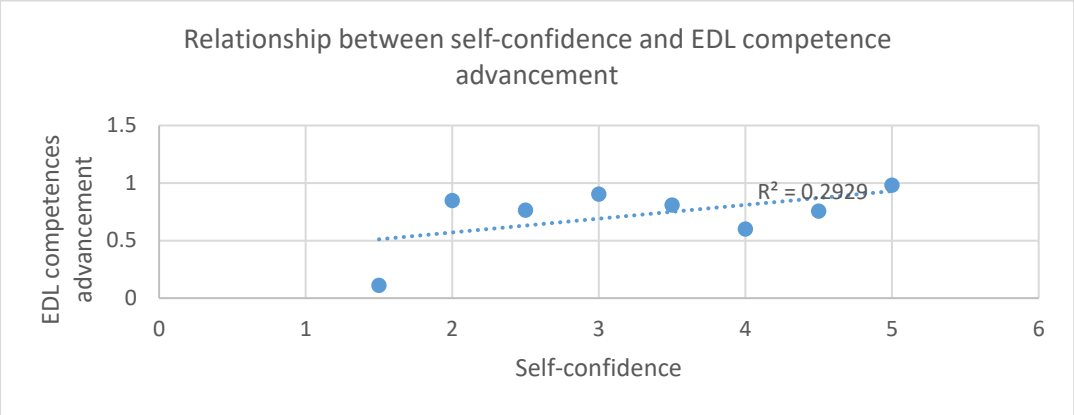


**Figure 40.** Relationship between Self-confidence and EDL competences advancement

### *5.4.5.d Hours per week planning to spend in the course*

We've found that the hours per week the participant was planning to spend in the course affect course completion. As we can see in Figure 41, they are also positively related to EDL competence advancement.

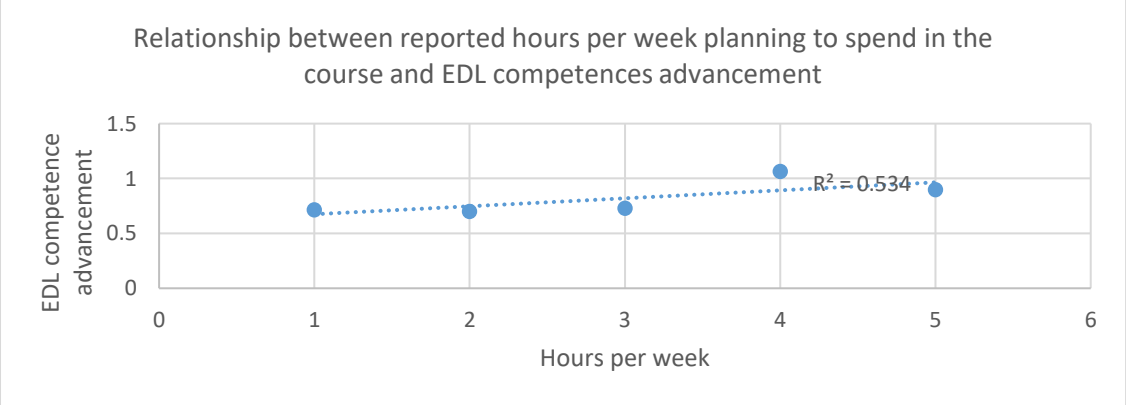


**Figure 41.** Relationship between the hours per week the participant is planning to spend in the course and EDL competences advancement

### 5.4.6 Conclusions

In this section, we examined the difference in EDL competences advancement reported from the three targeted groups (eLearning Professional, School Teachers and Higher Education Students).

Although external motives had strong positive relationship to course completion, we could not find any relation to EDL competence advancement. On the other hand, we found positive relationship between the GRIT score and EDL competences advancement. Furthermore, we examined the effect of self-confidence to EDL competences advancement and we found positive relationship.

The hours that the participants were planning to spend in the course are very important as they have strong relationship not only with the course completion, but with the EDL competences advancement as well.

Next we continue with the analysis of the post-course survey, where participants are asked about their learning experience in the L2A MOOC.

## 5.5 Learning Experience

In this section we analyze the post-course survey were participants reported their Learning Experience per module and the Overall Learning Experience from the course attendance.

### 5.5.1 Learning experience per module

In the post-course survey, participants were asked to rate from 1 to 5 their agreement to 11 statements, concerning their learning experience in each module of the course. As we can see in Figure 28, rating per module varies from 3,5 to 4,4 on average (3=Neither agree nor disagree, 4= Agree, 5=Strongly agree).

In Figure 42 the reported learning experience per module is graphically illustrated. We define the areas of rating as per below:

- Relatively high (>4)
- Marginally (3,8-4)
- Relatively low (3,6 - 3,8)

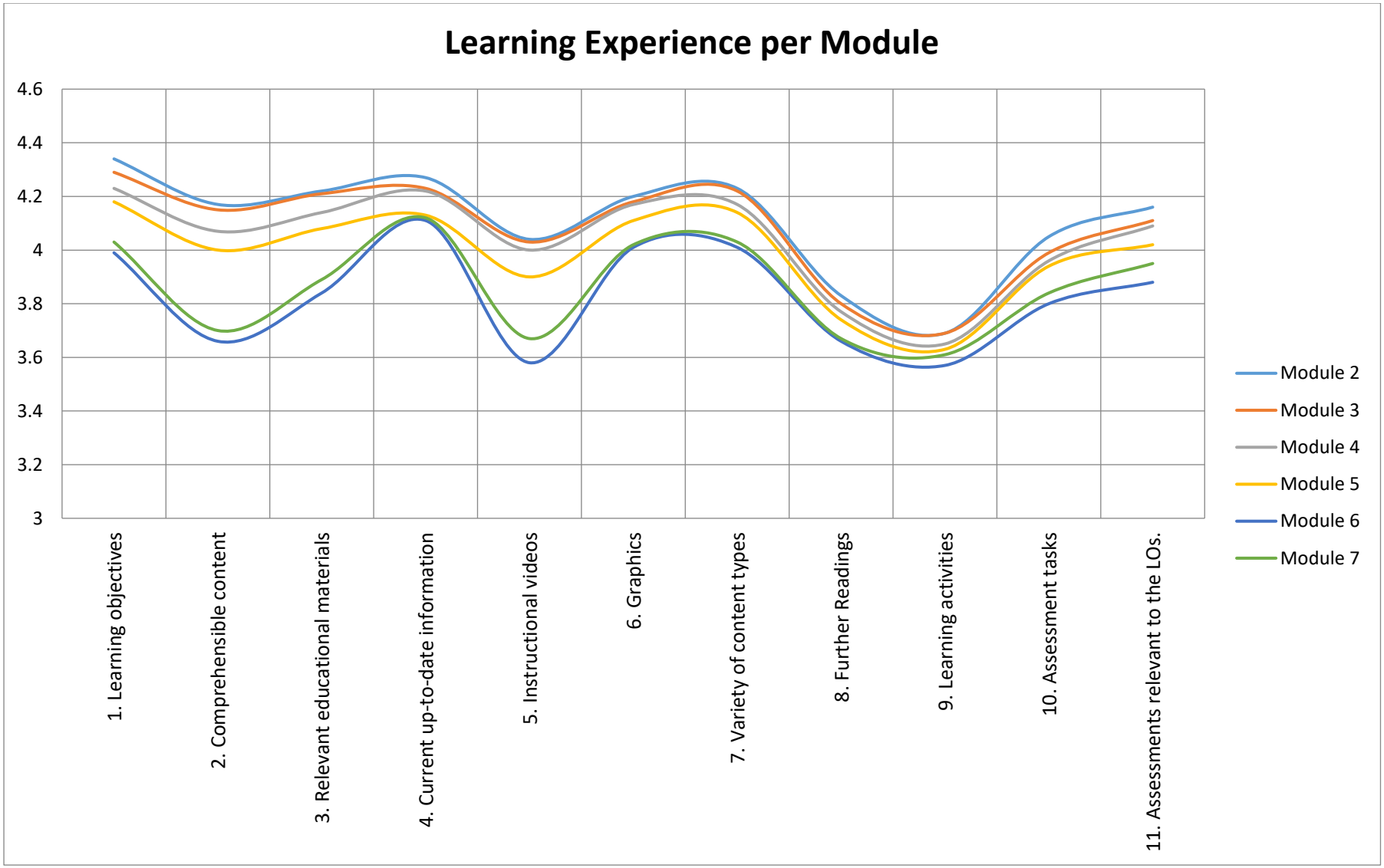


**Figure 42.** Learning Experience per Module

Survey participants rated relatively high (score>4) their agreement to statements about the ***instructional design of the course*** (learning objectives clearly stated, variety of content types, and relevance of the assessments with the LOs), and the ***content*** (relevant educational materials, current up-to-date information, graphics). Comprehensive content and instructional videos scored relatively high in modules 2-5 and relatively low in modules 6-7. Further readings, learning activities and assessment tasks need attention as they score relatively low in all modules.

In the same section of the post-course survey, participants were asked to report the hours per week they spent on each module, as well as the posts they contributed to the discussion forums per module.

*Hours spent on each module*

Participants were asked about the workload per module in relation to the hours they spent on each module. As we can see in Figure 43, the reported workload was evenly spread. About 50% of the participants reported they spent less than 6 hours per module, while the rest spent more than 6 hours per module.

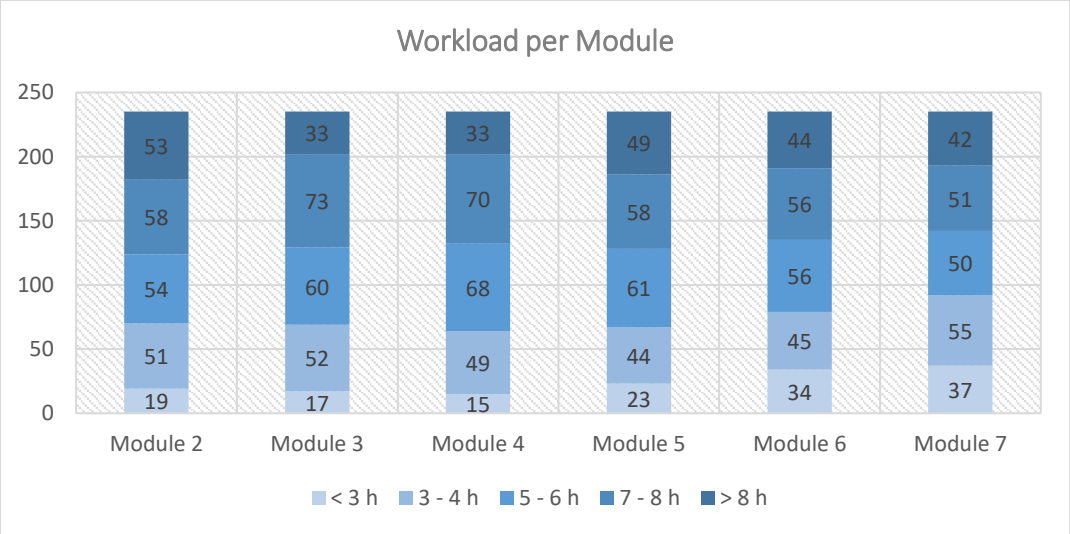


**Figure 43.** Distribution of the reported workload per Module

*Forum participation per module*

Figure 44 illustrates the forum participation as reported from participants in the post-course survey. Forums in Modules 2 and 3 seem to be more active than in Modules 4-7. Overall we can notice that over 50% of participants that completed the L2A MOOC and answered the post-course survey had contributed to forum discussions.

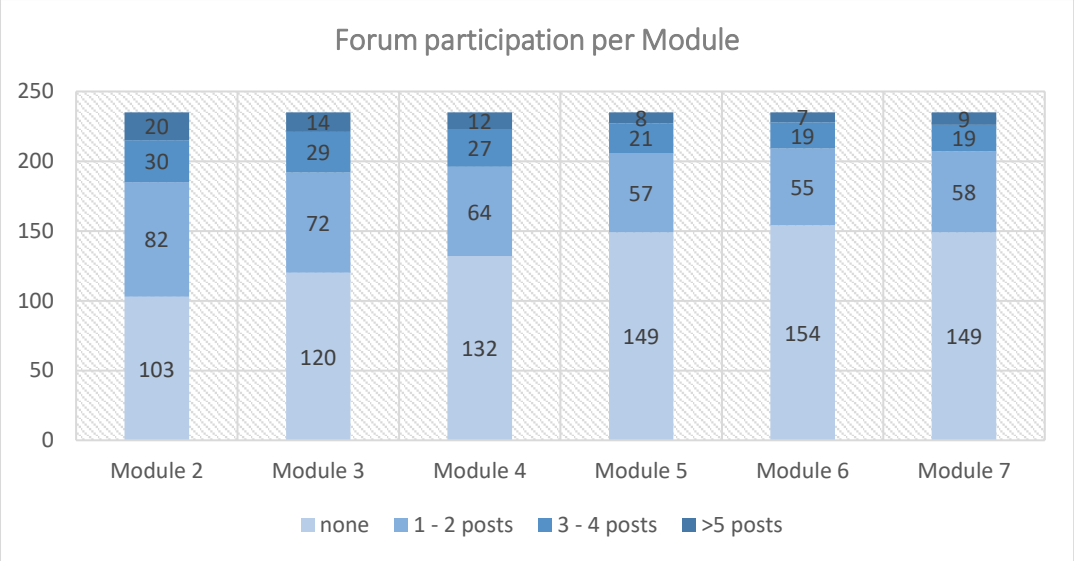


**Figure 44.** Reported forum participation

### 5.5.2 Overall learning experience

Participants in the post-course survey, were asked to rate 18 statements from "Strongly disagree" to "Strongly Agree", concerning the perceived Learning Experience from the L2A MOOC.

1. The course platform was easy to use.
2. The overall visual design of the course was appealing.
3. The course environment was well structured, topics and subtopics were logically arranged in a predictable pattern.
4. The learning path was easy to navigate.
5. Course objectives and learning goals were clearly stated.
6. The workload was reasonably spread.
7. The workload was in line with my expectations.
8. The course difficulty was in line with my expectations at the start of the course.
9. The difficulty level of assessments was appropriate for the course.
10. The level of interaction with peer learners was adequate.
11. The discussion forums were an effective tool for collaborating with other learners.
12. Help and support provided on the course platform were adequate.
13. I can apply the knowledge created in this course to my work or other related activities.
14. I was motivated to work through the course.
15. I feel like I achieved my personal goals for this course.
16. I enjoyed the course.
17. It is very likely to revisit the course materials in the future.
18. It is very likely to recommend this course e.g. to a colleague or friend.

These statements define the five dimensions of learning experience (Appendix 1 – Evaluation plan):

- Learning Experience [LX]: Statements 5 to 11
- Platform Ease of Use [PEoU]: Statements 1 to 4 & 12
- Confirmation of Expectations [CONF]: Statements 13 & 15
- Satisfaction [SAT]: Statements 14 & 16
- Continuance Intention [INT]: Statements 17 & 18

Results are presented in Figure 45, were percent agreeing (Strongly agree and Agree) is used.

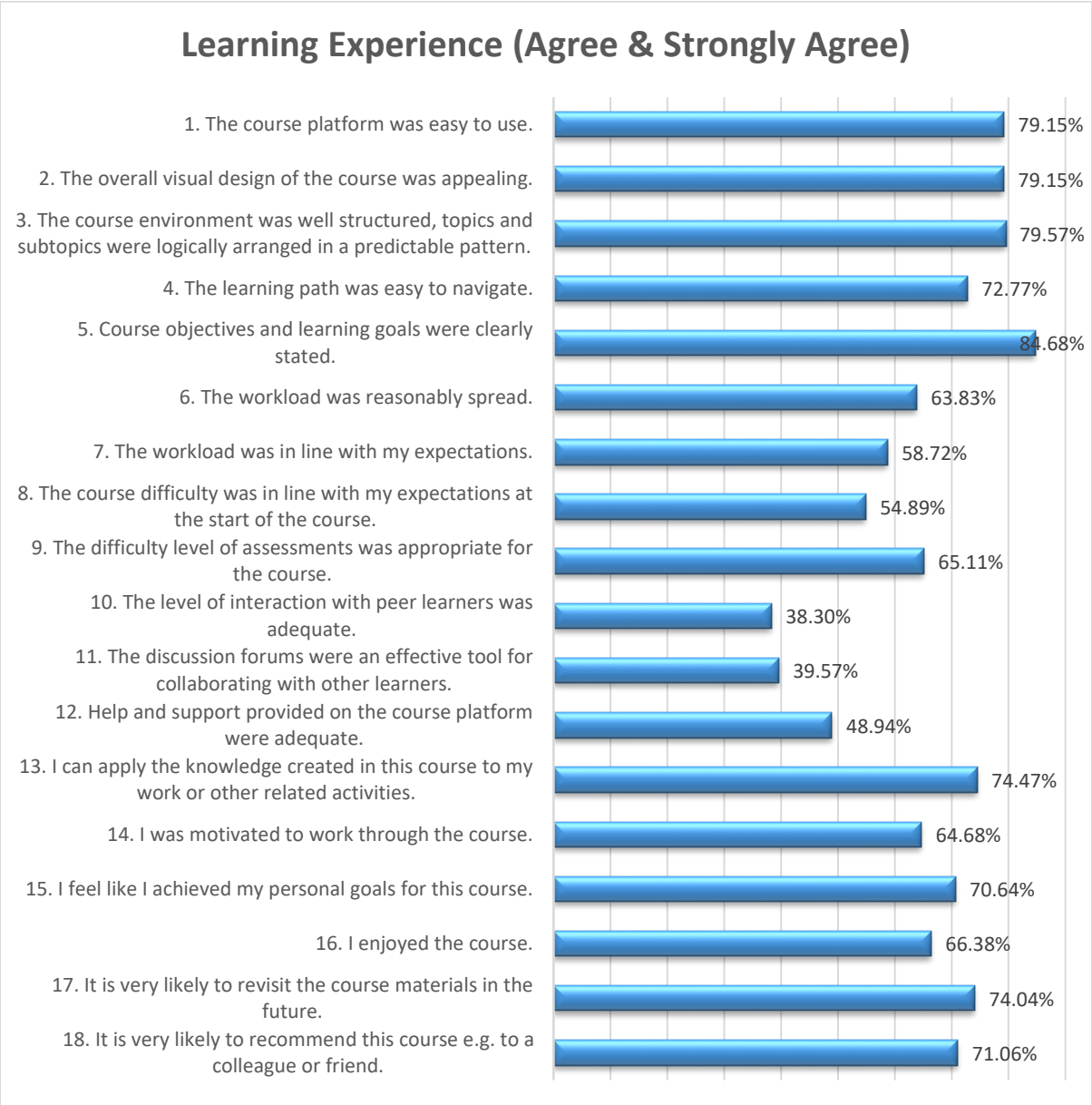


**Figure 45.** Percentage of Agree & Strongly Agree to 18 Learning Experience statements

As we can see, dimension “Platform Ease of Use” scores high almost in all statements, as well as dimensions “Confirmation of Expectations” and “Continuance intension”. On the other hand, participants appear to face problems with the level of interaction with peers in the course, the course difficulty and the required workload.

In Figure 46, a comparison of the mean values for each dimension of Learning Experience between the three targeted groups is displayed. As we can note, Higher Education Students report lower mean ratings for all dimensions of the Learning Experience [LX]. The least mean rating is reported from Higher Education Students and is related to Satisfaction [SAT].

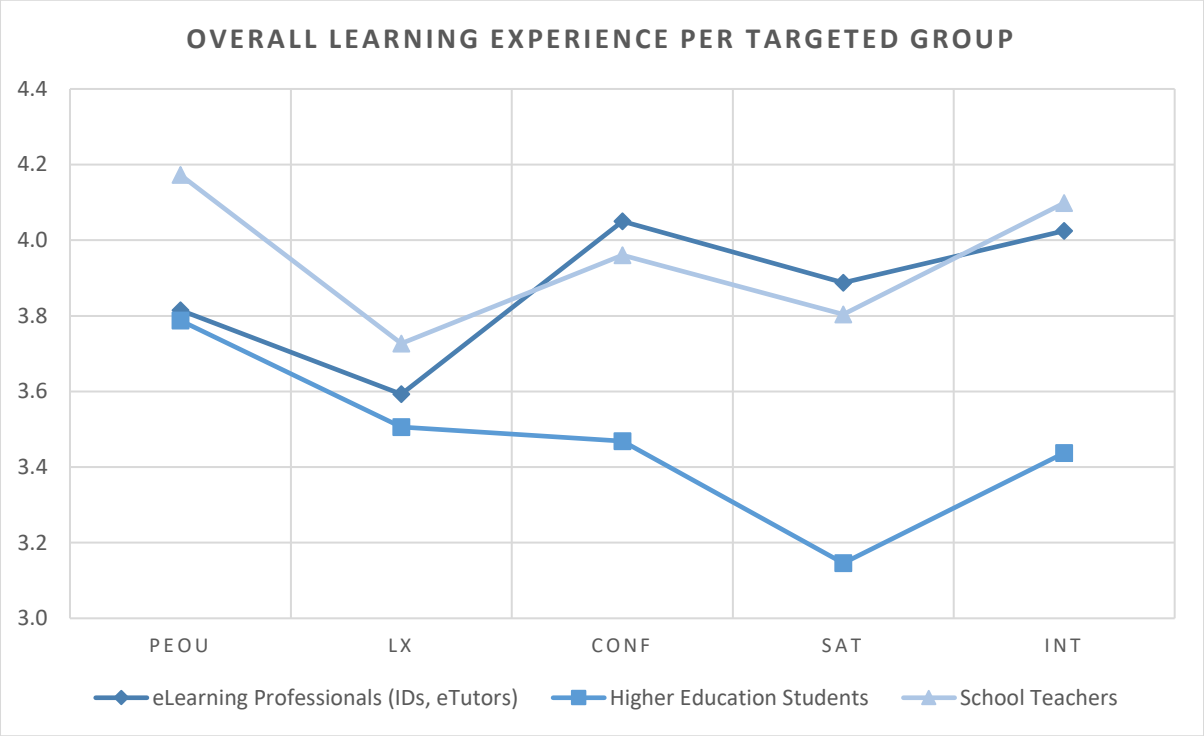


**Figure 46.** Comparison of the dimensions of Overall Learning Experience between the three targeted groups

Platform Ease of Use [PEoU] scores high among all targeted groups. E-Learning Professionals and School Teachers, that completed the course, report high Confirmation of Expectations [CONF], they intend to revisit the course material and recommend the course to a friend [INT].

### 5.5.3 Relationship between the Overall Learning Experience and EDL competences advancement

#### *5.5.3.a Learning Experience [LX] to EDL competences advancement*

Relationship between the Learning Experience (LX – statements 5 to 11) and the reported EDL competences advancement is shown in Figure 47 It seems that the reported Learning Experience is positively related to EDL competences advancement.

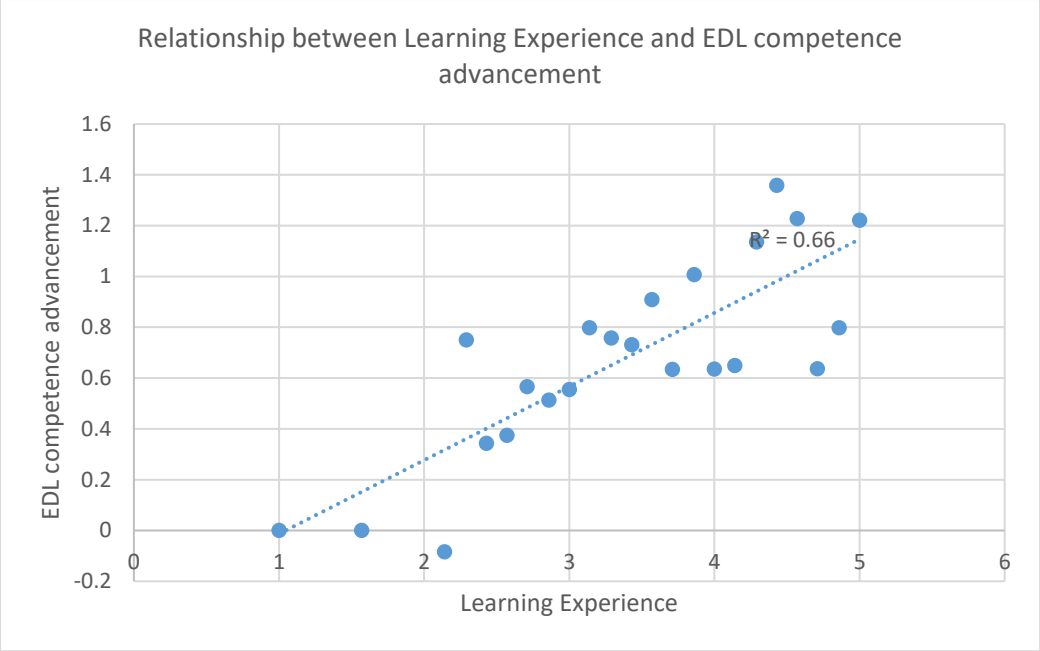


**Figure 47.** Learning Experience [LX] to EDL competences advancement

### *5.5.3.b Platform Ease of Use [PEoU] to EDL competences advancement*

Relationship between Platform Ease of Use (PEoU– statements 1 to 4 & 12) and the reported EDL competences advancement is shown in Figure 48. The reported Platform Ease of Use is strongly positively related to EDL competences advancement.

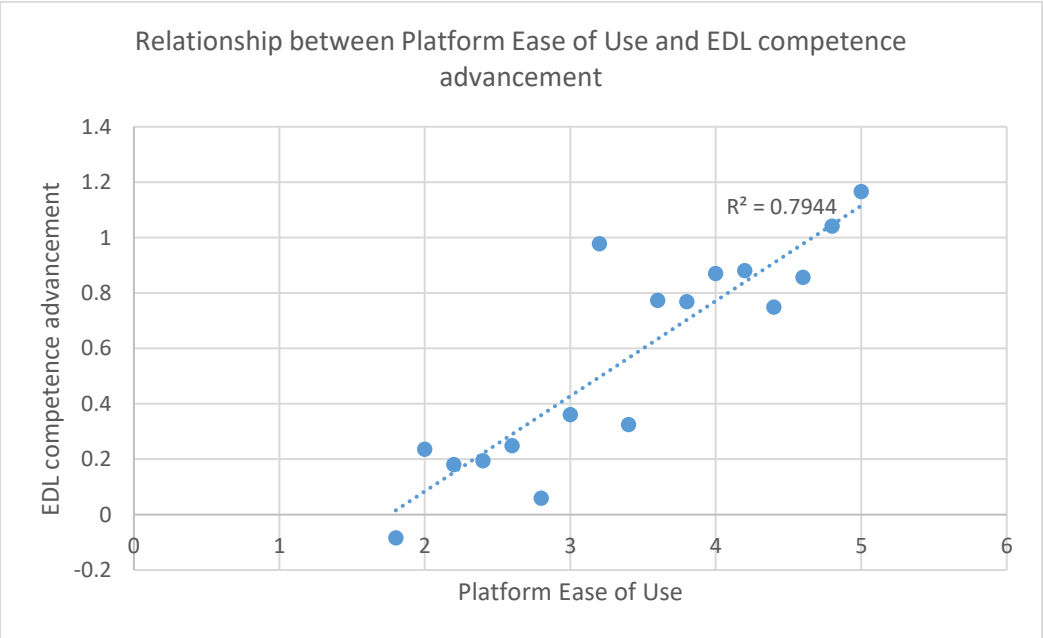


**Figure 48.** Platform Ease of Use to EDL competences advancement

### *5.5.3.c Confirmation of Expectations [CONF] to EDL competences advancement*

Relationship between the Confirmation of Expectations (CONF – statements 13 & 15) and the reported EDL competences advancement is shown in Figure 49. The reported Confirmation of Expectations [CONF] is strongly positively related to EDL competences advancement.

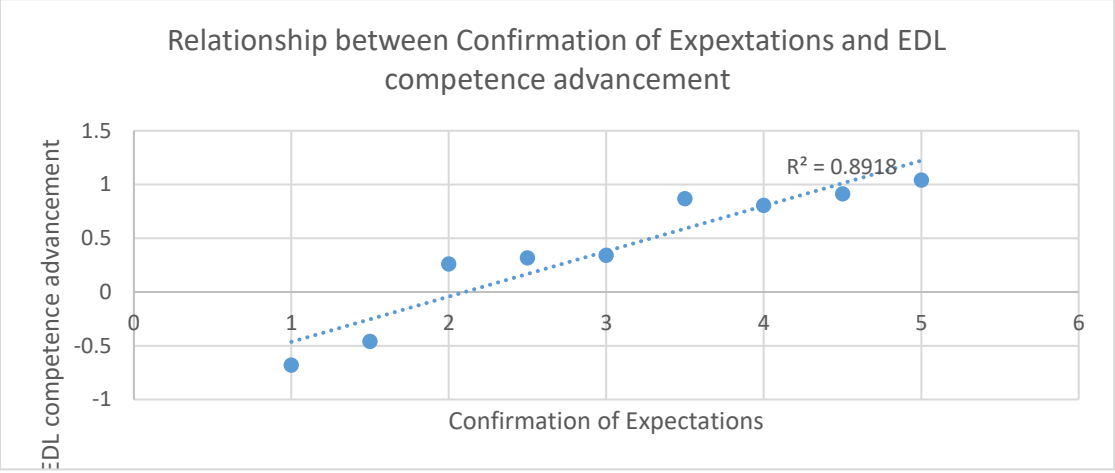


**Figure 49.** Confirmation of Expectations to EDL competences advancement

### *5.5.3.d Satisfaction [SAT] to EDL competences advancement*

Relationship between the reported Satisfaction (SAT – statements 14 & 16) and the EDL competences advancement is shown in Figure 50. The reported Satisfaction [SAT] is positively related to EDL competences advancement.

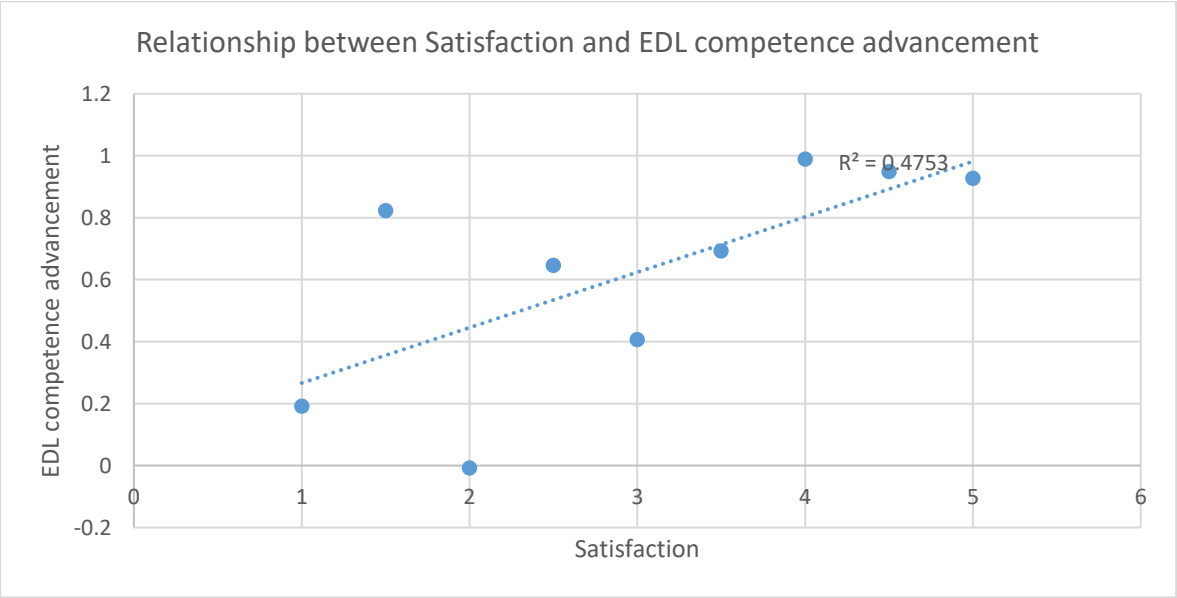


**Figure 50.** Satisfaction to EDL competences advancement

### *5.5.3.e Continuance Intention [INT] to EDL competences advancement*

Relationship between the reported Continuance Intention (INT– statements 17 & 18) and the EDL competences advancement is shown in Figure 51. The reported Continuance Intention [INT] is positively related to EDL competences advancement.

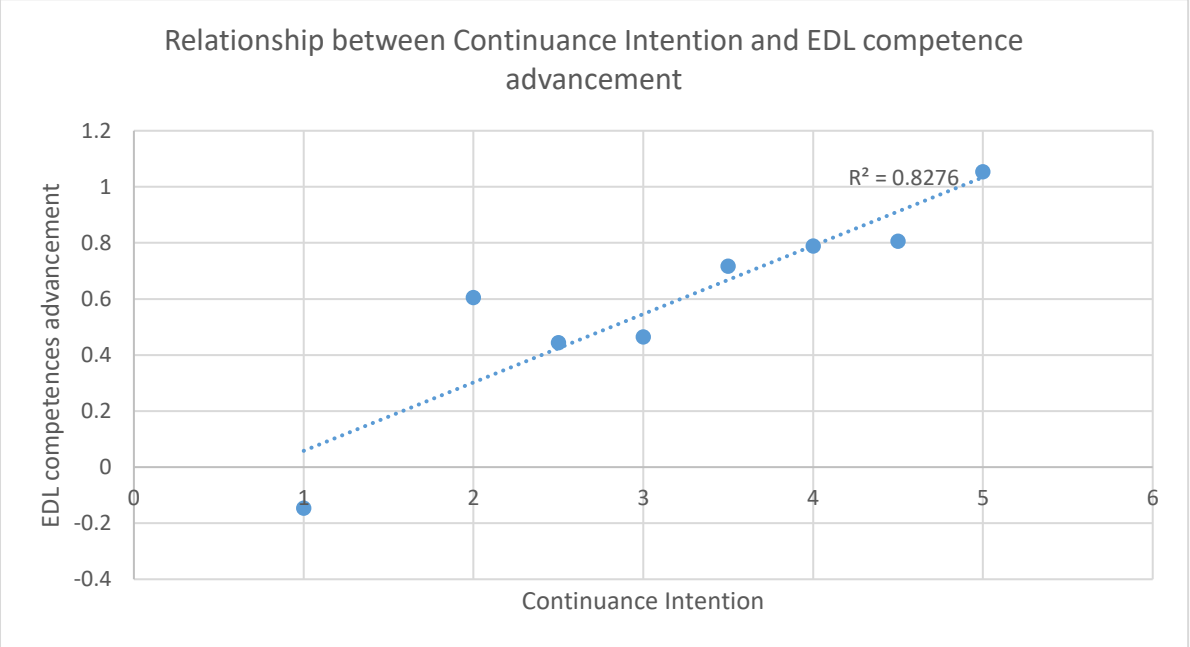


**Figure 51.** Continuance Intention to EDL competences advancement

## 5.6 Qualitative analysis of participants' comments in relation to their learning experience

### 5.6.1 Scope

The scope of this section is to analyze participants' comments in relation to their learning experience.

### 5.6.2 Background

The post-course survey questionnaire included two open-ended questions so that learners could optionally comment what they liked most and least about taking part in the course.

Out of the total 235 of post-course survey participants, 229 provided feedback on what they liked most and 198 on what they liked least about the MOOC.

Following a thematic analysis (Braun & Clarke, 2006) of survey participants' remarks we identified five central themes, as per below:

- Course Content (learning material included in modules)
- Instructional Design (content delivery methods, structure, activities, videos)
- Interaction (interaction with other participants or instructors, forums)
- Assessment (final MCQ assessment activity and quizzes throughout the course)
- Platform (intuitive use, technical issues, navigation)

Table 50. L2A MOOC comments summarizes the number of positive and negative participants' comments pre theme.

**Table 50.** L2A MOOC comments

| | Pros | Cons |
|---|---|---|
| Course Content | 119 | 78 |
| Instructional Design | 77 | 65 |
| Interaction | 18 | 24 |
| Assessment | 22 | 40 |
| Platform | 12 | 18 |

In the following sections we present an overview of our key conclusions for each theme along with a selection of salient comments, for both positive and negative issues reported by the learners.

### 5.6.3 Participants' positive comments

In this section we summarize the positive comments as derived from participants' answers in the question "What did you enjoy most about your MOOC experience?"

#### *5.6.3.a Course Content*

The majority of the learners (119 comments in total) provided positive feedback about the content of the MOOC. Many learners valued highly their hands-on experience, acknowledging the combination of Educational Data Analytics theory and practice through the use of existing educational data analytics tools from world market leaders. In particular, learners emphasized on module 5 presenting tools available in Moodle platform (12 comments).

- "Engaging with new material, paths not taken, and climbing up toward new peaks."

- “It was surprisingly more interesting than expected so it made me engage and get involved.”
- “I liked that fact that I learnt about data analytics much more than I could imagine.”
- “The updated information and the tools for educational data analytics in Moodle.”
- “Getting an introduction to three different kinds of LMSs.”
- “The hands-on-approach!”
- “I have especially enjoyed applying my knowledge, testing the different platforms and having a structured course.”
- “Learning about learning and teaching analytics and the explanation provided of why and how to do it.”
- “Learning things that you can apply in your work.”
- “I really liked the fact that I gained so much knowledge in order to enhance my teaching methods and generally my performance as a teacher and maybe as an instructional designer in the future.”
- “The relation to the job at school.”
- “It was an area I had given little thought to - so it now interesting to contemplate how I might put this into practice in the future.”
- “I feel confident in applying the learned knowledge and methods.”

#### *5.6.3.b Instructional Design*

There were many remarks about the instructional design of the course (77 in total) such as the course structure and the multimodal content. Most of the learners found the videos to be the most engaging learning method (29 comments), while they also acknowledged that the learning goals were clearly stated. Some learners expressed their gratification over the self-paced nature of the course.

- “The videos were very well made, explanatory, appealing.”
- “Very nice mixture of videos and text.”
- “I liked the self-paced nature of the course.”
- “Up-to-date learning material, interesting and very well presented.”
- “It was well-planned, my whole experience was positive, the material aroused my interest and though my time is restricted I wanted to log in again as soon as possible.”
- “the variety of the content really overcame my expectations...all forms of presentation were included and motivated the volume of my dedication”
- “The learning goals were clearly stated and the course well-structured for the most part.”

#### *5.6.3.c Interaction*

The forums of the course were quite popular (18 remarks) and contributed to the interaction with peers in discussing course topics.

- "I had the opportunity to view different opinions and experiences via forum discussions."
- "As this is a MOOC, I expected very little interaction with other participants - and I surprisingly had a feeling that I got a lot out of the exchange with other course participants. I really felt I was getting to know some of the other digital colleagues."
- "I enjoyed most the participation in discussions, where I could elaborate in other peers' opinions."

#### *5.6.3.d Assessment*

Several learners also commented positively the final MSQ assessment activity and quizzes throughout the course (22 comments).

- "Liked the test in the end, covered the course very well."
- "The quizzes that needed me to work with excel files in order to answer."

#### *5.6.3.e Platform*

Learners reported comments (10 comments) about the platform mainly focusing on its intuitive use.

- "How easy it was to use the portal."
- "I really enjoyed the online course. I thought it was well planned and laid out, easy for me to follow."
- "I enjoyed the course because the platform was easy to use and I achieved my personal goals."
- "The environment was well structured, the visual design of the course was appealing."

### 5.6.4 Participants' negative comments

In this section we summarize the negative comments as derived from participants' answers in the question "What did you like least about taking part in the MOOC?"

### *5.6.4.a Course Content*

Most of the negative remarks regarding course content (76 comments in total) were related to the detailed, quite specialized and complex content provided for specific LMS (26 comments), especially since learners could not practice using these tools (module 6 and 7). Many learners also criticized the information overload throughout the whole course (20 comments), the overlaps across modules (13 comments) and the level of difficulty (9 comments). Further, there were comments about the quality of some videos in specific sections (7 comments).

- “it was a lot information, which I had to learn in a relatively short time; some information esp. regarding Learning Management Systems (LMS) are easier to learn in practice”
- “Module 6 and 7. Maybe because I did not have a lot of time to complete these two modules. However, I found them very difficult to complete...and the questions in the final assessment were difficult as well. The topic of these modules was quite complex and especially if one cannot use the tools practically.”
- “I didn't like the fact that we had to attend three LMS and not only one (for example MOODLE) and penetrate more via practice.”
- “Platform specific models offered redundant content and were hard to link with the initial modules.”
- “Module 6 and 7 are - for me - not interesting and I wasn't highly motivated to spend much time with these topics.“
- “Content overload and difficulty. Too much information.”
- “same theory parts were repeated in different modules, making me losing interest”
- “The course material volume exceeded my expectations. I had to leave important work behind in my personal and professional life.”
- “I think that the material could have been structured a bit better, in the sense that I found some overlaps in the different sections, and also found some material being repeated towards the end. Although the modules were pretty clear, I think it could have been organised a bit better as a course.”
- “Constant repetitions of the same concepts, especially in Modules 2-3-4 and lack of opportunity to test the platforms in Modules 5-6-7.”
- “the videos - they were not relevant to the course and tiring”

### *5.6.4.b Instructional Design*

The critical feedback of the participants for this theme (56 comments in total) was centered on the required workload (31 comments), that as they reported, was much higher than the expected compared to the required time commitment anticipated in syllabus of the course.

Some learners acknowledged that the extension of the duration of the course may lighten the load of content presented each week. There was also some criticism (17 comments) about the multi-level structure and increased number of HTML pages making learners feeling demotivated, nevertheless the multiple level structure of the course highly depends on platform's functionality. Few learners commented the quality and length of some videos and that there was too much reading material (7 comments).

- "I needed to spend a lot of time to the course. Much more than you suggest!"
- "I didn't like that I spent more time than I anticipated."
- "The workload. I am the type of learner who takes notes in order to master new knowledge. It got time consuming and hectic sometimes."
- "I didn't have the time to follow the course as I would like to. Better to spread the course to more weeks in order to be easier to be followed by people who would like to but they have many obligations."
- "The confusion structure of the content (many levels, sub-levels and so on)."
- "The intricate, mazy learning path. Too many steps in order to complete a single Module."
- "The structure of the content in hundreds of html pages was at times infuriating."
- "some videos were way too long, not very well recorded, sometimes attention diverted"

### *5.6.4.c Interaction*

Some learners did not enjoy the forums included in the course e.g. since they experienced lack of interaction with their peers and e-tutors, while others seem concerned about the quality of the discussions (24 comments in total).

- "lack of interaction with other students and teachers, lack of contact with teachers and module creators"
- "I didn't get the feeling that the forums and their threads/posts would help me through the course. (I've got to say: I took this course with a group already and we exchanged there.)
- "I never interacted with somebody, because I started late and that is what I really missed."
- "The forum posts seemed unnecessary to me, but possibly also because I was so late and felt there was no one else there."
- "Quality of discussions was very variable."
- "Discussion forums - were disappointing. I was expecting to get more from them. Personally, I put quite a bit of work into them but continually asked myself why I was

bothering - they are not part of the assessment and many contributions were very weak."

- "I know from other courses, that there are weekly live-webinars that would help my personal learning style."

#### *5.6.4.d Assessment*

Learners expressed their frustration (40 comments) about the type of the final assessment using MCQs, the increased number of questions, the fact that no meaningful feedback was provided for wrong answers, as well as about the questions focusing on the three LMS reporting details and on content that was not clearly explained in corresponding modules (e.g. module 6 and 7).

- "I am not a great multiple-choice enthusiast - and even though I passed the final test, I still feel that I would have preferred a slightly more flexible type of assessment. However, I do understand the need for automatic grading - and given the limitations of a MOOC course environment, I thought that the assessment process was transparent and encouraging."
- "too long final assessment"
- "The tests because I couldn't know the right answers, no feedback"
- "having assessment questions about different LMS reporting details, like certain columns etc. - I feel like I don't need to know this by heart"
- "included questions based on the content not covered or not clearly explained in corresponding modules"
- "Some quizzes esp. in module 6 were not related to content explained before (learning theories), so it was hard to answer the questions"
- "Another major annoyance for me was pedagogical. Although I thought the overall learning design was excellent, I was frustrated with the quizzes and the lack of explanations of why particular answers were wrong. I had to spend much time 'guessing' the right answers and when the system told me what answer was correct, I had to go back over the learning material for figure out what misconceptions I had. This is a classic problem of lack of meaningful feedback provided. I suggest that the quiz sections are reviewed and explanations provided as to why the required answers were correct and where to look if wrong answers were selected or provided. The 'fill-in' responses that I got wrong were most off-putting because I had no clue how to arrive at the correct answers."

#### *5.6.4.e Platform*

The post-course survey reported 18 comments on platform issues referring mainly to the long page loading time and the lack of ease of navigation resulting in low discoverability of a specific subsection of the course or a forum message. Learners also reported that some quizzes did not work properly.

- “System performance: poor loading times (tried from different machines, different access points, asked colleagues, same result = slow homepage). Checking a green box makes the page load again, which takes forever ...”
- “Platform loading”
- “The delay after clicking to get to the next page was frustrating.”
- “Hard to monitor the forums messages. Hard to find the replies of your comments.”
- “The way the course was "sectioned"... sometimes I felt the material was divided into too many small bits, and we had to click the next window very frequently, and it was, thus, sometimes more difficult to find an information that we wanted to revisit, for example.”
- “Some quizzes in modules 6 and 7 were faulty: they did not work properly, as has been mentioned by several peers in discussion forums, and they included questions based on the content not covered or not clearly explained in corresponding modules (in particular SCORM statuses in module 6).”

## 5.7 Conclusions

In this section we examined participants’ learning experience as is was reported in the post-course survey from the 235 participant who completed the course. The evaluation of the learning experience had three parts:

- Learning experience per module
- Overall learning experience of the course
- Participants’ comments in relation to their learning experience

The first part revealed the strengths and weaknesses per module. More specifically, participants rated high their agreement to statements related to the instructional design, across all modules. Statements about the content (learning materials, up to date information) also score relatively high. Instructional videos and comprehensiveness of the content seems problematic in modules 6 and 7. Further readings, learning activities and assessment tasks need attention as they score relatively low in all modules.

The second part revealed problems in learning experience throughout the course related mainly to the workload and the course difficulty, as well as the lack of interaction and collaboration in the course. Attention is needed to the fact that one third of participants that completed the course do not agree with statements related to satisfaction ("I enjoyed the course" and "I was motivated to work through the course").

Next we examined the effect of the Overall Learning Experience (analyzed in Learning Experience, Platform Ease of Use, Satisfaction, Confirmation of Expectations and Continuance Intension) to EDL competences advancement and concluded there is strong positive relation of all dimensions of the Overall Learning Experience to EDL competence advancement.

The third part, where participants were asked about what they liked most and least in the course, provides useful insights for the evaluation. Many positive comments were about the platform's ease of use. Learners also, valued highly their hands-on experience emphasizing on module 5, presenting tools available in Moodle platform. They liked the multimodal content, highlighting videos as the most engaging learning method. They also appreciated and the self-paced nature of the course and the fact that learning goals were clearly stated. The forums were quite popular and contributed to the interaction with peers in discussing course topics. Several learners also commented positively the final MSQ assessment quiz and the activities throughout the course.

Negative remarks were related to the detailed, quite specialized and complex content provided for specific LMS, especially since learners could not practice using these tools, the information overload throughout the whole course, the workload that was much higher than the expected compared to the needed time commitment defined in syllabus of the course, the overlaps across modules, and level of difficulty. They reported lack of interaction with their peers and e-tutors, while others seem concerned about the quality of the discussions.

Participants also mentioned their concerns about the final assessment, the fact that no meaningful feedback was provided for wrong answers, as well as about the questions focusing on the three LMSs reporting details and on content that was not clearly explained in corresponding modules. They also reported that some quizzes did not work properly. Issues concerning the use of platform include problems with the navigation through the content and difficulty to locate posts in the discussion forums.

## 5.8 Areas and recommendations for possible improvement

**Table 51.** Areas and recommendations of possible improvement

| Area | Issue | Possible solution | Priority level |
|---|---|---|---|
| Learners profile | 1. The analysis of participants' profile revealed three major targeted groups namely eLearning Professionals, School Teachers and HE Students. | Leverage this information to properly adjust content and activities to customized per group. [*MOOC Content/Activities: All Modules*] | High |
| | 2. E-Learning professionals' completion rate is significantly lower (11,87%) than the completion rate of School Teachers (24,37%) and Higher Education Students (36,09%), while HE students have significantly higher completion rate than the other two targeted groups. E-learning professional is the group that indicates lower external motives among the groups. Completion rate is highly impacted by participants' external motives such as earning a certificate. | In order to increase learners' external motives, we suggest to incorporate competence credential (i.e competence badge) to be 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. To earn the competence credential the learner needs to achieve all the learning outcomes as specified by the respective statements of the dimension. [*MOOC Educational Design: Gamification*] | High |
| | 3. HE students, which are the group that reported significantly lower EDL competence advancement, also reported significantly lower satisfaction from the learning experience. | Given the fact that HE students in general do not have professional experience, we should motivate these learners to take ownership of their | Medium |

| | | | |
|---|---|---|---|
| | These participants also reported higher external motivation and had significantly higher completion rates. | learning by making meaningful connections that can be applied to their future professional role. [*MOOC Educational Design: Gamification*] | |
| | 4. HE students are significantly younger than other targeted groups. Their mean age is 29 years old. | Add gamification to attract millennials and increase participants' motivation and engagement. [*MOOC Educational Design: Gamification*] | Medium |
| Content | 5. Participants reported overlaps in content material "Constant repetitions of the same concepts, especially in Modules 2-3-4" | Content material within and across modules needs to be reviewed and updated so as to minimize overlaps, be more concrete and concise. [*MOOC Content/Activities: Modules 2-3-4*] | High |
| | 6. Problematic comprehensiveness of the content in some modules. Participants' agreement in the statement "The content per module was presented in a comprehensible manner" for Modules 6 and 7 was relatively low. | Combine theory to practice and avoid complex and very detailed reporting information in LMS-related content that users cannot practice. [*MOOC Content/Activities: Modules 6-7*] | High |
| | 7. Several participants reported information overload throughout the entire course and complained about the level of difficulty | Review detailed, quite specialized and complex content. [*MOOC Content/Activities: All Modules*] | Medium |
| | 8. Participants negatively commented the quality of some videos in modules 6 and 7. | Videos in specific sections need to be cross-checked for quality assurance. [*MOOC Content/Activities: Modules 6-7*] | High |

| | | | |
|---|---|---|---|
| | 9. Participants reported that some videos are very long. | Video lectures or interviews longer than 10' should be removed as they are considered disengaging for the learners. [*MOOC Content/Activities: All Modules*] | Medium |
| Workload | 10. In the pre-course survey, participants reported they were planning to spend **3,72** hours per week on average, but 70% of the participants in the post-course survey reported they spent more than 4 hours on average per module. | The workload should be distributed in more weeks, extending the course duration so as to lighten the load of content presented each week [*MOOC Educational Design: Syllabus*] | High |
| | 11. As derived from the quantitative analysis, "confidence in finishing the course according to the anticipated time commitment as defined in the syllabus" is strongly related both to course completion, as well as to EDL competences advancement. Nevertheless, the statement "*The workload was in line with my expectations*" scored relatively low in the post-course survey (63,83% agreement) | Provide guidelines and time scheduling that clearly communicate to the learners how much time should be allocated per each module. [*MOOC Educational Design: Syllabus*] | Medium |
| | 12. Some participants reported (31 negative comments) that "workload that was much higher than the expected compared to the needed time commitment defined in syllabus of the course" | Consider revising the overall workload of the course [*MOOC Educational Design: Syllabus*]. | Low |
| Learning activities | 13. Learning activities scored relatively low across all modules. | Self(/Peer)-graded authentic activities should be added at the end of each topic, to enable learners to put | High |

| | | | |
|---|---|---|---|
| | | theory into practice, boost motivation and engage them productively to the content. [*MOOC Content/Activities: All Modules*] | |
| | 14. Interaction with learning content | Add gamified activities to enhance learners' interaction with content material. These activities could be MCQs related to the video watched or the topic studied providing regular and meaningful feedback to the learners. [*MOOC Educational Design: Gamification*] | High |
| Feedback | 15. Participants reported "*lack of meaningful feedback provided*" in quizzes | Provide regular feedback with explanations why the required answers in MCQ activities are correct and where to look if wrong answers were selected or provided. [*MOOC Educational Design: Gamification*] | High |
| | 16. Grading and feedback for human-assessed authentic activities. | Use clear grading rubrics to **self-grade** or **peer grade** learning activities. [*MOOC Content/Activities: All Modules*] | Medium |
| | | Add gamification elements like points and progress bar to provide feedback for content and activities completion. [*MOOC Educational Design: Gamification*] | Medium |
| Assessment | 17. Assessment tasks per module scored relatively low | Consider revising the final assessment exploiting Use- | Medium |

| | | | |
|---|---|---|---|
| | across all modules. Furthermore, learners expressed their frustration (40 comments) about the type of the final assessment using MCQs. On the other hand, several participants reported they liked the quizzes "*that needed me to work with excel files in order to answer*". | case scenarios to create more authentic assessment activities. [*MOOC Educational Design: Assessment for Certification*] | |
| | 18. Participants complained about some final assessment questions focusing on the three LMS reporting details and on content that was not clearly explained in corresponding modules | Consider revising assessment in modules 5, 6, 7 [*MOOC Content/Activities: Modules 5-6-7*] | Medium |
| Platform | 19. Structure of the content | We need to decrease the detailed organization of topics and subtopics, providing a clear learning path. | Medium |
| | 20. Navigational issues | It is essential to improve navigation and discoverability by using breadcrumb or incorporating a navigation map on top of the screen. | Medium |
| Interaction with peers | 21. Participants reported (24 comments) lack of interaction between peers in the course. Furthermore only 38,3% of participants agreed with the statement "The level of interaction with peer learners was adequate. | To enhance interactivity between peers, implementation of gamification features, such as points and/or badges for forum participation is widely used. Gamification is used to support collaboration among participants, handle isolation and improve social participation (Antonaci et al., 2018) [*MOOC* | High |

| | | | |
|---|---|---|---|
| | | *Educational Design: Gamification*] | |
| | 22. Lack of collaboration. Only 39,57% of participants agreed with the statement The discussion forums were an effective tool for collaborating with other learners. | Add forum discussions related to human assessed learning activities to enhance collaboration. [*MOOC Content/Activities: All Modules*] | High |

# Chapter 6 – Discussion

## 6.1 Findings / Conclusions

Massive Open Online Courses (MOOCs) are widely used by professionals as a flexible and cost-effective tool to improve their professional competences. Despite MOOCs' potential, significant challenges are reported in literature related to course completion, participation, motivation and credible assessment. Several good practices for the evaluation of MOOCs have been documented in order to reveal useful insights towards improving of their quality.

Most research examine factors that affect completion rates and ignore the perceived competence advancement. The scope of this study is to explore the factors which affect the perceived competence advancement of participants, focusing on the learners' profile and the reported learning experience upon completion.

To this end, an evaluation framework for MOOCs for Professional Development, focused on their contribution to the advancement of the perceived competence level of the participants, was proposed. Furthermore, this methodological framework was validated through the successful application to the Learn2Analyze MOOC (L2A MOOC), a competence based MOOC4PD aiming to support the development of the basic competences for Educational Data Analytics of Online and Blended teaching and learning. Our goal was to leverage the outcomes for improving the educational design of the course, the learning environment and thus to better meet the learning needs of our MOOC participants in future versions.

The core question of the evaluation is:

> *"What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the competences of participants?"*

To identify the main targeted groups participated in the MOOC and describe their profile, data on demographic characteristics, motives, and background knowledge on the subject matter, were collected using questionnaire-based surveys (pre-course survey). This data were correlated with their learning experience and the achieved learning outcomes that were collected through a post-course survey.

The analysis of L2A MOOC participants' profile revealed three main targeted groups, namely eLearning Professionals, Higher Education Students, and School Teachers. The examination of the reported EDL competences advancement between the three targeted groups indicates that, although external motives had strong positive relationship to course completion, there was no relation to EDL competence advancement. On the other hand, it seems that there is a

positive relationship between the GRIT score (passion and perseverance for long-term and meaningful goals) and EDL competences advancement. The hours that the participants were planning to spend in the course are very important as they seem to have strong relationship not only with the course completion, but with the EDL competences advancement as well. Furthermore, the examination of the effect of self-confidence (confidence in completing the course on time and confidence in learning the material) indicates positive relationship to EDL competences advancement.

Learning experience was measured, both per module and through the course, in terms of the overall level of satisfaction, satisfaction with the platform, the workload, the level of interaction, the content (graphics, videos, complementary material, learning activities, and assessments), and the continuance intention. The first part of the post-course questionnaire revealed the strengths and weaknesses per module. The second part revealed problems in learning experience throughout the course.

Useful insights were revealed from the examination of participants' learning experience as is was reported in the post-course survey in relation to EDL competences level advancement. The study indicates strong positive relation of all dimensions of the Overall Learning Experience to the reported EDL competences advancement.

In addition, the post-course survey questionnaire included two open-ended questions so that learners could optionally comment what they liked most and least about taking part in the course. Using Braun and Clark's method for thematic coding five central themes were identified namely (a) course content, (b) instructional design, (c) interaction, (d) assessment, and (e) platform. The analysis of the learner's comments confirms the results of the quantitative research.

## 6.2 Goal achievement

Participants were well-distributed in age, gender and professional background. The implementation of the Learn2Analyze MOOC indicates relatively high completion rate and the completion of the course resulted in one-level advancement of competences for each EDL competence dimension. The evaluation framework identified areas of possible improvement for the offered competence-based Professional Development MOOC, along with recommendations to better the quality of the learning experience and effectively cultivate the competences of participants.

*Completion rate*

During L2A MOOC Phase A, **1920** users enrolled from **85** countries. Out of these, **1147** participants answered the pre-course survey and started the MOOC. These participants were distributed in **75** countries. **235** participants successfully completed the L2A MOOC and received their certificate of achievement (Completion Rate = 20.45%).

*Age diversity*

Half of the participants were between 18 and 41 years old, while 75% fell between 18 and 49. The age of participants follows the normal distribution with mean value 40.68 and standard deviation 10.51.

*Gender diversity*

Although approximately 2.61% of the participants chose not to respond to the question related to their gender, the participants were almost evenly split in terms of gender with 41.67% male and 55.72% female.

*Geographical distribution*

Although the participants are distributed in 75 countries around the world, the majority (86%) comes from Europe, mainly from Greece (n=492), Germany (n=220) and Italy (n=110), which are the core Learn2Analyse partners' countries.

*Current job sector*

68.87% (n=790) of the participants reported that they work in K12 and Higher Education while 16.83% (n=193) come from the Industry/Business, with 8.98% (n=103) from Large enterprises (> 100 employees) and 7.85% (n=90) from SMEs. Only 5.32% (n=61) reported “Self-employed” and 3.92% (n=45) reported “Not-employed”.

*Professional role*

29.38% (n=337) of the participants describe themselves as eLearning Professionals, while 11.60% n=133 are Higher Education Students and 36.53% (n=419) are School Teachers.

*Years of experience in professional role*

Participants reported on average 9.99 years of experience in professional role. More particularly 43.50% (n=499) of the participants reported 1-5 years of experience in their professional role, 17% (n=195) reported 6-10 years, 27.46% (n=315) reported 11-20 years and 12.03% (n=138) reported more than 20 years of experience.

*Years involved in digital teaching and learning*

Participants reported on average 7.44 years of experience in online teaching and learning. More particularly 53.18% (n=610) of the participants reported 1-5 years involved in Digital T & L, 24.15% (n=277) reported 6-10 years, 18.66% (n=214) reported 11-20 years and 4.01% (n=46) reported more than 20 years.

*EDL competence level advancement*

The initial EDL competence level for all dimensions, reported in the pre-course survey, was approximately 2 corresponding to an Advanced beginner level. The achieved EDL competence level for all dimensions, reported in the post-course survey is approximately 3 corresponding to Competent level. Thus, the completion of the course resulted in one-level advancement of competences for each EDL competence dimension.

*Recommendations for improvements*

In the Post-course survey 205 participants in total, reported recommendations for improvements, mainly related to:

- the course content (76 comments)
- the quizzes and the type of the final assessment (40 comments)
- the workload (31 comments)
- the discussion forums (24 comments)
- the platform functionality (18 comments)
- the multilevel structure of the course (16 comments)

## 6.3 Limitations

The main limitation of the current study is based on the fact that answers to the post-course survey were limited to participants that completed the course and thus to participants that are in general more motivated. Demographic characteristics (age) of the post-course survey sample (participants who completed the course) show significant difference with the demographics of the course's population (calculated from the pre-course survey data). Furthermore, higher education students seem to be overrepresented in the post-course survey, as opposed to eLearning professionals who are underrepresented.

Second, additional factors such as educational background, comfort with technology and experience with MOOCs should be also examined in relation to course completion and to EDL competences level advancement. In the current study, these factors were excluded as they showed insufficient variability.

## 6.4 Further research

The proposed evaluation framework identified areas of possible improvement for the offered competence-based Professional Development MOOC, along with recommendations to better the quality of the learning experience and effectively cultivate the competences of participants. Further research is needed towards revising the L2A MOOC, based in the proposed recommendations, especially by incorporating gamification elements to increase learners' motivation and engagement, and examining possible improvement in learning experience, retention and competence advancement.

Furthermore, the quantitative approach which was adopted in this study revealed useful insights about the factors that motivate users and affect retention and competences cultivation. Nevertheless, more in-depth qualitative research is recommended to obtain a broad understanding of MOOC user behavior.

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# Appendix 1 – Evaluation plan

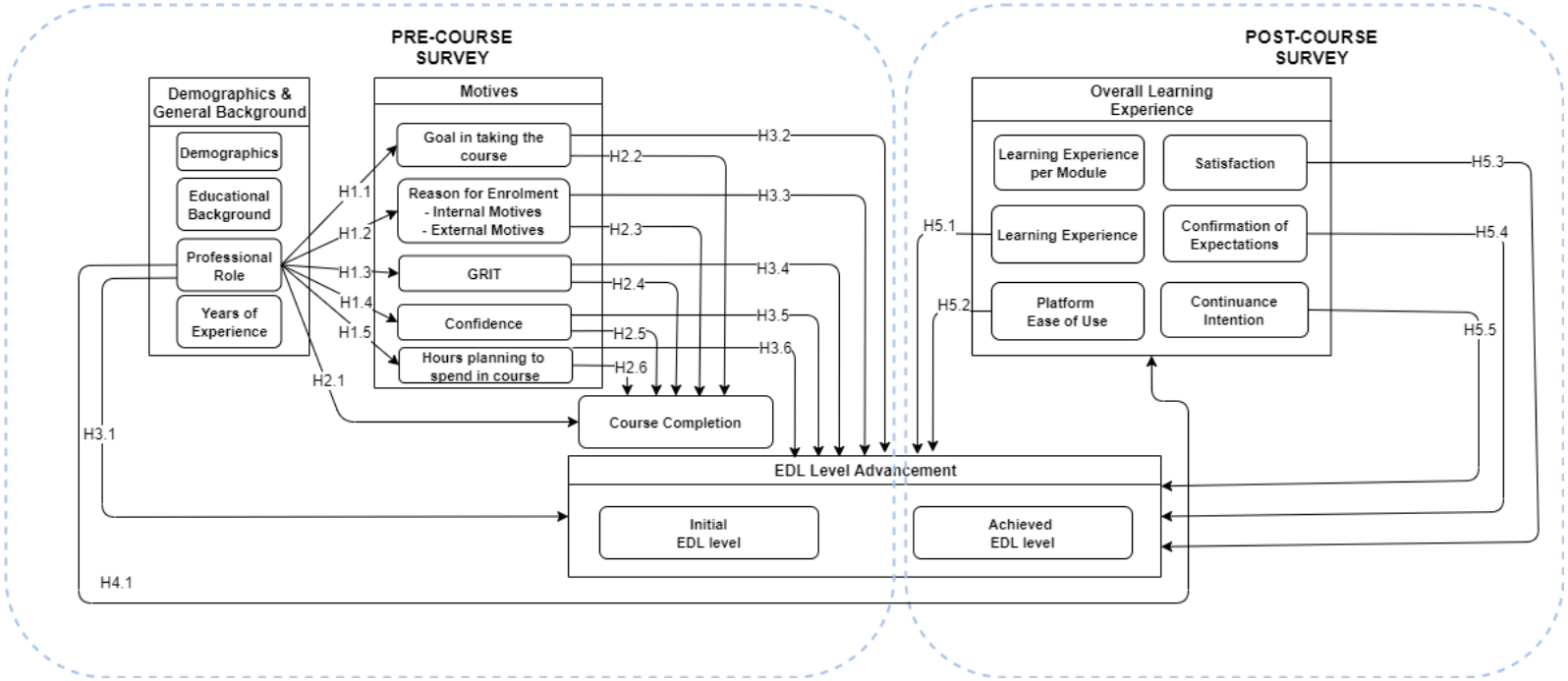


**Figure 52.** Evaluation Plan

The core question of this survey is:

- What are the areas of possible improvement for the offered competence-based Professional Development MOOC to better the quality of the learning experience and effectively cultivate the Educational Data Literacy Competences that are described in the L2A EDL competence profile?

The core question is investigated at the following dimensions:

1. What are the main **targeted groups** participated in the L2A MOOC and what is their profile? What are the individual characteristics and key differences of participants' targeted groups in relation to their **motives, self-confidence, GRIT and initial EDL competence**?
2. What characteristics of **participants' profile** are related to the **course completion**?
3. How does the characteristics of **participants profile** affect their **EDL competences advancement**?
4. What is the perceived learning experience per module as reported by participants that completed the L2A MOOC? What is the perceived **overall learning experience** per **targeted group**?
5. How does the overall learning experience affect competences advancement?

**Table 52.** Evaluation plan

| Dimensions | Research Questions |
|---|---|
| **DEM**: Demographics<br>**GB**: General Background<br>**ROLE**: Professional Role<br>**YoE**: Years of Experience in Digital Teaching and Learning<br><br>MOTIVES<br>**GOAL**: Goal in taking the course<br>**RfE**: Reasons for Enrolment<br>**MOT.INT**: Internal motives<br>**MOT.EXT**: External motives<br>**GRIT**: 8 items short GRIT scale | Learners profile<br>What is the difference in Motives between IDs, eTutors and School Teachers?<br>**Variables:** Goal in taking the course (GOAL), Reasons for Enrolment (RfE), GRIT score (GRIT), Confidence in completing the course (SelfConf)<br>**Groups:** IDs, eTutors and School Teachers<br>What is the relationship of Motives on Course Completion amongst MOOC Participants?<br>**Dependent Variable:** Course Completion (certificate)<br>**Independent Variables:** Goal in taking the course (GOAL), Reasons for Enrolment (RfE), GRIT score (GRIT), Confidence in completing the course (SelfConf)<br>**Group:** MOOC Participants<br>Participants' Learning experience<br>What is the perceived overall learning experience per module as reported by participants that completed the L2A MOOC?<br>**Variables:** Overall Learning Experience [LXM+LX+PEoU+SAT+CONF+INT]<br>**Groups:** MOOC Participants<br>What is the perceived overall learning experience per targeted group? |

| | |
|---|---|
| **SelfConf**: Confidence in completing the course<br><br>LEARNING EXPERIENCE<br>**LXM**: Learning experience per module<br>**LX**: Overall Learning Experience<br>**PEoU**: Platform Ease of Use<br><br>**SAT**: Satisfaction<br>**CONF**: Confirmation of expectations<br>**INT**: Continuance Intention<br><br>EDL LEVEL ADVANCEMENT<br>**EDL**: EDL Level Advancement = Achieved EDL Level - Initial EDL Level | **Variables:** Overall Learning Experience [LXM+LX+PEoU+SAT+CONF+INT]<br>**Groups:** IDs, eTutors and School Teachers<br>EDL Level Advancement<br>What is the difference in EDL Level Advancement between IDs, eTutors and School Teachers?<br>**Variable:** EDL Level Advancement [EDL]<br>**Groups:** IDs, eTutors and School Teachers<br>What is the relationship of Motives, Learning Experience and Satisfaction on EDL Level Advancement amongst MOOC Participants?<br>**Dependent Variable:** EDL Level Advancement<br>**Independent Variables:** Motives [GOAL+RoE+GRIT+SelfConf], Learning Experience [LXM+LX+PEoU] and Satisfaction [SAT+CONF+INT]<br>**Groups:** MOOC Participants<br>How does the overall learning experience affect competences advancement?<br>**Dependent Variable:** EDL Level Advancement [EDL]<br>**Independent Variables:** Overall Learning Experience [LXM+LX+PEoU+SAT+CONF+INT]<br>**Group:** MOOC Participants |

# Appendix 2 – Instruments

## Appendix 2.1 Pre-course Survey

***Section 1 – Invitation***

You are invited to participate in the Learn2Analyze MOOC Pre-Course Survey. Your responses to this survey will help us to evaluate the Learn2Analyze MOOC and improve it in future versions.

The survey is expected to take approximately 20 minutes to complete. You will be asked to provide answers to a series of questions related to your demographics and general background, your motives for enrolling in the Learn2Analyze (L2A) MOOC and your existing competence level per "Educational Data Literacy (EDL) Competence Profile (CP) Statement" for each competence dimension of the Learn2Analyze EDL Competence framework. Upon completion of the Pre-Course Survey you will receive the Learn2Analyze MOOC "Unlock Code". After the course opening (21st of October 2019), you can return to the Learn2Analyze MOOC on OpenCourseWorld (https://www.opencourseworld.de/pages/programmes.jsf#!/2287711/1700) and use this code as a key to unlock the Learn2Analyze MOOC content.

We greatly appreciate your willingness to share your time by participating. Your responses to these surveys will help us to improve the quality of the learning experience and to better our course offerings.

On behalf of the Learn2Analyze Consortium, we express our sincere thanks for your participation in our survey acknowledging that your insights on the questions in this survey will prove invaluable.

How did you learn about the Learn2Analyze MOOC?

- A Mailing List
- A Facebook Group posting
- A LinkedIn Group posting
- A Twitter Group posting
- A Ning Group posting
- A Blog Posting
- A Newsletter Posting
- An Article Posted Online or Printed
- A MOOC Aggregator or Course Catalogue Posting

- A Physical Event
- Other

Please define (name which one)

_____

***Section 2 - Consent form to participate in Web-based Survey***

**Title of Survey:** Learn2Analyze MOOC Pre-course survey Questionnaire

Purpose and Procedure:

The Learn2Analyze (L2A) is an Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' (Instructional Designers and e-Trainers) Competences in Educational Data Analytics. L2A is an action 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).

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

Please note:

1. The survey will be carried out from 01/09/2019 to 31/12 /2019.
2. Before you proceed to the survey questions, you will be asked to indicate your consent.
3. Should you decide you do not wish to further participate, you may leave the survey at any time, just by exiting your browser.
4. The questionnaire consists of 5 sections and needs approximately 15-20 minutes to be completed.
5. The first section includes the consent form for participating in the survey.
6. The second section includes a set of questions about demographics and general background.
7. The third section includes a set of questions on your motives for enrolling in the Learn2Analyze (L2A) MOOC.
8. The fourth section includes a set of questions on your existing competence level per "Educational Data Literacy (EDL) Competence Profile (CP) Statement" for each competence dimension of the Learn2Analyze EDL Competence framework.
9. In the final section, you will be asked for your email address in order to receive the Learn2Analyze MOOC "Unlock Code". You will need it as a key to unlock the Learn2Analyze MOOC content, after the 21st of October 2019, when the course starts.

Legal basis for processing personal and sensitive data:

Personal Data:

In connection with this research, the Learn2Analyze Consortium's collection and processing of the following Personal Data is lawful based on consent (Article 6.1(a), GDPR):

□ Name, Email Address

□ Education Information

Sensitive Data:

In connection with this research, the Learn2Analyze Consortium's collection and processing of the following Sensitive Data is lawful based on consent (Article 9.2(a), GDPR):

□ Gender

Potential Benefits:

There are no direct benefits for participating in the survey. The survey results will help us evaluate the L2A MOOC and improve its future versions.

Potential Risk or Discomforts:

We do not perceive any risk or discomfort in the completion of the survey.

Storage of Data:

The survey is completed in a Google Docs form and stored in a secure GoogleDrive folder under the e-mail l2a.r12.survey@gmail.com, for the time required by the purposes described in this document, for maximum 2 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 Google services. The transfer is authorized on the basis of provisions of the European Union, on the adequacy of the protection offered by the EU-US privacy shield scheme.

Right to Withdraw:

Your participation in this survey is voluntary. You are under no obligation to complete the survey and you can withdraw from the survey prior to submitting it. If you do not want to participate simply stop participating or close the browser window. You can simply exit the Web Browser without saving your responses, and they will not be recorded.

Rights of research participants:

You have the right to request access to, a copy of, rectification, restriction in the use of, or erasure of your information in accordance with all applicable laws, contacting the lead Learn2Analyze researcher for this survey in l2a.r12.survey@gmail.com. The erasure of your information shall be subject to the Learn2Analyze Consortium's need to retain certain information pursuant to any other identified lawful basis.

If the Learn2Analyze Consortium's use of your information is pursuant to your consent, you have the right to withdraw consent without affecting the lawfulness of the Learn2Analyze Consortium'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 your national Data Protection Authority (DPA).

Participant Concerns and Reporting:
If you have any questions concerning the survey or experience any discomfort related to the survey, please contact the lead Learn2Analyze researcher for this survey in l2a.r12.survey@gmail.com

Conflict of Interest:
We do not perceive any conflicts of interest in the development of this survey.

Compensation:
There is no compensation for participants in this survey.

Confidentiality:
The only people processing your input will be the researcher(s) involved in the Learn2Analyze project. The researcher(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.

How will results be used:
The results of the survey will be used for evaluating the L2A MOOC. The results from the survey may be used for research study, for scholarly purposes only and might be presented in conferences, published in journals or articles for educational purposes.
By indicating consent to participate in this survey you also indicate consent for the possible secondary use of this data at a later date if we decide to undertake a further longitudinal study for the enhancement of the Learn2Analyze MOOC.

Debriefing and Dissemination of Results:
The final report will be made publicly available through the official website of the project www.learn2analyze.eu.
On behalf of the Learn2Analyze Consortium, we would like to sincerely thank you for your participation in our survey acknowledging that your insights on the questions in this survey will prove invaluable.

Selecting “I Agree” below indicates that:

You have read the above information;
You voluntarily agree to participate in this survey;
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 18 years of age.

- I Agree

***Section 3 - Create you Unique Code ID***

To create your unique code ID please use:

1. The first letter of your first name (e.g. U)
2. The last 2 digits of your cell phone (if none use 00) (e.g. 17)
3. Your month of birth (e.g. 03)
4. The first letter of your middle name (if none, use X) (e.g. M)
5. The first letter of city/town you were born in (e.g. V)

(The above example would generate the unique code ID: U1703MV)

Please provide your unique code ID as per instructions:

_____

***Section 4 - Demographics & General Background***

You will be asked to provide answers to a series of questions related to your demographics and educational/professional background.

Number of questions in current section: 12

1. What is your year of birth? Please enter (YYYY)

_____

2. What is your gender?

- Female
- Male
- I prefer not to answer

3. Please specify your country of residence.

(Select from drop-down list)

4. What is the highest level of education you have completed?

- o High School Diploma (or equivalent)
- o Associate degree / technical diploma - occupational / technical / vocational program
- o Associate degree - academic program
- o Bachelor's degree (e.g., BSc, BA, AB, BS, BPS)
- o Master's Degree (e.g., MA, MS, MSc, MEng, MEd, MSW, MBA)
- o Professional School Degree (e.g., JD, MD, DDS, DVM, LLB)
- o Doctoral Degree (e.g., PhD, EdD)
- o Other

5. What is your current job sector?

- o Self-employed
- o Large (>100 people) for-profit company
- o Small (<100 people) for-profit company
- o Large (>100 people) non-profit
- o Small (<100 people) non-profit
- o K-12 Education
- o College
- o University
- o Governmental Education Agency
- o Other Governmental Agency
- o Not-employed
- o Other

3. What is your professional role? (select all that apply)

- ☐ Higher Education Students
- ☐ Professional Instructional Designer of Online and/or Blended Courses
- ☐ (e-) Tutor of Online and or Blended Courses
- ☐ School Teacher in K-12 Education
- ☐ Professional involved in supporting Teaching & Learning in Higher Education and/or Professional involved in supporting Professional Development
- ☐ Professional involved in supporting Educational Data in Higher Education and/or Professional Development
- ☐ Manager in a Higher Education Institute

- ☐ Manager in a Professional Development Service Provider
- ☐ Manager in an e-Learning Service Provider
- ☐ Manager in a Governmental Education Policy Making Institute
- ☐ Academic involved in teaching Higher Education Courses on Digital Learning and/or Learning Technologies
- ☐ Academic involved in teaching Higher Education Courses specifically for Instructional Designers and/or (e-) Tutors
- ☐ Academic involved in teaching Higher Education Courses specifically for Educational Data Literacy
- ☐ Researcher in Digital Learning and/or Learning Technologies
- ☐ Researcher in Instructional Design of Online and/or Blended Courses
- ☐ Researcher in Educational Data Literacy
- ☐ Other

4. How many years are you involved in this role?
   - 1-5
   - 6-10
   - 11-20
   - 21+

5. How many years are you involved in the field of Digital Teaching and Learning?
   - 1-5
   - 6-10
   - 11-20
   - 21+

6. On a scale from 1 (low) to 5 (high), please rate your English proficiency

7. On a scale from 1 (low) to 5 (high), please rate your comfort with Technology

8. In how many MOOCs have you enrolled?

   - None
   - 1
   - 2-4
   - 5-10
   - >10

9. How many MOOCs have you completed?

- None
- 1
- 2-4
- 5-10
- >10

***Section 5 - Motives for enrolling in the L2A MOOC***

You will be asked to answer a series of questions on your motives for enrolling in the Learn2Analyze (L2A) MOOC.

Number of questions in current section: 6

1. Which of the following best describes your goal in taking this course? Please select one of the following
   - Planning to follow the course schedule and complete all activities to earn a certificate of completion
   - Auditing, but intend to follow the course schedule
   - Auditing, but do not intend to follow the course schedule
   - Just checking what this course is about
   - Bookmaking it as a learning resource
   - Interested in a small subset of course topics
   - General curiosity
   - Other

2. Can you tell us why you have enrolled in this course?
   Please select the number [1..5] that best describes what you think.

| | Not at all true | 2 | Somewhat true | 4 | Very True | Not Applicable |
|---|---|---|---|---|---|---|
| M2.1 Participating in this course is relevant for my personal development. | | | | | | |
| M2.2 Participating in this course will extend my current knowledge of the topic. | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| M2.3 I will use this course to obtain a job-relevant qualification. | | | | | | |
| M2.4 I think the L2A certificate is beneficial for my CV and future job applications. | | | | | | |
| M2.5 The subject of the course is relevant to my academic field of study. | | | | | | |
| M2.6 The subject of the course is relevant to my college/university class. | | | | | | |
| M2.7 I have been advised or ordered to take part in this course. | | | | | | |
| M2.8 I have enrolled in this course out of general curiosity. | | | | | | |

3. How confident are you in your ability to learn the material in this course?
    - Not confident at all
    - A little confident
    - Moderately confident
    - Very confident
    - Extremely confident

4. How would you rate your possibility of finishing this course according to the anticipated time commitment as defined in the syllabus?
    - Not confident at all
    - A little confident
    - Moderately confident
    - Very confident
    - Extremely confident

5. How many hours per week do you plan to spend studying on this course?
    - less than 3 hours
    - 3-4 hours
    - 5-6 hours

- 7-8 hours
- more than 8 hours

6. How would you describe yourself?

   Please select the choice that best describes what you think.

| | Very much like me | Mostly like me | Somew hat like me | Not much like me | Not like me at all |
|---|---|---|---|---|---|
| G6.1 New ideas and projects sometimes distract me from previous ones. | | | | | |
| G6.2 Setbacks don't discourage me | | | | | |
| G6.3 I have been obsessed with a certain idea or project for a short time but later lost interest. | | | | | |
| G6.4 I am a hard worker. | | | | | |
| G6.5 I often set a goal but later choose to pursue a different one | | | | | |
| G6.6 I have difficulty maintaining my focus on projects that take more than a few months to complete. | | | | | |
| G6.7 I finish whatever I begin. | | | | | |
| G6.8 I am diligent. | | | | | |

***Section 6 - Existing Competence Level per L2A EDL-CP Statement***

Dimension 1: Data Collection

1.1 Obtain, access and gather the appropriate data and/or data sources

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

1.2 Apply data limitations and quality measures (e.g., validity, reliability, biases in the data, difficulty in collection, accuracy, completeness)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

Dimension 2: Data Management

2.1 Apply data processing and handling methods (i.e., methods for cleaning and changing data to make it more organized – e.g., duplication, data structuring)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

2.2 Apply data description (i.e., metadata)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

2.3 Apply data curation processes (i.e., to ensure that data is reliably retrievable for future reuse, and to determine what data is worth saving and for how long)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

2.4 Apply the technologies to preserve data (i.e., store, persist, maintain, backup data), e.g., storage mediums/services, tools, mechanisms

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

Dimension 3: Data Analysis

3.1 Apply data analysis and modelling methods (e.g. application of descriptive statistics, exploratory data analysis, data mining).

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

3.2 Apply data presentation methods (e.g., pictorial visualisation of the data by using graphs, charts, maps and other data forms like textual or tabular representations)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

Dimension 4: Data Comprehension & Interpretation

4.1 Interpret data properties (e.g., measurement error, outliers, discrepancies within data, key take-away points, data dependencies)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

4.2 Interpret statistics commonly used with educational data (e.g., randomness, central tendencies, mean, standard deviation, significance)

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

4.3 Interpret insights from data analysis (e.g., explanations of patterns, identification of hypotheses, connection of multiple observations, underlying trends)

- Novice
- Advanced beginner

- Competent
- Proficient
- Expert

4.4 Elicit potential implications/links of the data analysis insights to instruction

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

Dimension 5: Data Application

5.1 Use data analysis results to make decisions to revise instruction

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

5.2 Evaluate the data-driven revision of instruction

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

Dimension 6: Data Ethics

1.1 Use the informed consent

- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

1.2 Protect individuals' data privacy, confidentiality, integrity and security

- Novice
- Advanced beginner
- Competent

- Proficient
- Expert

1.3 Apply authorship, ownership, data access (governance), re-negotiation and data-sharing
- Novice
- Advanced beginner
- Competent
- Proficient
- Expert

***Section 7 - Instructions to unlock the L2A MOOC content***

Submit the form and get access to the Learn2Analyze MOOC.

After the course opening (21st of October 2019), you can return to the Learn2Analyze MOOC on OpenCourseWorld (https://www.opencourseworld.de/pages/programmes.jsf#!/2287711/1700) and use this code as a key to unlock the Learn2Analyze MOOC content.

## Appendix 2.2 Post-course Survey

***Section 1 - Invitation***

You are invited to participate in this survey because you have registered for the online course administered by Learn2Analyze Consortium. Your responses to this survey will help us to evaluate the Learn2Analyze MOOC and improve it in future versions.

The Post-Course Survey is expected to take approximately 20 minutes to complete and it is a requirement for the Certificate of Achievement.

In the Post-Course Survey you will be asked questions about your level of satisfaction and learning experience per module, as well as the overall learning experience of the Learn2Analyze (L2A) MOOC. Finally you will report on your achieved competence level per "Educational Data Literacy (EDL) Competence Profile (CP) Statement" for each competence dimension of the Learn2Analyze EDL Competence framework, after attending the Learn2Analyze (L2A) MOOC.

Submit the form and get the key to unlock the Learn2Analyze Certificate of Achievement. Return to the OpenCourseWorld platform, use this key and download your certificate.

We greatly appreciate your willingness to share your time by participating. Your responses to this survey will help us to improve the quality of the learning experience and to better our course offerings, acknowledging your insights will prove invaluable.

***Section 2 - Consent form to participate in Web-based Survey***

**Title of Survey:** Learn2Analyze MOOC Post-course Survey Questionnaire

Purpose and Procedure:

The Learn2Analyze (L2A) is an Academia-Industry Knowledge Alliance for enhancing Online Training Professionals' (Instructional Designers and e-Trainers) Competences in Educational Data Analytics. L2A is an action 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).

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

Please note:

1. The survey will be carried out from 21/10/2019 to 31/12/2019.
2. Before you proceed to the survey questions, you will be asked to indicate your consent.
3. Should you decide you do not wish to further participate, you may leave the survey at any time, just by exiting your browser.
4. The questionnaire consists of 6 sections and needs approximately 20 minutes to be completed.
5. In the first section, you are invited to participate in the post-course survey.
6. The second section includes the consent form for participating in the survey.
7. The third section includes a set of questions on your level of satisfaction and learning experience per module of the Learn2Analyze (L2A) MOOC.
8. The fourth section includes a set of questions on your overall level of satisfaction and learning experience after attending the Learn2Analyze (L2A) MOOC.
9. The fifth section includes a set of questions on your competence level per "Educational Data Literacy (EDL) Competence Profile (CP) Statement" for each competence dimension of the Learn2Analyze EDL Competence framework, after attending the Learn2Analyze (L2A) MOOC.

10. In the final section, you will be asked for your name and email address in order to receive a key to unlock the Learn2Analyze Certificate of Achievement. Return to the OpenCourseWorld platform, use this key and download your certificate.

(Same as Pre-course survey consent form)

Selecting "I Agree" below indicates that:

You have read the above information;
You voluntarily agree to participate in this survey;
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 18 years of age.

- o I Agree

***Section 3 - Create you Unique Code ID***

To create your unique code ID please use:
1. The first letter of your first name (e.g. U)
2. The last 2 digits of your cell phone (if none use 00) (e.g. 17)
3. Your month of birth (e.g. 03)
4. The first letter of your middle name (if none, use X) (e.g. M)
5. The first letter of city/town you were born in (e.g. V)

(The above example would generate the unique code ID: U1703MV)

Please provide your unique code ID as per instructions:

_____

***Section 4 - Learning experience per module***

1. Learning objectives per module were clearly stated.
2. The content per module was presented in a comprehensible manner.
3. The educational materials and content per module were relevant and addressed the topic identified in the title.

4. The educational materials and content per module were based on current up-to-date information.
5. The instructional videos per module supported my learning and added value to the course content.
6. The graphics per module supported my learning and added value to the course content.
7. There was a good variety of content types (i.e., written notes, videos, graphics, etc.).
8. Further Readings per module were relevant and supported my learning.
9. Learning activities (Polls, Discussions and Workshops) used in the module were effective and helped me construct explanations/solutions.
10. Assessment tasks used per module challenged my thinking and supported my learning
11. The assessments per module were relevant to the learning objectives.

| (questions 1..11) | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| **Module 2** Online and Blended Teaching and Learning supported by Educational Data | | | | | |
| **Module 3** Learning Analytics | | | | | |
| **Module 4** Teaching Analytics | | | | | |
| **Module 5** Applying Teaching & Learning Analytics with Moodle | | | | | |
| **Module 6** Applying Teaching & Learning Analytics with eXact Suite | | | | | |
| **Module 7** Applying Teaching & Learning Analytics with IMC Learning Suite | | | | | |

12. How many hours per week did you spend on each module?

| | < 3 h | 3 - 4 h | 5 - 6 h | 7 - 8 h | > 8 h |
|---|---|---|---|---|---|
| **Module 2** Online and Blended Teaching and Learning supported by Educational Data | | | | | |
| **Module 3** Learning Analytics | | | | | |
| **Module 4** Teaching Analytics | | | | | |
| **Module 5** Applying Teaching & Learning Analytics with Moodle | | | | | |
| **Module 6** Applying Teaching & Learning Analytics with eXact Suite | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Module 7** Applying Teaching & Learning Analytics with IMC Learning Suite | | | | | |

13. How many posts did you contribute to discussion forums per module?

| | none | 1 - 2 posts | 3 - 4 posts | >5 posts |
|---|---|---|---|---|
| **Module 2** Online and Blended Teaching and Learning supported by Educational Data | | | | |
| **Module 3** Learning Analytics | | | | |
| **Module 4** Teaching Analytics | | | | |
| **Module 5** Applying Teaching & Learning Analytics with Moodle | | | | |
| **Module 6** Applying Teaching & Learning Analytics with eXact Suite | | | | |
| **Module 7** Applying Teaching & Learning Analytics with IMC Learning Suite | | | | |

***Section 5 - Overall learning experience***

Number of questions in current section: 20

Please rate [1..5] your agreement to the following statements:
(Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

1. The course platform was easy to use.
2. The overall visual design of the course was appealing.
3. The course environment was well structured, topics and subtopics were logically arranged in a predictable pattern.
4. The learning path was easy to navigate.
5. Course objectives and learning goals were clearly stated.
6. The workload was reasonably spread.
7. The workload was in line with my expectations.
8. The course difficulty was in line with my expectations at the start of the course.
9. The difficulty level of assessments was appropriate for the course.
10. The level of interaction with peer learners was adequate.
11. The discussion forums were an effective tool for collaborating with other learners.
12. Help and support provided on the course platform were adequate.

13. I can apply the knowledge created in this course to my work or other related activities.
14. I was motivated to work through the course.
15. I feel like I achieved my personal goals for this course.
16. I enjoyed the course.
17. It is very likely to revisit the course materials in the future.
18. It is very likely to recommend this course e.g. to a colleague or friend.

Please share your thoughts and recommendations:

19. What did you enjoy most about your course experience?

_____

20. What did you like least about taking part in the course?

_____

***Section 6 - Achieved Competence Level per L2A EDL-CP Statement***

Please rate your achieved competence level for each statement of the L2A Educational Data Literacy Competence Dimensions addressed in this course

You can find additional information about L2A EDL-CP in http://www.learn2analyze.eu/

(Same as Pre-course survey section 6)

***Section 7 - Instructions to unlock the L2A MOOC Certificate of Achievement***

Congratulations, you have reached the end of our trip. You have successfully completed the L2A MOOC and submitted the Pre and Post-Course Surveys. Thank you for your participation.

Submit the form and get the key to unlock the Learn2Analyze Certificate of Achievement. Return to the OpenCourseWorld platform, use this key and download your certificate.

# Appendix 3 – Coding of Questions

## Appendix 3.1 - Pre-Course Survey

**Table 53.** Coding of Questions (Pre-course survey)

| | |
|---|---|
| A. Demographics & General Background | |
| a. Demographics | |
| [Age] | Q1*. What is your current age? |
| [Gender] | Q2.* What is your gender? |
| [Country] | Q3*. Please specify your country or region of residence. |
| b. General Background | |
| [EducLevel] | Q4*. What is the highest level of education you have completed? |
| [JobSector] | Q5*. What is your current job sector? |
| [ProfRole] | Q6*.What is your professional role? (select all that apply) |
| [YoEinPR] | Q7*. How many years are you involved in this role? |
| [YoEinDTL] | Q8*. How many years are you involved in the field of Digital Teaching and Learning? |
| [EnglProf] | Q9*. On a scale from 1 (low) to 5 (high), please your English proficiency |
| [ComfTech] | Q10*. On a scale from 1 (low) to 5 (high), please rate your comfort with Technology |
| [MOOCsEnr] | Q11*. In how many MOOCs have you enrolled? |
| [MOOCsCompl] | Q12*. How many MOOCs have you completed? |
| B. Motives | |
| a. Goal | |
| [GOAL] | Q1*. Which of the following best describes your goal in taking this course? Please select one of the following<br>○ Planning to follow the course schedule and complete all activities to earn a certificate of completion<br>○ Auditing, but intend to follow the course schedule<br>○ Auditing, but do not intend to follow the course schedule<br>○ Just checking what this course is about<br>○ Bookmaking it as a learning resource<br>○ Interested in a small subset of course topics<br>○ General curiosity<br>○ Other - Please specify |
| b. Reasons for Enrolment (internal – external motives) | |
| | Q2*. Can you tell us why you have enrolled in this course? Please select the number [1..5] that best describes what you think. |

| | |
|---|---|
| [M2.1] | M2.1. Participating in this course is relevant for my personal development. |
| [M2.2] | M2.2. Participating in this course will extend my current knowledge of the topic. |
| [M2.3] | M2.3. I will use this course to obtain a job-relevant qualification. |
| [M2.4] | M2.4. I think L2A certificate is beneficial for my CV and future job applications. |
| [M2.5] | M2.5. The subject of the course is relevant to my academic field of study. |
| [M2.6] | M2.6. The subject of the course is relevant to my college/university class. |
| [M2.7] | M2.7. I have been advised or ordered to take part in this course. |
| [M2.8] | M2.8. I have enrolled in this course out of general curiosity. |
| c. Self-Confidence | |
| [ConfAbility] | Q3. How confident are you in your ability to learn the material in this course? |
| [ConfTime] | Q4. How would you rate your possibility of finishing this course according to the anticipated time commitment as defined in the syllabus? |
| [Hours] | Q5. How many hours per week do you plan to spend studying on this course? |
| d. GRIT | |
| | 6. How would you describe yourself? |
| [G6.1] | G6.1. New ideas and projects sometimes distract me from previous ones. |
| [G6.2] | G6.2. Setbacks don't discourage me. |
| [G6.3] | G6.3. I have been obsessed with a certain idea or project for a short time but later lost interest. |
| [G6.4] | G6.4. I am a hard worker. |
| [G6.5] | G6.5. I often set a goal but later choose to pursue a different one. |
| [G6.6] | G6.6. I have difficulty maintaining my focus on projects that take more than a few months to complete. |
| [G6.7] | G6.7. I finish whatever I begin. |
| [G6.8] | G6.8. I am diligent. |
| C. EDL Initial Competence Level | |
| **1.** Data Collection | |
| [D1S1a] | 1.1 Obtain, access and gather the appropriate data and/or data sources |

| | |
|---|---|
| [D1S2a] | 1.2 Apply data limitations and quality measures (e.g., validity, reliability, biases in the data, difficulty in collection, accuracy, completeness) |
| **2.** Data Management | |
| [D2S1a] | 2.1 Apply data processing and handling methods (i.e., methods for cleaning and changing data to make it more organized – e.g., duplication, data structuring) |
| [D2S2a] | 2.2 Apply data description (i.e., metadata) |
| [D2S3a] | 2.3 Apply data curation processes (i.e., to ensure that data is reliably retrievable for future reuse, and to determine what data is worth saving and for how long) |
| [D2S4a] | 2.4 Apply the technologies to preserve data (i.e., store, persist, maintain, backup data), e.g., storage mediums/services, tools, mechanisms |
| **3.** Data Analysis | |
| [D3S1a] | 3.1 Apply data analysis and modelling methods (e.g. application of descriptive statistics, exploratory data analysis, data mining). |
| [D3S2a] | 3.2 Apply data presentation methods (e.g., pictorial visualisation of the data by using graphs, charts, maps and other data forms like textual or tabular representations) |
| **4.** Data Comprehension and Interpretation | |
| [D4S1a] | 4.1 Interpret data properties (e.g., measurement error, outliers, discrepancies within data, key take-away points, data dependencies) |
| [D4S2a] | 4.2 Interpret statistics commonly used with educational data (e.g., randomness, central tendencies, mean, standard deviation, significance) |
| [D4S3a] | 4.3 Interpret insights from data analysis (e.g., explanations of patterns, identification of hypotheses, connection of multiple observations, underlying trends) |
| [D4S4a] | 4.4 Elicit potential implications/links of the data analysis insights to instruction |
| **5.** Data Application | |
| [D5S1a] | 5.1 Use data analysis results to make decisions to revise instruction |
| [D5S2a] | 5.2 Evaluate the data-driven revision of instruction |
| **6.** Data Ethics | |
| [D6S1a] | 6.1 Use the informed consent |

| | |
|---|---|
| [D6S2a] | 6.2 Protect individuals' data privacy, confidentiality, integrity and security |
| [D6S1a] | 6.3 Apply authorship, ownership, data access (governance), re-negotiation and data-sharing |

## Appendix 3.2 - Post-Course Survey

**Table 54.** Coding of questions (Post course survey)

| **A.** OVERALL LEARNING EXPERIENCE | | | | | | |
|---|---|---|---|---|---|---|
| 1. Learning Experience per Module [LXM] | | | | | | |
| [LXM] | Module 2 LXMiM2 | Module 3 LXMiM3 | Module 4 LXMiM4 | Module 5 LXMiM5 | Module 6 LXMiM6 | Module 7 LXMiM7 |
| Q1*. Learning objectives per module were clearly stated. [LXM1] | LXM1M2 | LXM1M3 | LXM1M4 | LXM1M5 | LXM1M6 | LXM1M7 |
| Q2*. The content per module was presented in a comprehensible manner. [LXM2] | LXM2M2 | LXM2M3 | LXM2M4 | LXM2M5 | LXM2M6 | LXM2M7 |
| Q3*. The educational materials and content per module were relevant and addressed the topic identified in the title. [LXM3] | LXM3M2 | LXM3M3 | LXM3M4 | LXM3M5 | LXM3M6 | LXM3M7 |
| Q4*. The educational materials and content per module were based on current up-to-date information. [LXM4] | LXM4M2 | LXM4M3 | LXM4M4 | LXM4M5 | LXM4M6 | LXM4M7 |
| Q5*. The instructional videos per module supported my learning and added value to the course content. [LXM5] | LXM5M2 | LXM5M3 | LXM5M4 | LXM5M5 | LXM5M6 | LXM5M7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Q6*. The graphics per module supported my learning and added value to the course content. [LXM6] | LXM6M2 | LXM6M3 | LXM6M4 | LXM6M5 | LXM6M6 | LXM6M7 |
| Q7*. There was a good variety of content types (i.e., written notes, videos, graphics, etc.). [LXM7] | LXM7M2 | LXM7M3 | LXM7M4 | LXM7M5 | LXM7M6 | LXM7M7 |
| Q8*. Further Readings per module were relevant and supported my learning. [LXM8] | LXM8M2 | LXM8M3 | LXM8M4 | LXM8M5 | LXM8M6 | LXM8M7 |
| Q9*. Learning activities used in the module were effective and helped me construct explanations/solutions. [LXM9] | LXM9M2 | LXM9M3 | LXM9M4 | LXM9M5 | LXM9M6 | LXM9M7 |
| Q10*. Self-Assessment tasks used per module challenged my thinking and supported my learning. [LXM10] | LXM10M2 | LXM10M3 | LXM10M4 | LXM10M5 | LXM10M6 | LXM10M7 |
| Q11*. The assessments per module were relevant to the learning objectives.[LXM11] | LXM11M2 | LXM11M3 | LXM11M4 | LXM11M5 | LXM11M6 | LXM11M7 |
| Q12*. How many hours per week did you spend on each module? [LXM12] | LXM12M2 | LXM12M3 | LXM12M4 | LXM12M5 | LXM12M6 | LXM12M7 |
| Q13*. How many posts did you contribute to discussion forums per module? [LXM13] | LXM13M2 | LXM13M3 | LXM13M4 | LXM13M5 | LXM13M6 | LXM13M7 |
| 2. Overall Learning Experience [OLX] | | | | | | |
| a. Learning Experience [LX] | | | | | | |

| | |
|---|---|
| [LX1] | Q5. Course objectives and learning goals were clearly stated. |
| [LX2] | Q6. The workload was reasonably spread. |
| [LX3] | Q7. The workload was in line with my expectations. |
| [LX4] | Q8. The course difficulty was in line with my expectations at the start of the course. |
| [LX5] | Q9. The difficulty level of assessments was appropriate for the course. |
| [LX6] | Q10. The level of interaction with peer learners was adequate. |
| [LX7] | Q11. The discussion forums were an effective tool for collaborating with other learners. |
| b. Platform Ease of Use [PEoU] | |
| [PEoU1] | Q1. The course platform was easy to use. |
| [PEoU2] | Q2. The overall visual design of the course was appealing. |
| [PEoU3] | Q3. The course environment was well structured, topics and subtopics were logically arranged in a predictable pattern. |
| [PEoU4] | Q4. The learning path was easy to navigate. |
| [PEoU5] | Q12. Help and support provided on the course platform were adequate. |
| c. Satisfaction [SAT] | |
| [SAT1] | Q14. I was motivated to work through the course. |
| [SAT2] | Q16. I enjoyed the course. |
| d. Confirmation [CONF] | |
| [CONF1] | Q13. I can apply the knowledge created in this course to my work or other related activities. |
| [CONF2] | Q15. I feel like I achieved my personal goals for this course. |
| e. Continuance Intention [INT] | |
| [INT1] | 17. It is very likely to revisit the course materials in the future. |
| [INT2] | 18. It is very likely to recommend this course e.g. to a colleague or friend. |
| **B.** EDL ACHIEVED COMPETENCE LEVEL | |
| **1.** Data Collection [D1] | |
| [D1S1b] | 1.1 Obtain, access and gather the appropriate data and/or data sources |
| [D1S2b] | 1.2 Apply data limitations and quality measures (e.g., validity, reliability, biases in the data, difficulty in collection, accuracy, completeness) |
| **2.** Data Management [D2] | |
| [D2S1b] | 2.1 Apply data processing and handling methods (i.e., methods for cleaning and changing data to make it more organized – e.g., duplication, data structuring) |
| [D2S2b] | 2.2 Apply data description (i.e., metadata) |

| | |
|---|---|
| [D2S3b] | 2.3 Apply data curation processes (i.e., to ensure that data is reliably retrievable for future reuse, and to determine what data is worth saving and for how long) |
| [D2S4b] | 2.4 Apply the technologies to preserve data (i.e., store, persist, maintain, backup data), e.g., storage mediums/services, tools, mechanisms |
| **3.** Data Analysis [D3] | |
| [D3S1b] | 3.1 Apply data analysis and modelling methods (e.g. application of descriptive statistics, exploratory data analysis, and data mining). |
| [D3S2b] | 3.2 Apply data presentation methods (e.g., pictorial visualisation of the data by using graphs, charts, maps and other data forms like textual or tabular representations) |
| **4.** Data Comprehension and Interpretation [D4] | |
| [D4S1b] | 4.1 Interpret data properties (e.g., measurement error, outliers, discrepancies within data, key take-away points, data dependencies) |
| [D4S2b] | 4.2 Interpret statistics commonly used with educational data (e.g., randomness, central tendencies, mean, standard deviation, significance) |
| [D4S3b] | 4.3 Interpret insights from data analysis (e.g., explanations of patterns, identification of hypotheses, connection of multiple observations, underlying trends) |
| [D4S4b] | 4.4 Elicit potential implications/links of the data analysis insights to instruction |
| **5.** Data Application [D5] | |
| [D5S1b] | 5.1 Use data analysis results to make decisions to revise instruction |
| [D5S2b] | 5.2 Evaluate the data-driven revision of instruction |
| **6.** Data Ethics [D6] | |
| [D6S1b] | 6.1 Use the informed consent |
| [D6S2b] | 6.2 Protect individuals' data privacy, confidentiality, integrity and security |
| [D6S1b] | 6.3 Apply authorship, ownership, data access (governance), re-negotiation and data-sharing |

## Appendix 4 - Groups of Professional Roles

A. eLearning Professionals (IDs, eTutors)

**1.** Professional Instructional Designer and/or (e-) Tutor of Online and/or Blended Courses

**2.** Professional involved in supporting Teaching & Learning in Higher Education and/or Professional involved in supporting Professional Development

B. Higher Education Students

**1.** Higher Education Students

C. School Teachers

**1.** K12 Teachers

D. Experts with Experience in EDL

**1.** Academic involved in teaching Higher Education Courses specifically for Educational Data Literacy Researchers in Digital Learning and/or Learning Technologies

**2.** Researcher in Educational Data Literacy

**3.** Professional involved in supporting Educational Data in Higher Education and/or Professional Development

E. Managers in (Online) Education/Training

**1.** Senior Manager in a Higher Education Institute

**2.** Senior Manager in a Professional Development Service Provider

**3.** Senior Manager in an e-Learning Service Provider

**4.** Senior Manager in a Governmental Education Policy Making Institute

F. Academics/Researchers in ID and/or Online Education/Training

**1.** Academic involved in teaching Higher Education Courses on Digital Learning and/or Learning Technologies

**2.** Academic involved in teaching Higher Education Courses specifically for Instructional Designers and/or e-Tutors

**3.** Researcher in Instructional Design of Online and/or Blended Courses

# Appendix 5 - Distribution of participants in the pre-course survey per Demographics, General Background, Motives in taking the course and Initial EDL competences level

## Appendix 5.1 Demographics

***Distribution of participants per Country***

**Table 55.** Distribution of participants per Country

| | Country of residence | Frequency | Percent |
|---|---|---|---|
| 1. | Greece | 492 | 42.89% |
| 2. | Germany | 220 | 19.18% |
| 3. | Italy | 103 | 8.98% |
| 4. | United States | 45 | 3.92% |
| 5. | Ireland | 29 | 2.53% |
| 6. | United Kingdom | 17 | 1.48% |
| 7. | Austria | 14 | 1.22% |
| 8. | Norway | 13 | 1.13% |
| 9. | Turkey | 12 | 1.05% |
| 10. | France | 12 | 1.05% |
| 11. | Canada | 12 | 1.05% |
| 12. | Romania | 11 | 0.96% |
| 13. | Israel | 11 | 0.96% |
| 14. | India | 11 | 0.96% |
| 15. | Australia | 10 | 0.87% |
| 16. | Switzerland | 8 | 0.70% |
| 17. | Belgium | 7 | 0.61% |
| 18. | Portugal | 6 | 0.52% |
| 19. | Brazil | 6 | 0.52% |
| 20. | Morocco | 5 | 0.44% |
| 21. | Lithuania | 5 | 0.44% |
| 22. | Finland | 5 | 0.44% |
| 23. | Spain | 4 | 0.35% |
| 24. | South Africa | 4 | 0.35% |
| 25. | Singapore | 4 | 0.35% |

| | | |
|---|---|---|
| 26. Serbia | 4 | 0.35% |
| 27. Croatia | 4 | 0.35% |
| 28. Ukraine | 3 | 0.26% |
| 29. Thailand | 3 | 0.26% |
| 30. Philippines | 3 | 0.26% |
| 31. Pakistan | 3 | 0.26% |
| 32. Netherlands | 3 | 0.26% |
| 33. Maldives | 3 | 0.26% |
| 34. Egypt | 3 | 0.26% |
| 35. United Arab Emirates | 2 | 0.17% |
| 36. Saudi Arabia | 2 | 0.17% |
| 37. Russia | 2 | 0.17% |
| 38. Nigeria | 2 | 0.17% |
| 39. Lebanon | 2 | 0.17% |
| 40. Estonia | 2 | 0.17% |
| 41. Ecuador | 2 | 0.17% |
| 42. Denmark | 2 | 0.17% |
| 43. Cyprus | 2 | 0.17% |
| 44. Colombia | 2 | 0.17% |
| 45. Bangladesh | 2 | 0.17% |
| 46. Vietnam | 1 | 0.09% |
| 47. Uzbekistan | 1 | 0.09% |
| 48. Uganda | 1 | 0.09% |
| 49. Taiwan | 1 | 0.09% |
| 50. Sweden | 1 | 0.09% |
| 51. Sudan | 1 | 0.09% |
| 52. Somalia | 1 | 0.09% |
| 53. Peru | 1 | 0.09% |
| 54. Oman | 1 | 0.09% |
| 55. New Zealand | 1 | 0.09% |
| 56. Namibia | 1 | 0.09% |
| 57. Mexico | 1 | 0.09% |
| 58. Malaysia | 1 | 0.09% |

| | | | |
|---|---|---|---|
| 59. | Macedonia | 1 | 0.09% |
| 60. | Luxembourg | 1 | 0.09% |
| 61. | Libya | 1 | 0.09% |
| 62. | Korea, South | 1 | 0.09% |
| 63. | Kazakhstan | 1 | 0.09% |
| 64. | Japan | 1 | 0.09% |
| 65. | Jamaica | 1 | 0.09% |
| 66. | Iran | 1 | 0.09% |
| 67. | Hungary | 1 | 0.09% |
| 68. | Georgia | 1 | 0.09% |
| 69. | Faroe Islands | 1 | 0.09% |
| 70. | China | 1 | 0.09% |
| 71. | Chile | 1 | 0.09% |
| 72. | Bosnia and Herzegovina | 1 | 0.09% |
| 73. | Argentina | 1 | 0.09% |
| 74. | Algeria | 1 | 0.09% |
| 75. | Albania | 1 | 0.09% |
| | Total | 1147 | 100.00% |

***Distribution of participants per age and gender***

**Table 56.** Distribution of participants per age

| | | |
|---|---|---|
| N | Valid | 1147 |
| | Missing | 0 |
| Mean | | 40,68 |
| Median | | 41,00 |
| Mode | | 48 |
| Std. Deviation | | 10,510 |
| Variance | | 110,457 |
| Percentiles | 25 | 32,00 |
| | 50 | 41,00 |
| | 75 | 49,00 |

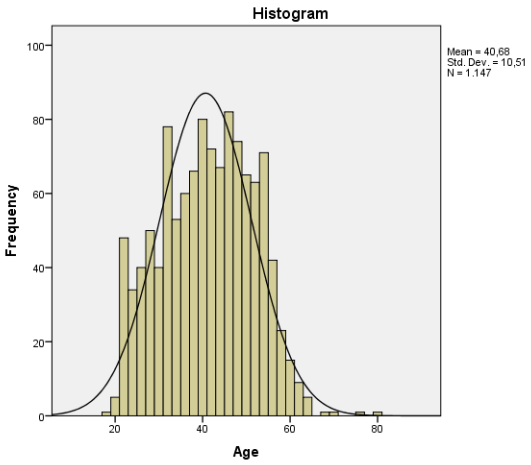


**Figure 53.** Distribution of participants per age in the pre-course survey

**Table 57.** Gender distribution

| Gender | Frequency | Percent |
|---|---|---|
| I prefer not to answer | 30 | 2,6 |
| Female | 640 | 55,8 |
| Male | 477 | 41,6 |
| Total | 1147 | 100,0 |

## Appendix 5.2 General Background

***Educational background***

1. Highest level of Education

**Table 58.** Distribution per Highest level of Education

| Highest Level of Education | Frequency | Percent |
|---|---|---|
| Doctoral Degree (e.g., PhD, EdD) | 193 | 16,8 |
| Master's Degree (e.g., MA, MS, MSc, MEng, MEd, MSW, MBA) | 600 | 52,3 |
| Bachelor's degree (e.g., BSc, BA, AB, BS, BPS) | 195 | 17,0 |
| Associate degree - academic program | 28 | 2,4 |
| Professional School Degree (e.g., JD, MD, DDS, DVM, LLB) | 20 | 1,7 |
| High School Diploma (or equivalent) | 86 | 7,5 |
| Other | 25 | 2,2 |
| Total | 1147 | 100,0 |

2. Reported English proficiency and comfort with technology

**Table 59.** Distribution per English proficiency

| On a scale from 1 (low) to 5 (high), please rate your English proficiency | frequency | percent |
|---|---|---|
| 1 | 10 | 0.87% |
| 2 | 39 | 3.40% |
| 3 | 307 | 26.77% |
| 4 | 360 | 31.39% |
| 5 | 431 | 37.58% |
| Total | 1147 | 100.00% |

**Table 60.** Distribution per reported comfort with technology

| On a scale from 1 (low) to 5 (high), please rate your comfort with Technology | frequency | percent |
|---|---|---|
| 1 | 4 | 0.35% |
| 2 | 30 | 2.62% |
| 3 | 148 | 12.90% |
| 4 | 414 | 36.09% |
| 5 | 551 | 48.04% |
| Total | 1147 | 100.00% |

3. Reported experience with MOOCs

**Table 61.** Experience with MOOCs (enrolled)

| In how many MOOCs have you enrolled? | frequency | percent |
|---|---|---|
| None | 351 | 30.60% |
| 1 | 179 | 15.61% |
| 2-4 | 299 | 26.07% |
| 5-10 | 182 | 15.87% |
| >10 | 136 | 11.86% |
| Total | 1147 | 100.00% |

**Table 62.** Experience with MOOCs (completed)

| How many MOOCs have you completed? | frequency | percent |
|---|---|---|
| None | 480 | 41.85% |
| 1 | 164 | 14.30% |
| 2-4 | 280 | 24.41% |
| 5-10 | 121 | 10.55% |
| >10 | 102 | 8.89% |
| Total | 1147 | 100.00% |

**Table 63.** Mean experience with MOOCs

| Number of MOOCs (enrolled) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| None | 0 | 0 | 351 | 0 | 0 | 30.60% |
| 1 | 1 | 1 | 179 | 179 | 179 | 15.61% |
| 2-4 | 3 | 9 | 299 | 2691 | 897 | 26.07% |
| 5-10 | 7 | 49 | 182 | 8918 | 1274 | 15.87% |
| 11-15 | 13 | 169 | 136 | 22984 | 1768 | 11.86% |
| Total | | | 1147 | 34772 | 4118 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 3.59$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 4.17$$

| Number of MOOCs (completed) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| None | 0 | 0 | 480 | 0 | 0 | 41.85% |
| 1 | 1 | 1 | 164 | 164 | 164 | 14.30% |
| 2-4 | 3 | 9 | 280 | 2520 | 840 | 24.41% |
| 5-10 | 7 | 49 | 121 | 5929 | 847 | 10.55% |
| 11-15 | 13 | 169 | 102 | 17238 | 1326 | 8.89% |
| Total | | | 1147 | 25851 | 3177 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 2.77$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 3.86$$

***Professional Experience***

1. Current Job sector/Professional role

**Table 64.** Reported current job sector

| Current Job Sector | frequency | percent |
|---|---|---|
| University | 352 | 31% |
| K-12 Education | 308 | 27% |
| Large (>100 people) for-profit company | 76 | 7% |
| Small (<100 people) for-profit company | 66 | 6% |
| Governmental Education Agency | 66 | 6% |

| | | |
|---|---|---|
| College | 64 | 6% |
| Self-employed | 61 | 5% |
| Not-employed | 45 | 4% |
| Large (>100 people) non-profit | 27 | 2% |
| Small (<100 people) non-profit | 24 | 2% |
| Other | 58 | 5% |
| Total | 1147 | 100% |

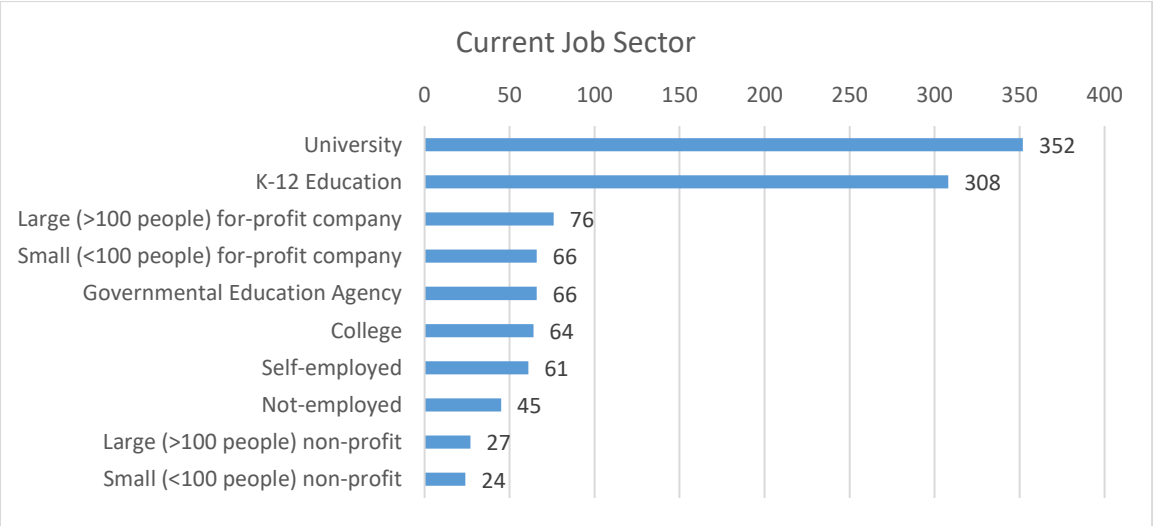


**Figure 54.** Current Job Sector

**Table 65.** Reported Job sector per Professional Role distribution

| Job Sector | | Professional Role | | | | | |
|---|---|---|---|---|---|---|---|
| | | eLearning Professionals (IDs, eTutors) | Higher Education Students | School Teachers | Others | Total | |
| | | | | | | f | % |
| K12, Higher Education | | 174 | 90 | 370 | 156 | 790 | 68.87 |
| Industry | | 105 | 8 | 12 | 68 | 193 | 16.83 |
| Self Employed/Not Employed | | 42 | 29 | 18 | 17 | 106 | 9.24 |
| Other | | 16 | 6 | 19 | 17 | 58 | 5.06 |
| Total | f | 337 | 133 | 419 | 258 | 1147 | |
| | % | 29.38 | 11.59 | 36.54 | 22.49 | | |

2. Years of experience

**Table 66.** Distribution of participants per years involved in their professional role

| Years involved in professional role | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 1-5 | 3 | 9 | 499 | 4491 | 1497 | 43.50% |
| 6-10 | 8 | 64 | 195 | 12480 | 1560 | 17.00% |
| 11-20 | 15.5 | 240.25 | 315 | 75678.75 | 4882.5 | 27.46% |
| 21-30 | 25.5 | 650.25 | 138 | 89734.5 | 3519 | 12.03% |
| Total | | | 1147 | 182384.25 | 11458.5 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 9.99$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 7.69$$

**Table 67.** Distribution of participants per years involved in field of Digital T & L

| Years involved in Digital T & L | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 1-5 | 3 | 9 | 610 | 5490 | 1830 | 53.18% |
| 6-10 | 8 | 64 | 277 | 17728 | 2216 | 24.15% |
| 11-20 | 15.5 | 240.25 | 214 | 51413.5 | 3317 | 18.66% |
| 21-30 | 25.5 | 650.25 | 46 | 29911.5 | 1173 | 4.01% |
| Total | | | 1147 | 104543 | 8536 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 7.44$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 5.98$$

## Appendix 5.3 Motives

***Goal in taking the course***

**Table 68.** Distribution of participants per reported Goal in taking the course

| Goal in taking the course | frequency | percent |
|---|---|---|

| | | |
|---|---|---|
| Planning to follow the course schedule and complete all activities to earn a certificate of completion | 757 | 66% |
| Auditing, but intend to follow the course schedule | 115 | 10% |
| General curiosity | 66 | 6% |
| Just checking what this course is about | 63 | 5% |
| Interested in a small subset of course topics | 47 | 4% |
| Bookmaking it as a learning resource | 45 | 4% |
| Auditing, but do not intend to follow the course schedule | 29 | 3% |
| Other | 25 | 2% |
| Total | 1147 | 100% |

***Reasons for taking the course***

**Table 69.** Reasons for Enrolment

| Reasons for taking the course | Average rating | True and Very true | | Not Applicable | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| M2.1 For personal development. | 4,22 | 879 | 76,6 | 15 | 1,3 |
| M2.2 To extend my current knowledge of the topic | 4,41 | 977 | 85,1 | 25 | 2,2 |
| M2.3 To obtain a job-relevant qualification. | 2,95 | 424 | 36,9 | 60 | 5,2 |
| M2.4 It would be beneficial for my CV and future job applications. | 3,29 | 525 | 45,7 | 52 | 4,5 |
| M2.5 It is relevant to my academic field of study. | 3,39 | 633 | 55,2 | 92 | 8,0 |
| M2.6 It is relevant to my college/university class. | 2,69 | 429 | 37,4 | 166 | 14,5 |
| M2.7 I was advised or ordered to take part in this course. | 1,76 | 180 | 15,7 | 113 | 9,9 |
| M2.8 General curiosity. | 2,92 | 420 | 36,6 | 67 | 5,8 |

***GRIT Score***

**Table 70.** Distribution of participants per GRIT score

GRIT

| | | |
|---|---|---|
| N | Valid | 1147 |
| | Missing | 0 |
| Mean | | 3,64 |
| Std. Deviation | | ,615 |

***Self-Confidence***

**Table 71.** Distribution of participants per reported confidence in learning the material

| Confidence in the ability to learn the material (ConfAbility) | Frequency | Percent |
|---|---|---|
| 1 | 11 | 1,0 |
| 2 | 74 | 6,5 |
| 3 | 350 | 30,5 |
| 4 | 546 | 47,6 |
| 5 | 166 | 14,5 |
| Total | 1147 | 100,0 |

**Table 72.** Distribution of participants per confidence in finishing the course on time

| Confidence in finishing the course according to the anticipated time commitment as defined in the syllabus (ConfTime) | Frequency | Percent |
|---|---|---|
| 1 | 12 | 1,0 |
| 2 | 78 | 6,8 |
| 3 | 347 | 30,3 |
| 4 | 470 | 41,0 |
| 5 | 240 | 20,9 |
| Total | 1147 | 100,0 |

**Table 73.** Mean confidence

| | | ConfAbility | ConfTime | Self-confidence |
|---|---|---|---|---|
| N | Valid | 1147 | 1147 | 1147 |
| | Missing | 0 | 0 | 0 |
| Mean | | 3,68 | 3,74 | 3,7105 |
| Std. Deviation | | ,833 | ,900 | ,72382 |

***Hours per week planning to spend in the course***

**Table 74.** Distribution of participants per hours per week planning to spend in course

| Hours per week (all participants) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 0-2 | 1 | 1 | 313 | 313 | 313 | 27.29% |
| 3-4 | 3.5 | 12.25 | 484 | 5929 | 1694 | 42.20% |
| 5-6 | 5.5 | 30.25 | 215 | 6503.75 | 1182.5 | 18.74% |
| 7-8 | 7.5 | 56.25 | 92 | 5175 | 690 | 8.02% |
| 8-10 | 9 | 81 | 43 | 3483 | 387 | 3.75% |
| Total | | | 1147 | 21403.75 | 4266.5 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 3.72$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 2.20$$

## Appendix 5.4 Initial EDL Competences

**Table 75.** Mean values for initial EDL competences level

| | | D1S1a | D1S2a | D2S1a | D2S2a | D2S3a | D2S4a |
|---|---|---|---|---|---|---|---|
| N | Valid | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 2,54 | 2,29 | 2,26 | 2,14 | 2,07 | 2,36 |
| Std. Deviation | | 1,079 | 1,055 | 1,077 | 1,038 | 1,013 | 1,080 |
| | | D3S1a | D3S2a | D4S1a | D4S2a | D4S3a | D4S4a |
| N | 1149 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 2,13 | 2,44 | 2,12 | 2,21 | 2,14 | 2,06 |
| Std. Deviation | | 1,048 | 1,066 | 1,025 | 1,064 | 1,019 | 1,010 |
| | | D5S1a | D5S2a | D6S1a | D6S2a | D6S3a | |
| N | 1149 | 1147 | 1147 | 1147 | 1147 | 1147 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | |
| Mean | | 2,16 | 2,06 | 2,29 | 2,40 | 2,14 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Std. Deviation | | 1,027 | 1,020 | 1,097 | 1,124 | 1,074 | |
| | | D1a | D2a | D3a | D4a | D5a | D6a |
| N | Valid | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 2,41 | 2,21 | 2,29 | 2,13 | 2,11 | 2,27 |
| Std. Deviation | | 1,016 | ,954 | ,982 | ,963 | ,999 | 1,024 |

# Appendix 6 - Key differences between participants' targeted groups in relation to their motives, self-confidence, GRIT and initial EDL competence

## Appendix 6.1 Demographics

Distribution of participants per age per targeted group

**Table 76.** Age per targeted group

| Professional Role | Mean | N | Std. Deviation |
|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | 41,46 | 337 | 9,621 |
| Higher Education Students | 29,27 | 133 | 9,122 |
| School Teachers | 44,62 | 419 | 9,243 |
| Others | 39,13 | 258 | 9,696 |
| Total | 40,68 | 1147 | 10,510 |

Compare mean age per targeted group

**Table 77.** Comparison of mean age values among targeted groups

| | eLearning Professionals - HES | | eLearning Professionals – School Teachers | | HES – School Teachers | |
|---|---|---|---|---|---|---|
| | Difference | Sig. | Difference | Sig. | Difference | Sig. |
| Age | 12,189 | ,000 | -3,156 | ,000 | -15,345 | ,000 |

## Appendix 6.2 General Background

Distribution of participants per years involved in their professional role

**Table 78.** Distribution of participants per years involved in professional role

| Professional role | 7. How many years are you involved in this role? | frequency |
|---|---|---|
| Academics/Researchers in ID and/or Online Education/Training | 1-5 | 67 |
| | 6-10 | 15 |
| | 11-20 | 28 |

| | | |
|---|---|---|
| | 21+ | 4 |
| Academics/Researchers in ID and/or Online Education/Training | Total | 114 |
| eLearning Professionals (IDs, eTutors) | 1-5 | 181 |
| | 6-10 | 89 |
| | 11-20 | 56 |
| | 21+ | 11 |
| eLearning Professionals (IDs, eTutors) | Total | 337 |
| Experts with Experience in EDL | 1-5 | 19 |
| | 6-10 | 13 |
| | 11-20 | 9 |
| | 21+ | 1 |
| Experts with Experience in EDL | Total | 42 |
| Higher Education Students | 1-5 | 113 |
| | 6-10 | 13 |
| | 11-20 | 4 |
| | 21+ | 3 |
| Higher Education Students | Total | 133 |
| Managers in (Online) Education/Training | 1-5 | 35 |
| | 6-10 | 16 |
| | 11-20 | 15 |
| | 21+ | 3 |
| Managers in (Online) Education/Training | Total | 69 |
| Others | 1-5 | 20 |
| | 6-10 | 7 |
| | 11-20 | 3 |
| | 21+ | 3 |
| Others | Total | 33 |
| School Teachers | 1-5 | 64 |
| | 6-10 | 42 |
| | 11-20 | 200 |
| | 21+ | 113 |
| School Teachers | Total | 418 |

| Grand Total | 1147 |
|---|---|

Years in Professional Role: Mean value and Standard Deviation per Professional Role

**Table 79.** Years in Professional Role: Mean value and Standard Deviation per Professional Role

| Years in Professional Role: Mean value and Standard Deviation per Professional Role | | | | | | |
|---|---|---|---|---|---|---|
| A. eLearning Professionals (IDs, eTutors) | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
| 1-5 | 3 | 9 | 181 | 1629 | 543 | 53.71% |
| 6-10 | 8 | 64 | 89 | 5696 | 712 | 26.41% |
| 11-20 | 15.5 | 240.25 | 56 | 13454 | 868 | 16.62% |
| 21-30 | 25.5 | 650.25 | 11 | 7152.75 | 280.5 | 3.26% |
| Total | | | 337 | 27931.75 | 2403.5 | 100.00% |
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 7.13$ | | | | | |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 5.66$ | | | | | |
| B. Higher Education Students | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
| 1-5 | 3 | 9 | 113 | 1017 | 339 | 84.96% |
| 6-10 | 8 | 64 | 13 | 832 | 104 | 9.77% |
| 11-20 | 15.5 | 240.25 | 4 | 961 | 62 | 3.01% |
| 21-30 | 25.5 | 650.25 | 3 | 1950.75 | 76.5 | 2.26% |
| Total | | | 133 | 4760.75 | 581.5 | 100.00% |
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 4.37$ | | | | | |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 4.08$ | | | | | |
| C. School Teachers | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
| 1-5 | 3 | 9 | 64 | 576 | 192 | 15.27% |
| 6-10 | 8 | 64 | 42 | 2688 | 336 | 10.02% |
| 11-20 | 15.5 | 240.25 | 200 | 48050 | 3100 | 47.73% |
| 21-30 | 25.5 | 650.25 | 113 | 73478.25 | 2881.5 | 26.97% |
| Total | | | 419 | 124792.25 | 6509.5 | 100.00% |

| | |
|---|---|
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 15.74$ |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 7.51$ |

Distribution of participants per years involved in their professional role

**Table 80.** Distribution of participants per years involved in their professional role

| Professional role | Years involved in Digital T & L? | frequency |
|---|---|---|
| Academics/Researchers in ID and/or Online Education/Training | 1-5 | 61 |
| | 6-10 | 27 |
| | 11-20 | 21 |
| | 21+ | 5 |
| Academics/Researchers in ID and/or Online Education/Training | Total | 114 |
| eLearning Professionals (IDs, eTutors) | 1-5 | 162 |
| | 6-10 | 87 |
| | 11-20 | 79 |
| | 21+ | 9 |
| eLearning Professionals (IDs, eTutors) | Total | 337 |
| Experts with Experience in EDL | 1-5 | 26 |
| | 6-10 | 10 |
| | 11-20 | 4 |
| | 21+ | 2 |
| Experts with Experience in EDL | Total | 42 |
| Higher Education Students | 1-5 | 115 |
| | 6-10 | 13 |
| | 11-20 | 4 |
| | 21+ | 1 |
| Higher Education Students | Total | 133 |
| Managers in (Online) Education/Training | 1-5 | 35 |
| | 6-10 | 13 |
| | 11-20 | 18 |

| | | |
|---|---|---|
| | 21+ | 3 |
| Managers in (Online) Education/Training | Total | 69 |
| Others | 1-5 | 26 |
| | 6-10 | 33 |
| | 11-20 | 3 |
| | 21+ | 4 |
| Others | Total | 33 |
| School Teachers | 1-5 | 85 |
| | 6-10 | 419 |
| | 11-20 | 26 |
| | 21+ | 123 |
| School Teachers | Total | 418 |
| Grand Total | | 1147 |

Years in Digital Teaching and Learning: Mean value and Standard Deviation per Professional Role

**Table 81.** Years in Digital Teaching and Learning: Mean value and Standard Deviation per Professional Role

| eLearning Professionals | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
|---|---|---|---|---|---|---|
| 1-5 | 3 | 9 | 162 | 1458 | 486 | 48.07% |
| 6-10 | 8 | 64 | 87 | 5568 | 696 | 25.82% |
| 11-20 | 15.5 | 240.25 | 79 | 18979.75 | 1224.5 | 23.44% |
| 21-30 | 25.5 | 650.25 | 9 | 5852.25 | 229.5 | 2.67% |
| Total | | | 337 | 31858 | 2636 | 100.00% |
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 7.82$ | | | | | |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 5.78$ | | | | | |
| Higher Education Students | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
| 1-5 | 3 | 9 | 115 | 1035 | 345 | 86.47% |
| 6-10 | 8 | 64 | 13 | 832 | 104 | 9.77% |
| 11-20 | 15.5 | 240.25 | 4 | 961 | 62 | 3.01% |
| 21-30 | 25.5 | 650.25 | 1 | 650.25 | 25.5 | 0.75% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | | | 133 | 3478.25 | 536.5 | 100.00% |
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 4.03$ | | | | | |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 3.14$ | | | | | |
| School Teachers | ci=center | ci2 | fi=frequency | ci2. fi | ci . fi | % |
| 1-5 | 3 | 9 | 185 | 1665 | 555 | 44.15% |
| 6-10 | 8 | 64 | 123 | 7872 | 984 | 29.36% |
| 11-20 | 15.5 | 240.25 | 85 | 20421.25 | 1317.5 | 20.29% |
| 21-30 | 25.5 | 650.25 | 26 | 16906.5 | 663 | 6.21% |
| Total | | | 419 | 46864.75 | 3519.5 | 100.00% |
| Mean | $\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 8.40$ | | | | | |
| Std Deviation | $s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 6.43$ | | | | | |

## Appendix 6.3 Motives

### *Goal in taking the course*

**Table 82.** Goal in taking the course per targeted group

| | | Professional Role | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | eLearning Professionals (IDs, eTutors) | | Higher Education Students | | School Teachers | | Total |
| Goal | Planning to follow the course schedule and complete all activities to earn a certificate of completion | 211 | 62,61% | 85 | 63,91% | 317 | 75,66% | 758 |
| | Auditing, but intend to follow the course schedule | 37 | 10,98% | 10 | 7,52% | 26 | 6,21% | 115 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Auditing, but do not intend to follow the course schedule | 15 | 4,45% | 5 | 3,76% | 1 | 0,24% | 29 |
| | Bookmaking it as a learning resource | 14 | 4,15% | 2 | 1,50% | 21 | 5,01% | 45 |
| | Interested in a small subset of course topics | 16 | 4,75% | 9 | 6,77% | 10 | 2,39% | 47 |
| | Just checking what this course is about | 23 | 6,82% | 11 | 8,27% | 16 | 3,82% | 63 |
| | General curiosity | 13 | 3,86% | 9 | 6,77% | 22 | 5,25% | 66 |
| | Other | 8 | 2,37% | 2 | 1,50% | 6 | 1,43% | 24 |
| Total | | 337 | 100,00% | 133 | 100,00% | 419 | 100,00% | 1147 |

***Reasons for Enrolment***

Mean values per targeted group

**Table 83.** Mean values for reasons for enrolment per professional group

| Professional Role | | M2.1 | M2.2 | M2.3 | M2.4 | M2.5 | M2.6 | M2.7 | M2.8 | MOT |
|---|---|---|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 4,26 | 4,43 | 2,95 | 3,25 | 3,04 | 2,31 | 1,50 | 2,97 | 3,0894 |
| | N | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 |
| | Std. Deviation | 1,070 | 1,001 | 1,573 | 1,506 | 1,815 | 1,819 | 1,254 | 1,559 | ,76366 |
| Higher Education Students | Mean | 3,87 | 4,30 | 3,33 | 3,50 | 3,80 | 3,36 | 2,56 | 2,81 | 3,4408 |
| | N | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 |
| | Std. Deviation | 1,144 | 1,000 | 1,391 | 1,480 | 1,418 | 1,760 | 1,725 | 1,388 | ,76292 |
| School Teachers | Mean | 4,34 | 4,41 | 2,90 | 3,39 | 3,42 | 2,77 | 1,67 | 2,76 | 3,2058 |
| | N | 419 | 419 | 419 | 419 | 419 | 419 | 419 | 419 | 419 |
| | Std. Deviation | 1,060 | 1,133 | 1,513 | 1,388 | 1,472 | 1,625 | 1,349 | 1,484 | ,76044 |
| Others | Mean | 4,16 | 4,44 | 2,86 | 3,07 | 3,59 | 2,71 | 1,84 | 3,18 | 3,2311 |
| | N | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 |
| | Std. Deviation | 1,093 | ,949 | 1,555 | 1,497 | 1,578 | 1,777 | 1,540 | 1,563 | ,79077 |
| Total | Mean | 4,22 | 4,41 | 2,95 | 3,29 | 3,39 | 2,69 | 1,76 | 2,92 | 3,2046 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Std. Deviation | 1,088 | 1,040 | 1,531 | 1,464 | 1,616 | 1,760 | 1,448 | 1,521 | ,77441 |

Compare Reasons for enrolment per targeted group

**Table 84.** Difference in reasons for enrolment between targeted groups

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| M2.1 | Between Groups | 23,113 | 3 | 7,704 | 6,601 | ,000 |
| | Within Groups | 1334,081 | 1143 | 1,167 | | |
| | Total | 1357,194 | 1146 | | | |
| M2.2 | Between Groups | 2,039 | 3 | ,680 | ,628 | ,597 |
| | Within Groups | 1237,372 | 1143 | 1,083 | | |
| | Total | 1239,411 | 1146 | | | |
| M2.3 | Between Groups | 22,678 | 3 | 7,559 | 3,242 | ,021 |
| | Within Groups | 2664,965 | 1143 | 2,332 | | |
| | Total | 2687,643 | 1146 | | | |
| M2.4 | Between Groups | 23,153 | 3 | 7,718 | 3,626 | ,013 |
| | Within Groups | 2433,051 | 1143 | 2,129 | | |
| | Total | 2456,204 | 1146 | | | |
| M2.5 | Between Groups | 73,904 | 3 | 24,635 | 9,646 | ,000 |
| | Within Groups | 2919,114 | 1143 | 2,554 | | |
| | Total | 2993,018 | 1146 | | | |
| M2.6 | Between Groups | 112,448 | 3 | 37,483 | 12,469 | ,000 |
| | Within Groups | 3435,813 | 1143 | 3,006 | | |
| | Total | 3548,262 | 1146 | | | |
| M2.7 | Between Groups | 111,369 | 3 | 37,123 | 18,520 | ,000 |
| | Within Groups | 2291,074 | 1143 | 2,004 | | |
| | Total | 2402,443 | 1146 | | | |
| M2.8 | Between Groups | 30,581 | 3 | 10,194 | 4,448 | ,004 |
| | Within Groups | 2619,513 | 1143 | 2,292 | | |
| | Total | 2650,094 | 1146 | | | |

Compare means of reasons for enrolment per targeted group

**Table 85.** Reasons for enrolment mean rating difference between targeted groups

| Reasons for Enrolment | eLearning Professionals-Higher Education Students | eLearning Professionals-School Teachers | Higher Education Students - School Teachers |
|---|---|---|---|

| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| M2.1 | ,386 | ,001 | No significant difference | | -,464 | ,000 |
| M2.2 | No significant difference | | | | | |
| M2.3 | -,378 | ,016 | No significant difference | | ,433 | ,003 |
| M2.4 | No significant difference | | | | | |
| M2.5 | -,755 | ,000 | -,376 | ,002 | -,379 | ,009 |
| M2.6 | -1,055 | ,000 | -,465 | ,000 | ,590 | ,000 |
| M2.7 | -1,052 | ,000 | No significant difference | | ,883 | ,000 |
| M2.8 | No significant difference | | | | | |

Mean values of internal/external motives per targeted group

**Table 86.** Mean values for internal/external motives per targeted group

| ProfRole | | INT | EXT | MOT |
|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 3,4024 | 2,5678 | 3,0894 |
| | N | 337 | 337 | 337 |
| | Std. Deviation | ,83765 | 1,06071 | ,76366 |
| Higher Education Students | Mean | 3,6286 | 3,1278 | 3,4408 |
| | N | 133 | 133 | 133 |
| | Std. Deviation | ,82504 | 1,09539 | ,76292 |
| School Teachers | Mean | 3,5379 | 2,6523 | 3,2058 |
| | N | 419 | 419 | 419 |
| | Std. Deviation | ,78647 | 1,05096 | ,76044 |
| Others | Mean | 3,6163 | 2,5891 | 3,2311 |
| | N | 258 | 258 | 258 |
| | Std. Deviation | ,85066 | 1,18829 | ,79077 |
| Total | Mean | 3,5262 | 2,6684 | 3,2046 |
| | N | 1147 | 1147 | 1147 |
| | Std. Deviation | ,82439 | 1,10299 | ,77441 |

**INT:** Internal Motives = (M2.1 + M2.2 + M2.5 + M2.6 + M2.8)/5

**EXT:** External Motives = (M2.3 + M2.4 + M2.7)/3

**MOT:** Motives = (M2.1+M2.2+M2.3+M2.4+M2.5+M2.6+M2.7+M2.8)/8

Compare means of internal and external motives for enrolment per targeted group

**Table 87.** Mean differences for Internal and External motives for enrolment per targeted group

| | eLearning Professionals-Higher Education Students | | eLearning Professionals-School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| INT Internal motives | -,22620 | ,008 | -,13557 | ,022 | No difference | significant |
| EXT External Motives | -,56006 | ,000 | No difference | significant | ,47547 | ,000 |
| MOT Motives | -,35140 | ,000 | -,11646 | ,037 | ,23494 | ,002 |

***GRIT Score***

GRIT Score per targeted group

**Table 88.** GRIT score per targeted group

| Professional Role | | G6.1 | G6.2 | G6.3 | G6.4 | G6.5 | G6.6 | G6.7 | G6.8 | GRIT |
|---|---|---|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 2,96 | 3,49 | 3,43 | 4,17 | 3,44 | 3,55 | 3,68 | 3,93 | 3,5823 |
| | N | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 | 337 |
| | Std. Deviation | 1,064 | 1,021 | ,974 | ,890 | ,944 | 1,090 | 1,004 | ,943 | ,58637 |
| Higher Education Students | Mean | 3,05 | 3,35 | 3,35 | 3,98 | 3,36 | 3,35 | 3,74 | 3,72 | 3,4887 |
| | N | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 | 133 |
| | Std. Deviation | 1,010 | 1,046 | ,985 | ,887 | 1,003 | 1,088 | ,984 | 1,018 | ,56207 |
| School Teachers | Mean | 3,30 | 3,65 | 3,59 | 4,23 | 3,74 | 3,86 | 4,00 | 4,05 | 3,8031 |
| | N | 419 | 419 | 419 | 419 | 419 | 419 | 419 | 419 | 419 |
| | Std. Deviation | 1,107 | 1,039 | 1,002 | ,880 | ,961 | 1,018 | ,988 | ,967 | ,64265 |
| Others | Mean | 2,98 | 3,45 | 3,44 | 3,99 | 3,40 | 3,58 | 3,72 | 3,83 | 3,5480 |
| | N | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 | 258 |
| | Std. Deviation | 1,009 | ,982 | ,974 | ,938 | ,975 | 1,049 | ,918 | ,961 | ,57874 |
| Total | Mean | 3,10 | 3,52 | 3,48 | 4,13 | 3,53 | 3,64 | 3,81 | 3,93 | 3,6444 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Std. Deviation | 1,072 | 1,026 | ,988 | ,902 | ,976 | 1,068 | ,987 | ,970 | ,61498 |

Compare means of GRIT score per targeted group

**Table 89.** Difference in mean GRIT score per targeted group

| GRIT | eLearning Professionals-Higher Education Students | | eLearning Professionals-School Teachers | | Higher Education Students - School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| GRIT score | No significant difference | | -,22076 | ,000 | -,31438 | ,000 |

***Self-Confidence***

Self-confidence per targeted group

**Table 90.** Self-confidence per targeted group

| Professional Role | | ConfAbility | ConfTime | Self-Confidence |
|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 3,81 | 3,69 | 3,7507 |
| | N | 337 | 337 | 337 |
| | Std. Deviation | ,823 | ,948 | ,71248 |
| Higher Education Students | Mean | 3,33 | 3,59 | 3,4624 |
| | N | 133 | 133 | 133 |
| | Std. Deviation | ,868 | ,930 | ,78002 |
| School Teachers | Mean | 3,64 | 3,96 | 3,7995 |
| | N | 419 | 419 | 419 |
| | Std. Deviation | ,798 | ,784 | ,68066 |
| Others | Mean | 3,76 | 3,52 | 3,6415 |
| | N | 258 | 258 | 258 |
| | Std. Deviation | ,830 | ,926 | ,74486 |
| Total | Mean | 3,68 | 3,74 | 3,7105 |
| | N | 1147 | 1147 | 1147 |
| | Std. Deviation | ,833 | ,900 | ,72382 |

Confidence in ability to learn the material (CONF1),

Confidence in completing the course on time (CONF2)

Overall confidence (CONF=(CONF1+CONF2)/2)

Compare self-confidence per targeted group

**Table 91.** Difference in self-confidence per targeted group

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| ConfAbility | Between Groups | 24,158 | 3 | 8,053 | 11,943 | ,000 |
| | Within Groups | 770,691 | 1143 | ,674 | | |
| | Total | 794,849 | 1146 | | | |
| ConfTime | Between Groups | 35,489 | 3 | 11,830 | 15,132 | ,000 |
| | Within Groups | 893,567 | 1143 | ,782 | | |
| | Total | 929,057 | 1146 | | | |
| Self-confidence | Between Groups | 13,282 | 3 | 4,427 | 8,619 | ,000 |
| | Within Groups | 587,120 | 1143 | ,514 | | |
| | Total | 600,402 | 1146 | | | |

Compare means of self-confidence between targeted groups

**Table 92.**Compare means of self-confidence between targeted groups

| | eLearning Professionals (IDs, eTutors) | | Higher Education Students | | School Teachers | |
|---|---|---|---|---|---|---|
| | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) | Mean Difference | Sig. (2-tailed) |
| ConfAbility | .479 | .000 | .108 | .005 | -.311 | .000 |
| ConfTime | Not significant | | -.266 | .000 | -.363 | .000 |
| Self-confidence | .28834 | .000 | Not significant | | -.33712 | .000 |

***Hours per week planning to spend in the course per targeted group***

**Table 93.** Distribution of hours per week planning to spend in course for eLearning professionals

| Hours per week (eLearning Professionals) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 0-2 | 1 | 1 | 112 | 112 | 112 | 33.23% |
| 3-4 | 3.5 | 12.25 | 133 | 1629.25 | 465.5 | 39.47% |
| 5-6 | 5.5 | 30.25 | 60 | 1815 | 330 | 17.80% |
| 7-8 | 7.5 | 56.25 | 19 | 1068.75 | 142.5 | 5.64% |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-10 | 9 | 81 | 13 | 1053 | 117 | 3.86% |
| Total | | | 337 | 5678 | 1167 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 3.46$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 2.20$$

**Table 94.** Distribution of hours per week planning to spend in course for Higher Education Students

| Hours per week (Higher Education Students) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 0-2 | 1 | 1 | 29 | 29 | 29 | 21.80% |
| 3-4 | 3.5 | 12.25 | 57 | 698.25 | 199.5 | 42.86% |
| 5-6 | 5.5 | 30.25 | 21 | 635.25 | 115.5 | 15.79% |
| 7-8 | 7.5 | 56.25 | 17 | 956.25 | 127.5 | 12.78% |
| 8-10 | 9 | 81 | 9 | 729 | 81 | 6.77% |
| Total | | | 133 | 3047.75 | 552.5 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 4.15$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 2.38$$

**Table 95.** Distribution of hours per week planning to spend in course for School Teachers

| Hours per week (School Teachers) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 0-2 | 1 | 1 | 76 | 76 | 76 | 18.14% |
| 3-4 | 3.5 | 12.25 | 194 | 2376.5 | 679 | 46.30% |
| 5-6 | 5.5 | 30.25 | 94 | 2843.5 | 517 | 22.43% |
| 7-8 | 7.5 | 56.25 | 42 | 2362.5 | 315 | 10.02% |
| 8-10 | 9 | 81 | 13 | 1053 | 117 | 3.10% |
| Total | | | 419 | 8711.5 | 1704 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 4.07$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 2.06$$

Compare mean hours per week planning to spend in the course per targeted group

**Table 96.** Compare mean hours per week planning to spend in the course per targeted group

| Targeted group | n | Mean hours per week | Standard Deviation |
|---|---|---|---|
| eLearning Professional | 337 | 3.36 | 2.20 |
| Higher Education Students | 133 | 4.15 | 2.38 |
| School Teachers | 419 | 4.07 | 2.06 |
| All participants | 1147 | 3.72 | 2.20 |

## Appendix 6.4 Initial EDL competence level per targeted group

**Table 97.** Initial EDL competence level per targeted group

| Professional Role | | D1a | D2a | D3a | D4a | D5a | D6a | InitEDL |
|---|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 2,4377 | 2,1788 | 2,2834 | 2,1283 | 2,1929 | 2,3610 | 2,2637 |
| | N | 337 | 337 | 337 | 337 | 337 | 337 | 337 |
| | Std. Deviation | 1,02381 | ,91436 | ,95616 | ,97649 | 1,03144 | 1,04901 | ,86322 |
| Higher Education Students | Mean | 2,2143 | 2,0357 | 2,1880 | 2,0714 | 1,9211 | 2,0952 | 2,0876 |
| | N | 133 | 133 | 133 | 133 | 133 | 133 | 133 |
| | Std. Deviation | ,90094 | ,90827 | ,95664 | ,91420 | ,89367 | ,90227 | ,79342 |
| School Teachers | Mean | 2,3496 | 2,1748 | 2,1981 | 2,0316 | 2,0072 | 2,1424 | 2,1506 |
| | N | 419 | 419 | 419 | 419 | 419 | 419 | 419 |
| | Std. Deviation | ,96658 | ,92206 | ,91317 | ,89492 | ,95406 | 1,00959 | ,85684 |
| Others | Mean | 2,5969 | 2,3818 | 2,4845 | 2,3362 | 2,2636 | 2,4651 | 2,4214 |
| | N | 258 | 258 | 258 | 258 | 258 | 258 | 258 |
| | Std. Deviation | 1,10987 | 1,05241 | 1,10524 | 1,04754 | 1,04858 | 1,03624 | ,95682 |
| Total | Mean | 2,4154 | 2,2064 | 2,2864 | 2,1332 | 2,1094 | 2,2738 | 2,2374 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| | Std. Deviation | 1,01571 | ,95369 | ,98202 | ,96309 | ,99892 | 1,02444 | ,88162 |

**Table 98.** Mean EDL competence level per EDL Dimension per professional role

| | Professional Role | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| D1a | eLearning Professionals (IDs, eTutors) | 337 | 2,4377 | 1,02381 | ,05577 |
| | Higher Education Students | 133 | 2,2143 | ,90094 | ,07812 |
| D2a | eLearning Professionals (IDs, eTutors) | 337 | 2,1788 | ,91436 | ,04981 |

| | | | | | |
|---|---|---|---|---|---|
| D3a | Higher Education Students | 133 | 2,0357 | ,90827 | ,07876 |
| | eLearning Professionals (IDs, eTutors) | 337 | 2,2834 | ,95616 | ,05209 |
| D4a | Higher Education Students | 133 | 2,1880 | ,95664 | ,08295 |
| | eLearning Professionals (IDs, eTutors) | 337 | 2,1283 | ,97649 | ,05319 |
| D5a | Higher Education Students | 133 | 2,0714 | ,91420 | ,07927 |
| | eLearning Professionals (IDs, eTutors) | 337 | 2,1929 | 1,03144 | ,05619 |
| D6a | Higher Education Students | 133 | 1,9211 | ,89367 | ,07749 |
| | eLearning Professionals (IDs, eTutors) | 337 | 2,3610 | 1,04901 | ,05714 |
| InitEDL | Higher Education Students | 133 | 2,0952 | ,90227 | ,07824 |
| | eLearning Professionals (IDs, eTutors) | 337 | 2,2637 | ,86322 | ,04702 |
| | Higher Education Students | 133 | 2,0876 | ,79342 | ,06880 |

**Table 99.** Compare mean EDL level per professional role (eLearning Professionals - HE Students)

Independent Samples Test

| eLearning Professionals (IDs, eTutors) Higher Education Students | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| D1a | Equal variances assumed | 3,805 | ,052 | 2,202 | 468 | ,028 | ,22340 | ,10145 | ,02405 | ,42275 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D2a | Equal variances assumed | ,585 | ,445 | 1,531 | 468 | ,126 | ,14307 | ,09346 | -,04058 | ,32672 |
| | Equal variances not assumed | | | 1,535 | 243,413 | ,126 | ,14307 | ,09319 | -,04048 | ,32662 |
| D3a | Equal variances assumed | ,250 | ,618 | ,974 | 468 | ,330 | ,09541 | ,09793 | -,09702 | ,28784 |
| | Equal variances not assumed | | | ,974 | 241,837 | ,331 | ,09541 | ,09795 | -,09753 | ,28835 |
| D4a | Equal variances assumed | ,606 | ,437 | ,579 | 468 | ,563 | ,05691 | ,09824 | -,13613 | ,24995 |
| | Equal variances not assumed | | | ,596 | 257,151 | ,552 | ,05691 | ,09546 | -,13108 | ,24490 |
| D5a | Equal variances assumed | 3,412 | ,065 | 2,669 | 468 | ,008 | ,27183 | ,10184 | ,07170 | ,47195 |
| | Equal variances not assumed | | | 2,840 | 277,179 | ,005 | ,27183 | ,09572 | ,08340 | ,46025 |
| D6a | Equal variances assumed | 3,728 | ,054 | 2,570 | 468 | ,010 | ,26579 | ,10340 | ,06260 | ,46898 |
| | Equal variances not assumed | | | 2,743 | 279,187 | ,006 | ,26579 | ,09688 | ,07508 | ,45650 |
| InitEDL | Equal variances assumed | 1,151 | ,284 | 2,037 | 468 | ,042 | ,17607 | ,08644 | ,00621 | ,34593 |
| | Equal variances not assumed | | | 2,113 | 261,697 | ,036 | ,17607 | ,08333 | ,01198 | ,34016 |

**Table 100.** Compare mean EDL level per professional role (eLearning Professionals - School Teachers)

Independent Samples Test

| eLearning Professionals (IDs, eTutors) School Teachers | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| D1a | Equal variances assumed | ,650 | ,420 | 1,212 | 754 | ,226 | ,08804 | ,07262 | -,05452 | ,23061 |
| | Equal variances not assumed | | | 1,205 | 700,886 | ,229 | ,08804 | ,07308 | -,05543 | ,23152 |
| D2a | Equal variances assumed | ,000 | ,999 | ,059 | 754 | ,953 | ,00396 | ,06722 | -,12799 | ,13592 |
| | Equal variances not assumed | | | ,059 | 722,103 | ,953 | ,00396 | ,06716 | -,12788 | ,13581 |
| D3a | Equal variances assumed | ,263 | ,608 | 1,250 | 754 | ,212 | ,08529 | ,06824 | -,04867 | ,21925 |
| | Equal variances not assumed | | | 1,244 | 704,874 | ,214 | ,08529 | ,06858 | -,04935 | ,21994 |
| D4a | Equal variances assumed | 2,589 | ,108 | 1,418 | 754 | ,157 | ,09672 | ,06821 | -,03718 | ,23061 |
| | Equal variances not assumed | | | 1,405 | 690,134 | ,161 | ,09672 | ,06885 | -,03847 | ,23190 |
| D5a | Equal variances assumed | 2,532 | ,112 | 2,566 | 754 | ,010 | ,18572 | ,07239 | ,04361 | ,32782 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Equal variances not assumed | | | 2,544 | 693,546 | ,011 | ,18572 | ,07300 | ,04239 | ,32905 |
| D6a | Equal variances assumed | ,327 | ,567 | 2,908 | 754 | ,004 | ,21863 | ,07517 | ,07106 | ,36620 |
| | Equal variances not assumed | | | 2,896 | 707,485 | ,004 | ,21863 | ,07549 | ,07042 | ,36683 |
| | Equal variances assumed | ,003 | ,959 | 1,797 | 754 | ,073 | ,11306 | ,06290 | -,01043 | ,23655 |
| InitEDL | Equal variances not assumed | | | 1,796 | 717,398 | ,073 | ,11306 | ,06296 | -,01054 | ,23666 |

**Table 101.** Compare mean EDL level per professional role (HE Students - School Teachers)

Independent Samples Test

| Higher Education Students School Teachers | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| D1a | Equal variances assumed | 2,380 | ,124 | -1,430 | 550 | ,153 | -,13536 | ,09467 | -,32132 | ,05061 |
| | Equal variances not assumed | | | -1,483 | 236,123 | ,139 | -,13536 | ,09128 | -,31519 | ,04448 |
| D2a | Equal variances assumed | ,596 | ,440 | -1,521 | 550 | ,129 | -,13911 | ,09144 | -,31872 | ,04051 |
| | Equal variances not assumed | | | -1,533 | 224,891 | ,127 | -,13911 | ,09073 | -,31789 | ,03968 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D3a | Equal variances assumed | | ,891 | ,346 | -,110 | 550 | ,912 | -,01012 | ,09194 | -,19072 | ,17048 |
| | Equal variances not assumed | | | | -,107 | 213,752 | ,915 | -,01012 | ,09419 | -,19577 | ,17553 |
| D4a | Equal variances assumed | | ,141 | ,707 | ,445 | 550 | ,657 | ,03981 | ,08953 | -,13606 | ,21567 |
| | Equal variances not assumed | | | | ,440 | 218,141 | ,661 | ,03981 | ,09053 | -,13862 | ,21823 |
| D5a | Equal variances assumed | | ,582 | ,446 | -,920 | 550 | ,358 | -,08611 | ,09355 | -,26986 | ,09765 |
| | Equal variances not assumed | | | | -,952 | 235,069 | ,342 | -,08611 | ,09043 | -,26426 | ,09205 |
| D6a | Equal variances assumed | | 2,643 | ,105 | -,481 | 550 | ,631 | -,04716 | ,09802 | -,23971 | ,14538 |
| | Equal variances not assumed | | | | -,510 | 245,523 | ,611 | -,04716 | ,09249 | -,22933 | ,13500 |
| InitEDL | Equal variances assumed | | 1,353 | ,245 | -,752 | 550 | ,452 | -,06301 | ,08381 | -,22763 | ,10161 |
| | Equal variances not assumed | | | | -,782 | 237,542 | ,435 | -,06301 | ,08053 | -,22166 | ,09564 |

# Appendix 7 – Characteristics of participants' profile that are related to the course completion

## Appendix 7.1 Profile of Participants that completed the course

### *a. Participants that completed the course per Age*

**Table 102.** Distribution of Age for participants that completed the course

Age of participants that completed the course

| | | |
|---|---|---|
| N | Valid | 235 |
| | Missing | 0 |
| Mean | | 37,78 |
| Median | | 39,00 |
| Mode | | 22 |
| Std. Deviation | | 11,386 |
| Variance | | 129,643 |
| Percentiles | 25 | 27,00 |
| | 50 | 39,00 |
| | 75 | 47,00 |

Compare means between the Age of participants who completed the course and participants who dropped the course

**Table 103.** Mean values of age between participants

Age

| Completed | Mean | N | Std. Deviation |
|---|---|---|---|
| No | 41,42 | 912 | 10,145 |
| Yes | 37,78 | 235 | 11,386 |
| Total | 40,68 | 1147 | 10,510 |

**Table 104.** Compare of mean age between participants who completed and those who dropped the course

Independent Samples Test

| | Levene's Test for Equality of Variances | t-test for Equality of Means |
|---|---|---|

| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Lower | Upper |
| Age | Equal variances assumed | 9,596 | ,002 | 4,784 | 1145 | ,000 | 3,643 | ,762 | 2,149 | 5,138 |
| | Equal variances not assumed | | | 4,469 | 335,923 | ,000 | 3,643 | ,815 | 2,040 | 5,247 |

### *b. Distribution of participants that completed the course per Gender*

**Table 105.** Distribution of participants that completed the course per Gender

| Gender | N | Completed | Completion Rate |
|---|---|---|---|
| I prefer not to answer | 30 | 6 | 20% |
| Female | 640 | 141 | 22% |
| Male | 477 | 88 | 18% |
| Total | 1147 | 235 | 20% |

### *c. Geographical distribution of participants that completed the course*

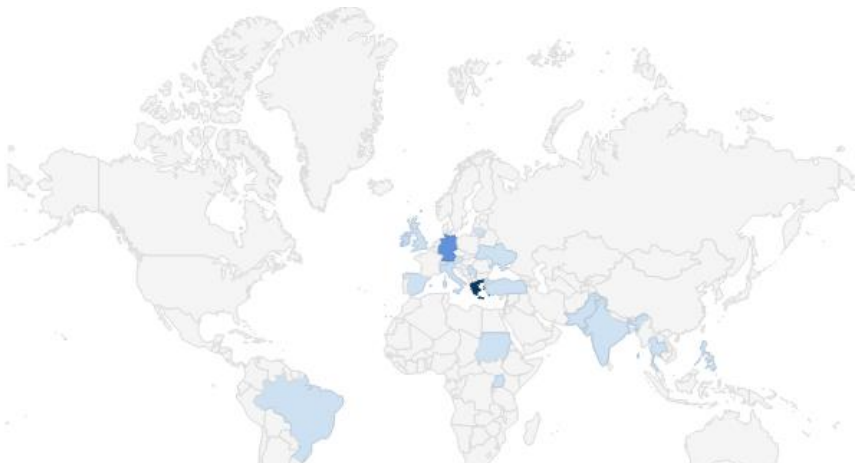

**Figure 55.** Geographical distribution of participants that completed the course (World map)

Geographical distribution of participants that completed the course

**Table 106.** Geographical distribution of participants that completed the course

| | Country | Frequency | Percent |
|---|---|---|---|
| 1. | Greece | 126 | 53.62% |
| 2. | Germany | 71 | 30.21% |
| 3. | Ireland | 8 | 3.40% |
| 4. | Italy | 3 | 1.28% |
| 5. | United Kingdom | 2 | 0.85% |
| 6. | Turkey | 2 | 0.85% |
| 7. | Brazil | 2 | 0.85% |
| 8. | Austria | 2 | 0.85% |
| 9. | Ukraine | 1 | 0.43% |
| 10. | Uganda | 1 | 0.43% |
| 11. | Thailand | 1 | 0.43% |
| 12. | Switzerland | 1 | 0.43% |
| 13. | Sudan | 1 | 0.43% |
| 14. | Spain | 1 | 0.43% |
| 15. | Serbia | 1 | 0.43% |
| 16. | Philippines | 1 | 0.43% |
| 17. | Pakistan | 1 | 0.43% |
| 18. | Luxembourg | 1 | 0.43% |
| 19. | Lithuania | 1 | 0.43% |
| 20. | Lebanon | 1 | 0.43% |
| 21. | India | 1 | 0.43% |
| 22. | France | 1 | 0.43% |
| 23. | Faroe Islands | 1 | 0.43% |
| 24. | Denmark | 1 | 0.43% |
| 25. | Croatia | 1 | 0.43% |
| 26. | Canada | 1 | 0.43% |
| 27. | Australia | 1 | 0.43% |
| | Grand Total | 235 | 100.00% |

### *d. Distribution of participants that completed the course per highest level of Education*

**Table 107.** Distribution of participants that completed the course per highest level of Education

| Highest Education Level | N | Completed | Completion Rate |
|---|---|---|---|
| Doctoral Degree (e.g., PhD, EdD) | 193 | 31 | 16% |

| | | | |
|---|---|---|---|
| Master's Degree (e.g., MA, MS, MSc, MEng, MEd, MSW, MBA) | 600 | 106 | 18% |
| Bachelor's degree (e.g., BSc, BA, AB, BS, BPS) | 195 | 48 | 25% |
| Associate degree - academic program | 28 | 6 | 21% |
| Professional School Degree (e.g., JD, MD, DDS, DVM, LLB) | 20 | 3 | 15% |
| High School Diploma (or equivalent) | 86 | 38 | 44% |
| Other | 25 | 3 | 12% |
| Total | 1147 | 235 | 20% |

### *e. Participants that completed the course per Job Sector*

**Table 108.** Participants that completed the course per Job Sector

| Job Sector | N | Completed | Completion Rate |
|---|---|---|---|
| K12, Higher Education | 790 | 168 | 21% |
| Industry | 193 | 29 | 15% |
| Self Employed/Not Employed | 106 | 25 | 24% |
| Other | 58 | 13 | 22% |
| Total | 1147 | 235 | 20% |

### *f. Distribution of participants that completed the course per years involved in their professional role*

**Table 109.** Distribution of participants that completed the course per years involved in their professional role

| Years involved in professional role | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 1-5 | 3 | 9 | 105 | 945 | 315 | 44.68% |
| 6-10 | 8 | 64 | 32 | 2048 | 256 | 13.62% |
| 11-20 | 15.5 | 240.25 | 74 | 17778.5 | 1147 | 31.49% |
| 21-30 | 25.5 | 650.25 | 24 | 15606 | 612 | 10.21% |
| Total | | | 235 | 36377.5 | 2330 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 9.91$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 7.52$$

Completion rates per Years of Experience in Professional Role

**Table 110.** Completion rates per Years of Experience in Professional Role

| YoEinPR | N | Completed | Completion Rate |
|---|---|---|---|
| 1-5 | 499 | 105 | 21% |
| 6-10 | 195 | 32 | 16% |
| 11-20 | 315 | 74 | 23% |
| 21+ | 138 | 24 | 17% |
| Total | 1147 | 235 | 205 |

### *g. Distribution of participants that completed the course per years involved in field of Digital T & L*

**Table 111.** Distribution of participants that completed the course per years involved in field of Digital T & L

| Years involved in Digital T & L | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| 1-5 | 3 | 9 | 145 | 1305 | 435 | 61.70% |
| 6-10 | 8 | 64 | 48 | 3072 | 384 | 20.43% |
| 11-20 | 15.5 | 240.25 | 38 | 9129.5 | 589 | 16.17% |
| 21-30 | 25.5 | 650.25 | 4 | 2601 | 102 | 1.70% |
| Total | | | 235 | 16107.5 | 1510 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 6.43$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 5.22$$

Completion rates per Years of Experience in Digital T & L

**Table 112.** Completion rates per Years of Experience in Digital T & L

| YoEinDTL | N | Completed | Completion Rate |
|---|---|---|---|
| 1-5 | 610 | 145 | 24% |
| 6-10 | 277 | 48 | 17% |
| 11-20 | 214 | 38 | 18% |
| 21+ | 46 | 4 | 09% |
| Total | 1147 | 235 | 20% |

### *h. Compare means of English Proficiency between participants that completed the course and those that dropped it.*

**Table 113.** Compare means of English Proficiency between participants that completed the course and those that dropped it.

Group Statistics

| | Completed | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| EnglProf | No | 912 | 4,04 | ,925 | ,031 |
| | Yes | 235 | 3,91 | ,927 | ,060 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| EnglProf | Equal variances assumed | ,120 | ,729 | 1,952 | 1145 | ,051 | ,132 | ,068 | -,001 | ,265 |
| | Equal variances not assumed | | | 1,949 | 363,280 | ,052 | ,132 | ,068 | -,001 | ,265 |

### *i. Compare means of Comfort with Technology between participants that completed the course and those that dropped it.*

**Table 114.** Compare means of Comfort with Technology between participants that completed the course and those that dropped it

Group Statistics

| | Completed | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Comfort with Technology | No | 912 | 4,33 | ,796 | ,026 |
| | Yes | 235 | 4,13 | ,863 | ,056 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| ComfTech | Equal variances Assumed | ,000 | ,996 | 3,472 | 1145 | ,001 | ,206 | ,059 | ,089 | ,322 |
| | Equal variances not assumed | | | 3,310 | 343,557 | ,001 | ,206 | ,062 | ,083 | ,328 |

### *j. MOOCs enrolled*

**Table 115.** Mean number of MOOCs enrolled among participants that completed the course

| Number of MOOCs (enrolled) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|
| None | 0 | 0 | 97 | 0 | 0 | 41.28% |
| 1 | 1 | 1 | 38 | 38 | 38 | 16.17% |
| 2-4 | 3 | 9 | 51 | 459 | 153 | 21.70% |
| 5-10 | 7 | 49 | 27 | 1323 | 189 | 11.49% |
| 11-15 | 13 | 169 | 22 | 3718 | 286 | 9.36% |
| Total | | | 235 | 5538 | 666 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 2.83$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 3.94$$

### *k. MOOCs completed*

**Table 116.** Mean number of MOOCs completed among participants that completed the course

| Number of MOOCs (completed) | $c_i$=center | $c_i^2$ | $f_i$=frequency | $c_i^2 . f_i$ | $c_i . f_i$ | % |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| None | 0 | 0 | 119 | 0 | 0 | 50.64% |
| 1 | 1 | 1 | 30 | 30 | 30 | 12.77% |
| 2-4 | 3 | 9 | 46 | 414 | 138 | 19.57% |
| 5-10 | 7 | 49 | 21 | 1029 | 147 | 8.94% |
| 11-15 | 13 | 169 | 19 | 3211 | 247 | 8.09% |
| Total | | | 235 | 4684 | 562 | 100.00% |

$$\bar{x} = \frac{\sum f_i \cdot c_i}{\sum f_i} = 2.39$$

$$s = \sqrt{\frac{f_i \cdot {c_i}^2}{n} - \bar{x}^2} = 3.77$$

## Appendix 7.2 Participants that completed the course per Professional Role

**Table 117.** Participants that completed the course per Professional Role

| Professional Role | Dropped | Completed | Total | Completion Rate |
|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | 297 | 40 | 337 | 11,87% |
| Higher Education Students | 85 | 48 | 133 | 36,10% |
| School Teachers | 317 | 102 | 419 | 24,34% |
| Others | 213 | 45 | 258 | 17,44% |
| Total | 912 | 235 | 1147 | |

**Table 118.** Mean differences in completion rate between eLearning Professionals and HE students

Group Statistics

| | Professional fRole | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Completed | eLearning Professionals (IDs, eTutors) | 337 | ,12 | ,324 | ,018 |
| | Higher Education Students | 133 | ,36 | ,482 | ,042 |

Independent Samples Test

| | Levene's Test for Equality of Variances | t-test for Equality of Means |
|---|---|---|

| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Lower | Upper |
| Completed | Equal variances assumed | 123,984 | ,000 | -6,302 | 468 | ,000 | -,242 | ,038 | -,318 | -,167 |
| | Equal variances not assumed | | | -5,338 | 180,970 | ,000 | -,242 | ,045 | -,332 | -,153 |

**Table 119.** Mean differences in completion rate between eLearning Professionals and School Teachers

Group Statistics

| | ProfRole | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Completed | eLearning Professionals (IDs, eTutors) | 337 | ,12 | ,324 | ,018 |
| | School Teachers | 419 | ,24 | ,430 | ,021 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Completed | Equal variances assumed | 87,371 | ,000 | -4,415 | 754 | ,000 | -,125 | ,028 | -,180 | -,069 |
| | Equal variances not assumed | | | -4,549 | 750,966 | ,000 | -,125 | ,027 | -,179 | -,071 |

**Table 120.** Mean differences in completion rate between HE students and School Teachers

Group Statistics

| | ProfRole | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Completed | Higher Education Students | 133 | ,36 | ,482 | ,042 |

| | | | | |
|---|---|---|---|---|
| School Teachers | 419 | ,24 | ,430 | ,021 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Completed | Equal variances assumed | 21,141 | ,000 | 2,665 | 550 | ,008 | ,117 | ,044 | ,031 | ,204 |
| | Equal variances not assumed | | | 2,511 | 202,889 | ,013 | ,117 | ,047 | ,025 | ,210 |

## Appendix 7.3 Relationship between participants' characteristics and course completion

### *a. Reasons for enrolment*

**Table 121.** Mean rating per Reason for Enrolment between participants who completed the MOOC and those who dropped

Report

| Completed | | M2.1 | M2.2 | M2.3 | M2.4 | M2.5 | M2.6 | M2.7 | M2.8 | INT | EXT | MOT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | Mean | 4,22 | 4,40 | 2,94 | 3,23 | 3,39 | 2,66 | 1,70 | 2,95 | 3,5248 | 2,6188 | 3,1850 |
| | N | 912 | 912 | 912 | 912 | 912 | 912 | 912 | 912 | 912 | 912 | 912 |
| | Std. Deviation | 1,084 | 1,045 | 1,549 | 1,493 | 1,622 | 1,751 | 1,397 | 1,523 | ,82443 | 1,11045 | ,77874 |
| Yes | Mean | 4,21 | 4,45 | 3,03 | 3,52 | 3,40 | 2,80 | 2,03 | 2,80 | 3,5319 | 2,8610 | 3,2803 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| | Std. Deviation | 1,107 | 1,021 | 1,460 | 1,322 | 1,597 | 1,792 | 1,606 | 1,507 | ,82594 | 1,05390 | ,75422 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | Mean | 4,22 | 4,41 | 2,95 | 3,29 | 3,39 | 2,69 | 1,76 | 2,92 | 3,5262 | 2,6684 | 3,2046 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| | Std. Deviation | 1,088 | 1,040 | 1,531 | 1,464 | 1,616 | 1,760 | 1,448 | 1,521 | ,82439 | 1,10299 | ,77441 |

**Table 122.** Difference in mean rating per Reason for Enrolment for participants who completed the MOOC between targeted groups

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| M2.1 | Between Groups | ,043 | 1 | ,043 | ,036 | ,849 |
| | Within Groups | 1357,151 | 1145 | 1,185 | | |
| | Total | 1357,194 | 1146 | | | |
| M2.2 | Between Groups | ,406 | 1 | ,406 | ,375 | ,541 |
| | Within Groups | 1239,005 | 1145 | 1,082 | | |
| | Total | 1239,411 | 1146 | | | |
| M2.3 | Between Groups | 1,668 | 1 | 1,668 | ,711 | ,399 |
| | Within Groups | 2685,975 | 1145 | 2,346 | | |
| | Total | 2687,643 | 1146 | | | |
| M2.4 | Between Groups | 16,071 | 1 | 16,071 | 7,541 | ,006 |
| | Within Groups | 2440,133 | 1145 | 2,131 | | |
| | Total | 2456,204 | 1146 | | | |
| M2.5 | Between Groups | ,055 | 1 | ,055 | ,021 | ,884 |
| | Within Groups | 2992,963 | 1145 | 2,614 | | |
| | Total | 2993,018 | 1146 | | | |
| M2.6 | Between Groups | 3,715 | 1 | 3,715 | 1,200 | ,274 |
| | Within Groups | 3544,546 | 1145 | 3,096 | | |
| | Total | 3548,262 | 1146 | | | |
| M2.7 | Between Groups | 21,456 | 1 | 21,456 | 10,318 | ,001 |
| | Within Groups | 2380,986 | 1145 | 2,079 | | |
| | Total | 2402,443 | 1146 | | | |
| M2.8 | Between Groups | 4,428 | 1 | 4,428 | 1,917 | ,167 |
| | Within Groups | 2645,666 | 1145 | 2,311 | | |
| | Total | 2650,094 | 1146 | | | |
| INT | Between Groups | ,010 | 1 | ,010 | ,014 | ,906 |
| | Within Groups | 778,831 | 1145 | ,680 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | 778,840 | 1146 | | | |
| | Between Groups | 10,962 | 1 | 10,962 | 9,073 | ,003 |
| EXT | Within Groups | 1383,257 | 1145 | 1,208 | | |
| | Total | 1394,219 | 1146 | | | |
| | Between Groups | 1,697 | 1 | 1,697 | 2,833 | ,093 |
| MOT | Within Groups | 685,575 | 1145 | ,599 | | |
| | Total | 687,272 | 1146 | | | |

**Table 123.** Internal motives to completion rate

Internal motives to completion rate

Completed

| INT | Mean | N | Std. Deviation |
|---|---|---|---|
| ,00 | ,00 | 2 | ,000 |
| ,20 | 1,00 | 1 | . |
| ,40 | ,00 | 1 | . |
| ,60 | ,00 | 1 | . |
| 1,00 | ,25 | 4 | ,500 |
| 1,20 | ,67 | 3 | ,577 |
| 1,40 | ,17 | 6 | ,408 |
| 1,60 | ,29 | 7 | ,488 |
| 1,80 | ,13 | 16 | ,342 |
| 2,00 | ,22 | 18 | ,428 |
| 2,20 | ,28 | 25 | ,458 |
| 2,40 | ,21 | 28 | ,418 |
| 2,60 | ,15 | 61 | ,358 |
| 2,80 | ,10 | 59 | ,305 |
| 3,00 | ,15 | 111 | ,362 |
| 3,20 | ,26 | 73 | ,442 |
| 3,40 | ,23 | 111 | ,420 |
| 3,60 | ,25 | 103 | ,437 |
| 3,80 | ,28 | 123 | ,453 |
| 4,00 | ,19 | 103 | ,397 |
| 4,20 | ,13 | 102 | ,335 |
| 4,40 | ,18 | 57 | ,384 |
| 4,60 | ,25 | 55 | ,440 |
| 4,80 | ,20 | 30 | ,407 |
| 5,00 | ,19 | 47 | ,398 |
| Total | ,20 | 1147 | ,404 |

**Table 124.** External motives to completion rate

External motives to completion rate

Completed

| EXT | Mean | N | Std. Deviation |
|---|---|---|---|
| ,00 | ,05 | 20 | ,224 |
| ,33 | ,20 | 5 | ,447 |
| ,67 | ,14 | 14 | ,363 |
| 1,00 | ,12 | 68 | ,325 |
| 1,33 | ,19 | 59 | ,393 |
| 1,67 | ,17 | 118 | ,377 |
| 2,00 | ,21 | 100 | ,409 |
| 2,33 | ,20 | 138 | ,404 |
| 2,67 | ,18 | 102 | ,383 |
| 3,00 | ,23 | 138 | ,424 |
| 3,33 | ,26 | 89 | ,440 |
| 3,67 | ,22 | 146 | ,415 |
| 4,00 | ,27 | 52 | ,448 |
| 4,33 | ,21 | 34 | ,410 |
| 4,67 | ,22 | 27 | ,424 |
| 5,00 | ,30 | 37 | ,463 |
| Total | ,20 | 1147 | ,404 |

**Table 125.** Reasons for Enrolment to completion rate

Reasons for Enrolment to completion rate

Completed

| MOT | Mean | N | Std. Deviation |
|---|---|---|---|
| ,00 | ,00 | 2 | ,000 |
| ,25 | 1,00 | 1 | . |
| ,63 | ,33 | 3 | ,577 |
| 1,00 | ,00 | 3 | ,000 |
| 1,13 | ,00 | 3 | ,000 |
| 1,25 | ,00 | 4 | ,000 |
| 1,38 | ,20 | 5 | ,447 |
| 1,50 | ,00 | 4 | ,000 |
| 1,63 | ,25 | 8 | ,463 |
| 1,75 | ,25 | 12 | ,452 |
| 1,88 | ,21 | 14 | ,426 |

| | | | |
|---|---|---|---|
| 2,00 | ,17 | 18 | ,383 |
| 2,13 | ,07 | 14 | ,267 |
| 2,25 | ,14 | 35 | ,355 |
| 2,38 | ,18 | 34 | ,387 |
| 2,50 | ,18 | 60 | ,390 |
| 2,63 | ,18 | 57 | ,384 |
| 2,75 | ,21 | 57 | ,411 |
| 2,88 | ,25 | 63 | ,439 |
| 3,00 | ,09 | 92 | ,283 |
| 3,13 | ,20 | 76 | ,401 |
| 3,25 | ,23 | 74 | ,424 |
| 3,38 | ,23 | 66 | ,422 |
| 3,50 | ,22 | 77 | ,417 |
| 3,63 | ,38 | 64 | ,488 |
| 3,75 | ,22 | 64 | ,417 |
| 3,88 | ,23 | 47 | ,428 |
| 4,00 | ,28 | 47 | ,452 |
| 4,13 | ,10 | 29 | ,310 |
| 4,25 | ,17 | 23 | ,388 |
| 4,38 | ,22 | 27 | ,424 |
| 4,50 | ,15 | 20 | ,366 |
| 4,63 | ,15 | 13 | ,376 |
| 4,75 | ,25 | 8 | ,463 |
| 4,88 | ,17 | 6 | ,408 |
| 5,00 | ,29 | 17 | ,470 |
| Total | ,20 | 1147 | ,404 |

### *b. GRIT*

**Table 126.** GRIT between participants that completed the MOOC and those that dropped

Group Statistics

| | Completed | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| G6.1 | No | 912 | 3,11 | 1,073 | ,036 |
| | Yes | 235 | 3,07 | 1,070 | ,070 |
| G6.2 | No | 912 | 3,51 | 1,030 | ,034 |
| | Yes | 235 | 3,58 | 1,011 | ,066 |
| G6.3 | No | 912 | 3,47 | ,995 | ,033 |
| | Yes | 235 | 3,53 | ,962 | ,063 |

| | | | | | |
|---|---|---|---|---|---|
| G6.4 | No | 912 | 4,12 | ,915 | ,030 |
| | Yes | 235 | 4,19 | ,848 | ,055 |
| G6.5 | No | 912 | 3,51 | ,979 | ,032 |
| | Yes | 235 | 3,63 | ,959 | ,063 |
| G6.6 | No | 912 | 3,64 | 1,072 | ,035 |
| | Yes | 235 | 3,66 | 1,056 | ,069 |
| G6.7 | No | 912 | 3,76 | 1,011 | ,033 |
| | Yes | 235 | 4,03 | ,857 | ,056 |
| G6.8 | No | 912 | 3,90 | ,984 | ,033 |
| | Yes | 235 | 4,03 | ,908 | ,059 |
| GRIT | No | 912 | 3,63 | ,618 | ,020 |
| | Yes | 235 | 3,71 | ,601 | ,039 |

**Table 127.** Mean differences for GRIT statements between participants that completed the MOOC and those that dropped

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| G6.1 | Equal variances assumed | ,002 | ,968 | ,434 | 1145 | ,665 | ,034 | ,078 | -,120 | ,188 |
| | Equal variances not assumed | | | ,434 | 364,738 | ,664 | ,034 | ,078 | -,120 | ,188 |
| G6.2 | Equal variances assumed | ,217 | ,641 | -,974 | 1145 | ,330 | -,073 | ,075 | -,220 | ,074 |
| | Equal variances not assumed | | | -,985 | 369,066 | ,325 | -,073 | ,074 | -,219 | ,073 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| G6.3 | Equal variances assumed | | ,602 | ,438 | -,823 | 1145 | ,411 | -,059 | ,072 | -,201 | ,082 |
| | Equal variances not assumed | | | | -,839 | 373,351 | ,402 | -,059 | ,071 | -,199 | ,080 |
| G6.4 | Equal variances assumed | | ,781 | ,377 | -1,157 | 1145 | ,247 | -,076 | ,066 | -,206 | ,053 |
| | Equal variances not assumed | | | | -1,210 | 386,460 | ,227 | -,076 | ,063 | -,200 | ,048 |
| G6.5 | Equal variances assumed | | 1,142 | ,285 | -1,606 | 1145 | ,109 | -,115 | ,071 | -,255 | ,025 |
| | Equal variances not assumed | | | | -1,626 | 369,929 | ,105 | -,115 | ,070 | -,253 | ,024 |
| G6.6 | Equal variances assumed | | ,005 | ,941 | -,246 | 1145 | ,806 | -,019 | ,078 | -,173 | ,134 |
| | Equal variances not assumed | | | | -,248 | 368,085 | ,804 | -,019 | ,077 | -,172 | ,133 |
| G6.7 | Equal variances assumed | | 28,552 | ,000 | -3,701 | 1145 | ,000 | -,266 | ,072 | -,406 | -,125 |
| | Equal variances not assumed | | | | -4,078 | 417,969 | ,000 | -,266 | ,065 | -,394 | -,138 |
| G6.8 | Equal variances assumed | | 6,863 | ,009 | -1,828 | 1145 | ,068 | -,130 | ,071 | -,269 | ,009 |
| | Equal variances not assumed | | | | -1,917 | 388,010 | ,056 | -,130 | ,068 | -,262 | ,003 |
| GRIT | Equal variances assumed | | ,131 | ,718 | -1,958 | 1145 | ,050 | -,088 | ,045 | -,176 | ,000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Equal variances not assumed | | | -1,989 | 371,437 | ,047 | -,088 | ,044 | -,175 | -,001 |

### *c. Self-confidence*

**Table 128.** Mean confidence between participants that completed the MOOC and those who dropped

| | Completed | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| ConfAbility | No | 912 | 3,71 | ,828 | ,027 |
| | Yes | 235 | 3,58 | ,845 | ,055 |
| ConfTime | No | 912 | 3,71 | ,921 | ,030 |
| | Yes | 235 | 3,84 | ,811 | ,053 |
| Self-confidence | No | 912 | 3,7105 | ,72556 | ,02403 |
| | Yes | 235 | 3,7106 | ,71857 | ,04687 |

**Table 129.** Compare means for confidence between participants that completed the MOOC and those who dropped

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| ConfAbility | Equal variances assumed | 1,189 | ,276 | 2,042 | 1145 | ,041 | ,124 | ,061 | ,005 | ,244 |
| | Equal variances not assumed | | | 2,018 | 358,492 | ,044 | ,124 | ,062 | ,003 | ,245 |
| ConfTime | Equal variances assumed | 9,254 | ,002 | -1,892 | 1145 | ,059 | -,124 | ,066 | -,254 | ,005 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Self-Confidence | Equal variances not assumed | | | -2,039 | 403,865 | ,042 | -,124 | ,061 | -,245 | -,004 |
| | Equal variances assumed | ,061 | ,805 | -,002 | 1145 | ,998 | -,00011 | ,05297 | -,10405 | ,10383 |
| | Equal variances not assumed | | | -,002 | 366,600 | ,998 | -,00011 | ,05267 | -,10369 | ,10347 |

Correlations

| | | Completed | ConfAbility |
|---|---|---|---|
| Completed | Pearson Correlation | 1 | -,060* |
| | Sig. (2-tailed) | | ,041 |
| | N | 1147 | 1147 |
| ConfAbility | Pearson Correlation | -,060* | 1 |
| | Sig. (2-tailed) | ,041 | |
| | N | 1147 | 1147 |

*. Correlation is significant at the 0.05 level (2-tailed).

Confidence in the ability to learn the material

| ConfAbility | Mean | N | Std. Deviation |
|---|---|---|---|
| 1 | ,18 | 11 | ,405 |
| 2 | ,30 | 74 | ,460 |
| 3 | ,21 | 350 | ,411 |
| 4 | ,20 | 546 | ,400 |
| 5 | ,16 | 166 | ,370 |
| Total | ,20 | 1147 | ,404 |

Confidence in the Ability to complete the course on time

| ConfTime | Mean | N | Std. Deviation |
|---|---|---|---|
| 1 | ,00 | 12 | ,000 |
| 2 | ,13 | 78 | ,336 |
| 3 | ,20 | 347 | ,400 |
| 4 | ,22 | 470 | ,417 |
| 5 | ,21 | 240 | ,410 |

| | | | |
|---|---|---|---|
| Total | ,20 | 1147 | ,404 |

### *d. Hours planning to spend in the course*

**Table 130.** Completion rate per reported hours per week planning to spend in the course

Completed

| Hours | Mean | N | Std. Deviation |
|---|---|---|---|
| less than 3 hours | ,11 | 313 | ,312 |
| 3-4 hours | ,19 | 484 | ,396 |
| 5-6 hours | ,28 | 215 | ,452 |
| 7-8 hours | ,33 | 92 | ,471 |
| more than 8 hours | ,37 | 43 | ,489 |
| Total | ,20 | 1147 | ,404 |

**Table 131.** Distribution of participants per hours per week planning to spend in the course

| | | Hours planning to spend in the course | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | 3-4 hours | 5-6 hours | 7-8 hours | less than 3 hours | more than 8 hours | |
| Completed | No | 390 | 154 | 62 | 279 | 27 | 912 |
| | Yes | 94 | 61 | 30 | 34 | 16 | 235 |
| Total | | 484 | 215 | 92 | 313 | 43 | 1147 |

# Appendix 8 - Characteristics of participants' profile that are related to the EDL competences advancement

**Table 132.** Initial EDL level for participants that competed the course per targeted group

Initial EDL Level per Targeted group

| Targeted group | | D1a | D2a | D3a | D4a | D5a | D6a |
|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 2,7375 | 2,4063 | 2,4875 | 2,3000 | 2,4500 | 2,3833 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 |
| | Std. Deviation | 1,21417 | 1,03572 | 1,12368 | 1,16051 | 1,17014 | 1,19722 |
| Higher Education Students | Mean | 2,1771 | 2,0208 | 2,2917 | 2,1667 | 2,0417 | 2,1111 |
| | N | 48 | 48 | 48 | 48 | 48 | 48 |
| | Std. Deviation | ,88420 | ,79029 | ,89224 | ,83528 | ,90409 | ,81746 |
| School Teachers | Mean | 2,1569 | 2,0564 | 2,1520 | 1,9632 | 1,9020 | 2,0621 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| | Std. Deviation | ,91191 | ,86022 | ,88382 | ,86916 | ,93088 | ,93311 |
| Others | Mean | 2,3000 | 2,1111 | 2,2000 | 2,0833 | 2,0889 | 2,1259 |
| | N | 45 | 45 | 45 | 45 | 45 | 45 |
| | Std. Deviation | 1,07872 | ,96318 | 1,09959 | ,92319 | 1,00730 | ,90255 |
| Total | Mean | 2,2872 | 2,1191 | 2,2468 | 2,0851 | 2,0596 | 2,1390 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 |
| | Std. Deviation | 1,01245 | ,90326 | ,97443 | ,93094 | ,99715 | ,95659 |

**Table 133.** Achieved EDL level per targeted group

Achieved EDL Level per Targeted group

| Professional Role | | D1b | D2b | D3b | D4b | D5b | D6b |
|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | 3,2500 | 3,1188 | 3,1875 | 3,0938 | 3,1625 | 3,1083 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 |
| | Std. Deviation | ,80064 | ,87521 | ,91769 | ,92627 | ,81953 | ,82479 |
| | Mean | 2,6354 | 2,5885 | 2,6875 | 2,5729 | 2,5521 | 2,6389 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Higher Education Students | N | 48 | 48 | 48 | 48 | 48 | 48 |
| | Std. Deviation | ,86750 | ,88650 | 1,03977 | ,89466 | ,83945 | ,89610 |
| | Mean | 3,0000 | 2,9559 | 3,0147 | 2,9412 | 2,9706 | 3,0359 |
| School Teachers | N | 102 | 102 | 102 | 102 | 102 | 102 |
| | Std. Deviation | ,82654 | ,86059 | ,87443 | ,86185 | ,93296 | ,86987 |
| | Mean | 2,9889 | 2,9222 | 2,9444 | 2,8778 | 2,7667 | 2,9778 |
| Others | N | 45 | 45 | 45 | 45 | 45 | 45 |
| | Std. Deviation | ,85605 | ,86901 | ,89964 | ,93027 | ,79487 | ,90565 |
| | Mean | 2,9660 | 2,9021 | 2,9638 | 2,8798 | 2,8787 | 2,9560 |
| Total | N | 235 | 235 | 235 | 235 | 235 | 235 |
| | Std. Deviation | ,85292 | ,88131 | ,93013 | ,90326 | ,88866 | ,88485 |

**Table 134.** Mean EDL advancement per EDL dimension per targeted group

Report

| Targeted group | | D1adv | D2adv | D3adv | D4adv | D5adv | D6adv |
|---|---|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | Mean | ,5125 | ,7125 | ,7000 | ,7938 | ,7125 | ,7250 |
| | N | 40 | 40 | 40 | 40 | 40 | 40 |
| | Std. Deviation | 1,22206 | ,99284 | ,93233 | ,92661 | 1,00567 | 1,12188 |
| Higher Education Students | Mean | ,4583 | ,5677 | ,3958 | ,4063 | ,5104 | ,5278 |
| | N | 48 | 48 | 48 | 48 | 48 | 48 |
| | Std. Deviation | ,89224 | ,86716 | ,99978 | ,84051 | ,87816 | ,93230 |
| School Teachers | Mean | ,8431 | ,8995 | ,8627 | ,9779 | 1,0686 | ,9739 |
| | N | 102 | 102 | 102 | 102 | 102 | 102 |
| | Std. Deviation | 1,04118 | ,98457 | ,97787 | ,93944 | 1,08098 | 1,16011 |
| Others | Mean | ,6889 | ,8111 | ,7444 | ,7944 | ,6778 | ,8519 |
| | N | 45 | 45 | 45 | 45 | 45 | 45 |
| | Std. Deviation | 1,02961 | 1,02961 | 1,06399 | 1,05433 | ,96622 | 1,12716 |
| Total | Mean | ,6787 | ,7830 | ,7170 | ,7947 | ,8191 | ,8170 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Std. Deviation | 1,05002 | ,97442 | 1,00092 | ,95945 | 1,02754 | 1,11072 |

**Table 135.** Compare means of EDL advancement between targeted groups

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| D1adv | Between Groups | 6,199 | 3 | 2,066 | 1,896 | ,131 |
| | Within Groups | 251,795 | 231 | 1,090 | | |
| | Total | 257,994 | 234 | | | |
| D2adv | Between Groups | 3,844 | 3 | 1,281 | 1,356 | ,257 |
| | Within Groups | 218,338 | 231 | ,945 | | |
| | Total | 222,182 | 234 | | | |
| D3adv | Between Groups | 7,163 | 3 | 2,388 | 2,427 | ,066 |
| | Within Groups | 227,269 | 231 | ,984 | | |
| | Total | 234,432 | 234 | | | |
| D4adv | Between Groups | 10,668 | 3 | 3,556 | 4,012 | ,008 |
| | Within Groups | 204,738 | 231 | ,886 | | |
| | Total | 215,406 | 234 | | | |
| D5adv | Between Groups | 12,278 | 3 | 4,093 | 4,027 | ,008 |
| | Within Groups | 234,786 | 231 | 1,016 | | |
| | Total | 247,064 | 234 | | | |
| D6adv | Between Groups | 6,918 | 3 | 2,306 | 1,891 | ,132 |
| | Within Groups | 281,769 | 231 | 1,220 | | |
| | Total | 288,687 | 234 | | | |
| EDLadv | Between Groups | 7,208 | 3 | 2,403 | 3,088 | ,028 |
| | Within Groups | 179,743 | 231 | ,778 | | |
| | Total | 186,952 | 234 | | | |

**Table 136.** Significant differences of EDL competence dimensions advancement between targeted groups

| | eLearning Professionals – Higher Education Students | | eLearning Professionals – School Teachers | | Higher Education Students – School Teachers | |
|---|---|---|---|---|---|---|
| | Difference | Sig. | Difference | Sig. | Difference | Sig. |
| D1adv | No significant difference between targeted groups | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| D2adv | No significant difference between targeted groups | | | | |
| D3adv | No significant difference between targeted groups | | | | |
| D4adv | ,38750 | ,043 | No significant difference between targeted groups | -,57169 | ,000 |
| D5adv | No significant difference between targeted groups | | | -,.55821 | ,002 |
| D6adv | No significant difference between targeted groups | | | | |
| EDLadv | No significant difference between targeted groups | | | -,45992 | ,003 |

**Table 137.** Compare Motives, EDL Advancement and Learning Experience between eLearning Professionals and HE students

Independent Samples Test

| eLearning professionals – Higher Education Students | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| OLX | Equal variances assumed | ,456 | ,502 | ,500 | 86 | ,619 | ,06215 | ,12436 | -,18507 | ,30938 |
| | Equal variances not assumed | | | ,491 | 75,579 | ,625 | ,06215 | ,12656 | -,18994 | ,31425 |
| CONF | Equal variances assumed | ,868 | ,354 | 3,669 | 86 | ,000 | ,58125 | ,15844 | ,26628 | ,89622 |
| | Equal variances not assumed | | | 3,727 | 85,991 | ,000 | ,58125 | ,15595 | ,27123 | ,89127 |
| SAT | Equal variances assumed | ,058 | ,811 | 3,587 | 86 | ,001 | ,74167 | ,20677 | ,33062 | 1,15271 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INT | Equal variances assumed | | | | 3,588 | 83,263 | ,001 | ,74167 | ,20671 | ,33056 | 1,15278 |
| | Equal variances not assumed | | | | 2,993 | 86 | ,004 | ,58750 | ,19628 | ,19731 | ,97769 |
| EDLadv | Equal variances assumed | | | | 2,988 | 82,566 | ,004 | ,58750 | ,19663 | ,19638 | ,97862 |
| | Equal variances not assumed | | | | 1,249 | 86 | ,215 | ,21499 | ,17207 | -,12708 | ,55706 |
| GRIT | Equal variances assumed | 2,036 | ,157 | 1,227 | 75,376 | ,224 | ,21499 | ,17519 | -,13397 | ,56395 | |
| | Equal variances not assumed | ,253 | ,616 | 1,018 | 86 | ,312 | ,13350 | ,13114 | -,12720 | ,39420 | |
| ConfAbility | Equal variances assumed | | | | 1,022 | 84,300 | ,310 | ,13350 | ,13062 | -,12625 | ,39325 |
| | Equal variances not assumed | 5,699 | ,019 | 4,403 | 86 | ,000 | ,77917 | ,17695 | ,42739 | 1,13094 | |
| ConfTime | Equal variances assumed | | | | 4,517 | 85,174 | ,000 | ,77917 | ,17250 | ,43620 | 1,12213 |
| | Equal variances not assumed | 3,537 | ,063 | 1,137 | 86 | ,259 | ,20833 | ,18330 | -,15605 | ,57272 | |
| SelfConf | Equal variances assumed | | | | 1,151 | 85,810 | ,253 | ,20833 | ,18101 | -,15151 | ,56818 |
| | Equal variances not assumed | 3,822 | ,054 | 3,245 | 86 | ,002 | ,49375 | ,15213 | ,19132 | ,79618 | |
| | | | | | 3,333 | 84,921 | ,001 | ,49375 | ,14812 | ,19924 | ,78826 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INTmot | Equal variances assumed | 5,567 | ,021 | ,004 | 86 | ,996 | ,00083 | ,18886 | -,37460 | ,37627 |
| | Equal variances not assumed | | | ,005 | 81,759 | ,996 | ,00083 | ,18205 | -,36134 | ,36300 |
| EXTmot | Equal variances assumed | ,069 | ,794 | -1,662 | 86 | ,100 | -,36975 | ,22249 | -,81205 | ,07255 |
| | Equal variances not assumed | | | -1,666 | 83,940 | ,099 | -,36975 | ,22192 | -,81107 | ,07157 |

**Table 138.** Compare Motives, EDL Advancement and Learning Experience between eLearning Professionals and School Teachers

Independent Samples Test

| eLearning Professional – School Teachers | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| OLX | Equal variances assumed | 1,073 | ,302 | -1,802 | 140 | ,074 | -,22717 | ,12604 | -,47635 | ,02202 |
| | Equal variances not assumed | | | -1,862 | 76,468 | ,066 | -,22717 | ,12198 | -,47009 | ,01576 |
| CONF | Equal variances assumed | ,227 | ,635 | ,634 | 140 | ,527 | ,08922 | ,14080 | -,18915 | ,36758 |
| | Equal variances not assumed | | | ,680 | 83,328 | ,498 | ,08922 | ,13117 | -,17166 | ,35009 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAT | Equal variances assumed | | ,304 | ,582 | ,493 | 140 | ,623 | ,08358 | ,16969 | -,25190 | ,41906 |
| | Equal variances not assumed | | | | ,475 | 66,410 | ,636 | ,08358 | ,17595 | -,26767 | ,43483 |
| INT | Equal variances assumed | | ,048 | ,827 | -,429 | 140 | ,668 | -,07304 | ,17018 | -,40949 | ,26341 |
| | Equal variances not assumed | | | | -,425 | 69,982 | ,672 | -,07304 | ,17180 | -,41569 | ,26962 |
| EDLadv | Equal variances assumed | | ,004 | ,948 | -1,429 | 140 | ,155 | -,24493 | ,17134 | -,58367 | ,09382 |
| | Equal variances not assumed | | | | -1,460 | 74,584 | ,148 | -,24493 | ,16775 | -,57913 | ,08928 |
| GRIT | Equal variances assumed | | ,066 | ,798 | -1,935 | 140 | ,055 | -,21496 | ,11110 | -,43460 | ,00469 |
| | Equal variances not assumed | | | | -1,930 | 70,959 | ,058 | -,21496 | ,11140 | -,43708 | ,00717 |
| ConfAbility | Equal variances assumed | | 2,615 | ,108 | 2,426 | 140 | ,017 | ,33676 | ,13879 | ,06238 | ,61115 |
| | Equal variances not assumed | | | | 2,529 | 77,929 | ,013 | ,33676 | ,13317 | ,07164 | ,60189 |
| ConfTime | Equal variances assumed | | ,618 | ,433 | -,831 | 140 | ,408 | -,11520 | ,13868 | -,38938 | ,15899 |
| | Equal variances not assumed | | | | -,799 | 66,136 | ,427 | -,11520 | ,14411 | -,40292 | ,17252 |
| SelfConf | Equal variances assumed | | 1,190 | ,277 | ,928 | 140 | ,355 | ,11078 | ,11937 | -,12522 | ,34679 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Equal variances not assumed | | | ,973 | 78,983 | ,333 | ,11078 | ,11385 | -,11583 | ,33740 |
| INTmot | Equal variances assumed | ,450 | ,504 | -,421 | 140 | ,674 | -,05725 | ,13598 | -,32610 | ,21159 |
| | Equal variances not assumed | | | -,442 | 79,169 | ,660 | -,05725 | ,12956 | -,31512 | ,20061 |
| EXTmot | Equal variances assumed | ,066 | ,797 | 1,051 | 140 | ,295 | ,20307 | ,19316 | -,17881 | ,58495 |
| | Equal variances not assumed | | | 1,059 | 72,414 | ,293 | ,20307 | ,19178 | -,17920 | ,58533 |

**Table 139.** Compare Motives, EDL Advancement and Learning Experience between HE students and School Teachers

Independent Samples Test

| Higher Education Students - School Teachers | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| OLX | Equal variances assumed | 3,981 | ,048 | -2,574 | 148 | ,011 | -,28932 | ,11239 | -,51141 | -,06722 |
| | Equal variances not assumed | | | -2,831 | 117,551 | ,005 | -,28932 | ,10221 | -,49174 | -,08690 |
| CONF | Equal variances assumed | ,259 | ,611 | -3,564 | 148 | ,000 | -,49203 | ,13804 | -,76481 | -,21926 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAT | Equal variances assumed | ,812 | ,369 | -3,549 | 91,171 | ,001 | -,49203 | ,13863 | -,76740 | -,21667 |
| | Equal variances not assumed | | | -4,115 | 148 | ,000 | -,65809 | ,15993 | -,97413 | -,34205 |
| | | | | -3,989 | 85,388 | ,000 | -,65809 | ,16498 | -,98609 | -,33008 |
| INT | Equal variances assumed | ,138 | ,711 | -4,159 | 148 | ,000 | -,66054 | ,15881 | -,97437 | -,34671 |
| | Equal variances not assumed | | | -4,156 | 91,954 | ,000 | -,66054 | ,15894 | -,97621 | -,34486 |
| EDLadv | Equal variances assumed | 1,931 | ,167 | -3,016 | 148 | ,003 | -,45992 | ,15249 | -,76125 | -,15858 |
| | Equal variances not assumed | | | -3,292 | 115,337 | ,001 | -,45992 | ,13973 | -,73668 | -,18316 |
| GRIT | Equal variances assumed | ,133 | ,716 | -3,295 | 148 | ,001 | -,34846 | ,10574 | -,55741 | -,13950 |
| | Equal variances not assumed | | | -3,238 | 88,204 | ,002 | -,34846 | ,10763 | -,56234 | -,13457 |
| ConfAbility | Equal variances assumed | 2,426 | ,121 | -3,095 | 148 | ,002 | -,44240 | ,14293 | -,72485 | -,15996 |
| | Equal variances not assumed | | | -2,891 | 78,318 | ,005 | -,44240 | ,15304 | -,74705 | -,13775 |
| ConfTime | Equal variances assumed | 9,819 | ,002 | -2,349 | 148 | ,020 | -,32353 | ,13775 | -,59573 | -,05133 |
| | Equal variances not assumed | | | -2,167 | 76,247 | ,033 | -,32353 | ,14928 | -,62082 | -,02624 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SelfConf | Equal variances assumed | 2,035 | ,156 | -3,104 | 148 | ,002 | -,38297 | ,12339 | -,62680 | -,13914 |
| | Equal variances not assumed | | | -2,898 | 78,260 | ,005 | -,38297 | ,13216 | -,64606 | -,11988 |
| INTmot | Equal variances assumed | 5,577 | ,020 | -,392 | 148 | ,696 | -,05809 | ,14823 | -,35100 | ,23483 |
| | Equal variances not assumed | | | -,351 | 71,567 | ,727 | -,05809 | ,16548 | -,38800 | ,27182 |
| EXTmot | Equal variances assumed | ,351 | ,555 | 3,135 | 148 | ,002 | ,57282 | ,18273 | ,21172 | ,93392 |
| | Equal variances not assumed | | | 3,121 | 91,168 | ,002 | ,57282 | ,18352 | ,20829 | ,93734 |

# Appendix 9 – Learning Experience

## Appendix 9.1 Learning Experience per module

**Table 140.** Distribution of posts in L2A MOOC

Posts

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | ,00 | 88 | 37,4 | 37,4 | 37,4 |
| | 1,00 | 25 | 10,6 | 10,6 | 48,1 |
| | 2,00 | 15 | 6,4 | 6,4 | 54,5 |
| | 3,00 | 17 | 7,2 | 7,2 | 61,7 |
| | 4,00 | 2 | ,9 | ,9 | 62,6 |
| | 5,00 | 4 | 1,7 | 1,7 | 64,3 |
| | 6,00 | 37 | 15,7 | 15,7 | 80,0 |
| | 7,00 | 6 | 2,6 | 2,6 | 82,6 |
| | 8,00 | 2 | ,9 | ,9 | 83,4 |
| | 9,00 | 6 | 2,6 | 2,6 | 86,0 |
| | 10,00 | 4 | 1,7 | 1,7 | 87,7 |
| | 11,00 | 6 | 2,6 | 2,6 | 90,2 |
| | 12,00 | 10 | 4,3 | 4,3 | 94,5 |
| | 13,00 | 6 | 2,6 | 2,6 | 97,0 |
| | 14,00 | 2 | ,9 | ,9 | 97,9 |
| | 16,00 | 1 | ,4 | ,4 | 98,3 |
| | 18,00 | 4 | 1,7 | 1,7 | 100,0 |
| | Total | 235 | 100,0 | 100,0 | |

## Appendix 9.2 Overall Learning Experience per Professional Role

**Table 141.** Learning Experience per targeted group

Report

| ProfRole | | LX | CONF | SAT | INT |
|---|---|---|---|---|---|
| | Mean | 3,8080 | 3,9130 | 3,7935 | 4,0978 |

| | | | | | |
|---|---|---|---|---|---|
| eLearning Professionals (IDs, eTutors) | N | 46 | 46 | 46 | 46 |
| | Std. Deviation | ,64067 | ,83203 | ,96365 | ,91055 |
| | Mean | 3,7049 | 3,9167 | 3,5417 | 3,5625 |
| Higher Education Students | N | 24 | 24 | 24 | 24 |
| | Std. Deviation | ,59129 | ,74697 | ,94313 | 1,16388 |
| | Mean | 3,7386 | 3,8068 | 3,6098 | 3,8788 |
| School Teachers | N | 132 | 132 | 132 | 132 |
| | Std. Deviation | ,64061 | ,78060 | ,96368 | ,92695 |
| | Mean | 4,0859 | 4,1970 | 4,1515 | 4,3333 |
| Others | N | 33 | 33 | 33 | 33 |
| | Std. Deviation | ,70326 | ,68396 | ,93946 | ,86301 |
| | Mean | 3,7975 | 3,8936 | 3,7149 | 3,9532 |
| Total | N | 235 | 235 | 235 | 235 |
| | Std. Deviation | ,65212 | ,78130 | ,97160 | ,95851 |

**Table 142.** Mean differences of learning experience among groups

ANOVA

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| OLX | Between Groups | 3,412 | 3 | 1,137 | 2,734 | ,044 |
| | Within Groups | 96,099 | 231 | ,416 | | |
| | Total | 99,511 | 234 | | | |
| CONF | Between Groups | 4,061 | 3 | 1,354 | 2,253 | ,083 |
| | Within Groups | 138,779 | 231 | ,601 | | |
| | Total | 142,840 | 234 | | | |
| SAT | Between Groups | 8,752 | 3 | 2,917 | 3,177 | ,025 |
| | Within Groups | 212,146 | 231 | ,918 | | |
| | Total | 220,898 | 234 | | | |
| INT | Between Groups | 10,125 | 3 | 3,375 | 3,806 | ,011 |
| | Within Groups | 204,860 | 231 | ,887 | | |
| | Total | 214,985 | 234 | | | |

**Table 143.** Relationship between EDL competence advancement and Confirmation of Expectations

EDLadv

| CONF | Mean | N | Std. Deviation |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1,00 | -,6806 | 1 | . |
| 1,50 | -,4583 | 2 | 1,29636 |
| 2,00 | ,2611 | 5 | ,91700 |
| 2,50 | ,3167 | 10 | ,75489 |
| 3,00 | ,3419 | 26 | ,80101 |
| 3,50 | ,8677 | 40 | ,82754 |
| 4,00 | ,8050 | 80 | ,79953 |
| 4,50 | ,9146 | 34 | ,99331 |
| 5,00 | 1,0424 | 37 | ,96889 |
| Total | ,7683 | 235 | ,89383 |

**Table 144.** Relationship between EDL competence advancement and Learning Experience

EDLadv

| LX | Mean | N | Std. Deviation |
|---|---|---|---|
| 1,67 | ,0000 | 1 | . |
| 1,92 | ,0000 | 1 | . |
| 2,17 | ,0000 | 1 | . |
| 2,42 | -1,0000 | 1 | . |
| 2,58 | ,7083 | 3 | ,21651 |
| 2,67 | ,5833 | 4 | ,58608 |
| 2,75 | -,1875 | 2 | ,34373 |
| 2,83 | ,2972 | 5 | ,28626 |
| 2,92 | ,4688 | 8 | ,83369 |
| 3,00 | ,1616 | 11 | ,61996 |
| 3,08 | ,5532 | 6 | ,73689 |
| 3,17 | ,9722 | 5 | ,51604 |
| 3,25 | 1,2222 | 6 | ,91219 |
| 3,33 | ,4645 | 9 | ,77190 |
| 3,42 | ,6458 | 8 | ,89578 |
| 3,50 | 1,0324 | 6 | 1,24520 |
| 3,58 | ,7837 | 7 | ,70642 |
| 3,67 | ,8512 | 14 | ,60854 |
| 3,75 | ,4681 | 10 | 1,43896 |
| 3,83 | ,5817 | 17 | ,81161 |
| 3,92 | 1,0846 | 11 | ,85611 |
| 4,00 | 1,0353 | 13 | 1,28575 |
| 4,08 | ,8182 | 11 | ,82646 |

| | | | |
|---|---|---|---|
| 4,17 | ,8598 | 11 | ,77962 |
| 4,25 | ,6312 | 9 | 1,04995 |
| 4,33 | 1,0952 | 14 | ,71909 |
| 4,42 | ,7269 | 6 | ,66746 |
| 4,50 | 1,2556 | 5 | 1,52906 |
| 4,58 | 1,0556 | 3 | ,70874 |
| 4,67 | ,8611 | 5 | ,56254 |
| 4,75 | ,8715 | 4 | ,37805 |
| 4,83 | 1,1349 | 7 | ,79470 |
| 4,92 | 1,3333 | 1 | . |
| 5,00 | 1,1681 | 10 | 1,26034 |
| Total | ,7683 | 235 | ,89383 |

**Table 145.** Relationship between EDL competence advancement and satisfaction

EDLadv

| SAT | Mean | N | Std. Deviation |
|---|---|---|---|
| 1,00 | ,1910 | 8 | ,55450 |
| 1,50 | ,8222 | 5 | ,62626 |
| 2,00 | -,0079 | 7 | 1,15497 |
| 2,50 | ,6458 | 10 | ,76217 |
| 3,00 | ,4066 | 36 | ,82122 |
| 3,50 | ,6923 | 33 | ,86294 |
| 4,00 | ,9892 | 67 | ,88470 |
| 4,50 | ,9483 | 36 | ,75828 |
| 5,00 | ,9272 | 33 | 1,02417 |
| Total | ,7683 | 235 | ,89383 |

**Table 146.** Relationship between EDL competence advancement and Continuance Intention

EDLadv

| INT | Mean | N | Std. Deviation |
|---|---|---|---|
| 1,00 | -,1458 | 6 | ,80731 |
| 2,00 | ,6052 | 7 | ,98470 |
| 2,50 | ,4444 | 11 | ,70555 |
| 3,00 | ,4642 | 31 | ,89119 |
| 3,50 | ,7168 | 23 | ,75773 |
| 4,00 | ,7894 | 61 | ,87967 |

| | | | |
|---|---|---|---|
| 4,50 | ,8060 | 32 | ,82006 |
| 5,00 | 1,0543 | 64 | ,93073 |
| Total | ,7683 | 235 | ,89383 |

**Table 147.** Relationship between EDL competence advancement and Confidence in the ability to learn the material

EDLadv

| CONF1 | Mean | N | Std. Deviation |
|---|---|---|---|
| 1,00 | ,2569 | 2 | ,20624 |
| 2,00 | ,7153 | 22 | ,81937 |
| 3,00 | ,8550 | 75 | ,81393 |
| 4,00 | ,7661 | 109 | ,88842 |
| 5,00 | ,6173 | 27 | 1,18934 |
| Total | ,7683 | 235 | ,89383 |

**Table 148.** Relationship between EDL competence advancement and Confidence in the ability complete the course on time

EDLadv

| CONF2 | Mean | N | Std. Deviation |
|---|---|---|---|
| 2,00 | ,6486 | 10 | ,95017 |
| 3,00 | ,9052 | 69 | ,80704 |
| 4,00 | ,6083 | 105 | ,83815 |
| 5,00 | ,9357 | 51 | 1,05759 |
| Total | ,7683 | 235 | ,89383 |

**Table 149.** Relationship between EDL competence advancement and Internal Motives

EDLadv

| INTmot | Mean | N | Std. Deviation |
|---|---|---|---|
| ,20 | 1,0833 | 1 | . |
| 1,00 | ,8333 | 1 | . |
| 1,20 | ,7292 | 2 | ,12767 |
| 1,40 | ,5417 | 1 | . |
| 1,60 | 1,0833 | 2 | ,00000 |
| 1,80 | 1,2847 | 2 | ,02946 |

| | | | |
|---|---|---|---|
| 2,00 | ,3715 | 4 | ,93151 |
| 2,20 | ,3849 | 7 | ,80889 |
| 2,40 | ,7315 | 6 | ,58884 |
| 2,60 | ,8750 | 9 | ,49413 |
| 2,80 | ,5602 | 6 | ,97826 |
| 3,00 | ,8391 | 17 | ,77065 |
| 3,20 | ,6798 | 19 | ,68075 |
| 3,40 | ,7839 | 25 | ,95000 |
| 3,60 | ,7179 | 26 | 1,01887 |
| 3,80 | ,6762 | 35 | ,96466 |
| 4,00 | ,9576 | 20 | ,77846 |
| 4,20 | ,8803 | 13 | ,90625 |
| 4,40 | ,4347 | 10 | ,54280 |
| 4,60 | ,9603 | 14 | 1,43163 |
| 4,80 | ,8958 | 6 | ,91163 |
| 5,00 | 1,0231 | 9 | 1,28957 |
| Total | ,7683 | 235 | ,89383 |

**Table 150.** Relationship between EDL competence advancement and External Motives

EDLadv

| EXTmot | Mean | N | Std. Deviation |
|---|---|---|---|
| ,00 | ,8333 | 1 | . |
| ,33 | 1,0833 | 1 | . |
| ,67 | ,4167 | 2 | ,56961 |
| 1,00 | ,9635 | 8 | ,54210 |
| 1,33 | ,8182 | 11 | ,74116 |
| 1,67 | ,5236 | 20 | ,97795 |
| 2,00 | ,8704 | 21 | ,87418 |
| 2,33 | ,9549 | 28 | ,93998 |
| 2,67 | ,6636 | 18 | ,98869 |
| 3,00 | ,7669 | 32 | ,79414 |
| 3,33 | ,6165 | 23 | ,74132 |
| 3,67 | ,9323 | 32 | 1,07476 |
| 4,00 | ,7530 | 14 | ,67626 |
| 4,33 | 1,2024 | 7 | 1,30897 |
| 4,67 | ,3935 | 6 | ,69581 |
| 5,00 | ,3434 | 11 | 1,01195 |

| | | | |
|---|---|---|---|
| Total | ,7683 | 235 | ,89383 |

## Appendix 10 – Tests of Normality

**Table 151.** Tests of Normality – Pre-course Survey

Tests of Normality – Pre-course Survey

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Completed | ,489 | 1147 | ,000 | ,495 | 1147 | ,000 |
| Age | ,055 | 1147 | ,000 | ,982 | 1147 | ,000 |
| Gender | ,349 | 1147 | ,000 | ,700 | 1147 | ,000 |
| EducLevel | ,330 | 1147 | ,000 | ,742 | 1147 | ,000 |
| JobSector | ,410 | 1147 | ,000 | ,632 | 1147 | ,000 |
| ProfRole | ,254 | 1147 | ,000 | ,829 | 1147 | ,000 |
| YoEinPR | ,274 | 1147 | ,000 | ,809 | 1147 | ,000 |
| YoEinDTL | ,325 | 1147 | ,000 | ,762 | 1147 | ,000 |
| EnglProf | ,233 | 1147 | ,000 | ,836 | 1147 | ,000 |
| ComfTech | ,290 | 1147 | ,000 | ,778 | 1147 | ,000 |
| M2.1 | ,325 | 1147 | ,000 | ,728 | 1147 | ,000 |
| M2.2 | ,372 | 1147 | ,000 | ,619 | 1147 | ,000 |
| M2.3 | ,139 | 1147 | ,000 | ,910 | 1147 | ,000 |
| M2.4 | ,163 | 1147 | ,000 | ,894 | 1147 | ,000 |
| M2.5 | ,199 | 1147 | ,000 | ,850 | 1147 | ,000 |
| M2.6 | ,161 | 1147 | ,000 | ,891 | 1147 | ,000 |
| M2.7 | ,348 | 1147 | ,000 | ,780 | 1147 | ,000 |
| M2.8 | ,146 | 1147 | ,000 | ,916 | 1147 | ,000 |
| INT | ,081 | 1147 | ,000 | ,973 | 1147 | ,000 |
| EXT | ,075 | 1147 | ,000 | ,983 | 1147 | ,000 |
| MOT | ,050 | 1147 | ,000 | ,990 | 1147 | ,000 |
| ConfAbility | ,270 | 1147 | ,000 | ,865 | 1147 | ,000 |
| ConfTime | ,233 | 1147 | ,000 | ,877 | 1147 | ,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| CONF | ,163 | 1147 | ,000 | ,948 | 1147 | ,000 |
| G6.1 | ,198 | 1147 | ,000 | ,911 | 1147 | ,000 |
| G6.2 | ,229 | 1147 | ,000 | ,896 | 1147 | ,000 |
| G6.3 | ,250 | 1147 | ,000 | ,887 | 1147 | ,000 |
| G6.4 | ,239 | 1147 | ,000 | ,811 | 1147 | ,000 |
| G6.5 | ,271 | 1147 | ,000 | ,876 | 1147 | ,000 |
| G6.6 | ,271 | 1147 | ,000 | ,869 | 1147 | ,000 |
| G6.7 | ,243 | 1147 | ,000 | ,870 | 1147 | ,000 |
| G6.8 | ,221 | 1147 | ,000 | ,856 | 1147 | ,000 |
| GRIT | ,059 | 1147 | ,000 | ,989 | 1147 | ,000 |
| D1S1a | ,182 | 1147 | ,000 | ,904 | 1147 | ,000 |
| D1S2a | ,193 | 1147 | ,000 | ,882 | 1147 | ,000 |
| D2S1a | ,193 | 1147 | ,000 | ,877 | 1147 | ,000 |
| D2S2a | ,206 | 1147 | ,000 | ,862 | 1147 | ,000 |
| D2S3a | ,221 | 1147 | ,000 | ,849 | 1147 | ,000 |
| D2S4a | ,192 | 1147 | ,000 | ,889 | 1147 | ,000 |
| D3S1a | ,209 | 1147 | ,000 | ,859 | 1147 | ,000 |
| D3S2a | ,191 | 1147 | ,000 | ,897 | 1147 | ,000 |
| D4S1a | ,221 | 1147 | ,000 | ,858 | 1147 | ,000 |
| D4S2a | ,209 | 1147 | ,000 | ,871 | 1147 | ,000 |
| D4S3a | ,205 | 1147 | ,000 | ,864 | 1147 | ,000 |
| D4S4a | ,215 | 1147 | ,000 | ,849 | 1147 | ,000 |
| D5S1a | ,201 | 1147 | ,000 | ,866 | 1147 | ,000 |
| D5S2a | ,218 | 1147 | ,000 | ,848 | 1147 | ,000 |
| D6S1a | ,210 | 1147 | ,000 | ,879 | 1147 | ,000 |
| D6S2a | ,201 | 1147 | ,000 | ,890 | 1147 | ,000 |
| D6S3a | ,208 | 1147 | ,000 | ,857 | 1147 | ,000 |
| D1a | ,144 | 1147 | ,000 | ,938 | 1147 | ,000 |
| D2a | ,130 | 1147 | ,000 | ,935 | 1147 | ,000 |
| D3a | ,167 | 1147 | ,000 | ,928 | 1147 | ,000 |
| D4a | ,143 | 1147 | ,000 | ,918 | 1147 | ,000 |
| D5a | ,179 | 1147 | ,000 | ,886 | 1147 | ,000 |
| D6a | ,152 | 1147 | ,000 | ,926 | 1147 | ,000 |
| InitEDL | ,080 | 1147 | ,000 | ,959 | 1147 | ,000 |

a. Lilliefors Significance Correction

**Table 152.** Tests of Normality – Post course survey

Tests of Normality – Post course survey

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| PEoU1 | ,274 | 235 | ,000 | ,773 | 235 | ,000 |
| PEoU2 | ,256 | 235 | ,000 | ,799 | 235 | ,000 |
| PEoU3 | ,246 | 235 | ,000 | ,805 | 235 | ,000 |
| PEoU4 | ,234 | 235 | ,000 | ,818 | 235 | ,000 |
| LX1 | ,316 | 235 | ,000 | ,759 | 235 | ,000 |
| LX2 | ,233 | 235 | ,000 | ,874 | 235 | ,000 |
| LX3 | ,240 | 235 | ,000 | ,883 | 235 | ,000 |
| LX4 | ,220 | 235 | ,000 | ,897 | 235 | ,000 |
| LX5 | ,229 | 235 | ,000 | ,868 | 235 | ,000 |
| LX6 | ,264 | 235 | ,000 | ,875 | 235 | ,000 |
| LX7 | ,192 | 235 | ,000 | ,912 | 235 | ,000 |
| PEoU5 | ,215 | 235 | ,000 | ,882 | 235 | ,000 |
| PEoU | ,127 | 235 | ,000 | ,943 | 235 | ,000 |
| LX | ,078 | 235 | ,001 | ,980 | 235 | ,002 |
| CONF1 | ,276 | 235 | ,000 | ,839 | 235 | ,000 |
| SAT1 | ,251 | 235 | ,000 | ,868 | 235 | ,000 |
| CONF2 | ,267 | 235 | ,000 | ,858 | 235 | ,000 |
| SAT2 | ,273 | 235 | ,000 | ,858 | 235 | ,000 |
| INT1 | ,234 | 235 | ,000 | ,814 | 235 | ,000 |
| INT2 | ,253 | 235 | ,000 | ,846 | 235 | ,000 |
| OLX | ,072 | 235 | ,005 | ,982 | 235 | ,004 |
| CONF | ,197 | 235 | ,000 | ,922 | 235 | ,000 |
| SAT | ,194 | 235 | ,000 | ,908 | 235 | ,000 |
| INT | ,188 | 235 | ,000 | ,884 | 235 | ,000 |
| D1adv | ,144 | 235 | ,000 | ,968 | 235 | ,000 |
| D2adv | ,105 | 235 | ,000 | ,979 | 235 | ,001 |
| D3adv | ,138 | 235 | ,000 | ,972 | 235 | ,000 |
| D4adv | ,108 | 235 | ,000 | ,984 | 235 | ,008 |
| D5adv | ,154 | 235 | ,000 | ,960 | 235 | ,000 |
| D6adv | ,106 | 235 | ,000 | ,984 | 235 | ,009 |
| LXM1M2 | ,276 | 235 | ,000 | ,741 | 235 | ,000 |
| LXM1M3 | ,255 | 235 | ,000 | ,749 | 235 | ,000 |
| LXM1M4 | ,249 | 235 | ,000 | ,791 | 235 | ,000 |
| LXM1M5 | ,261 | 235 | ,000 | ,787 | 235 | ,000 |
| LXM1M6 | ,244 | 235 | ,000 | ,837 | 235 | ,000 |
| LXM1M7 | ,258 | 235 | ,000 | ,820 | 235 | ,000 |
| LXM2M2 | ,266 | 235 | ,000 | ,799 | 235 | ,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| LXM2M3 | ,275 | 235 | ,000 | ,795 | 235 | ,000 |
| LXM2M4 | ,281 | 235 | ,000 | ,818 | 235 | ,000 |
| LXM2M5 | ,277 | 235 | ,000 | ,833 | 235 | ,000 |
| LXM2M6 | ,268 | 235 | ,000 | ,876 | 235 | ,000 |
| LXM2M7 | ,245 | 235 | ,000 | ,882 | 235 | ,000 |
| LXM3M2 | ,257 | 235 | ,000 | ,778 | 235 | ,000 |
| LXM3M3 | ,245 | 235 | ,000 | ,793 | 235 | ,000 |
| LXM3M4 | ,256 | 235 | ,000 | ,812 | 235 | ,000 |
| LXM3M5 | ,287 | 235 | ,000 | ,804 | 235 | ,000 |
| LXM3M6 | ,265 | 235 | ,000 | ,852 | 235 | ,000 |
| LXM3M7 | ,274 | 235 | ,000 | ,843 | 235 | ,000 |
| LXM4M2 | ,273 | 235 | ,000 | ,780 | 235 | ,000 |
| LXM4M3 | ,253 | 235 | ,000 | ,786 | 235 | ,000 |
| LXM4M4 | ,254 | 235 | ,000 | ,793 | 235 | ,000 |
| LXM4M5 | ,240 | 235 | ,000 | ,803 | 235 | ,000 |
| LXM4M6 | ,231 | 235 | ,000 | ,821 | 235 | ,000 |
| LXM4M7 | ,238 | 235 | ,000 | ,817 | 235 | ,000 |
| LXM5M2 | ,272 | 235 | ,000 | ,820 | 235 | ,000 |
| LXM5M3 | ,281 | 235 | ,000 | ,820 | 235 | ,000 |
| LXM5M4 | ,259 | 235 | ,000 | ,839 | 235 | ,000 |
| LXM5M5 | ,263 | 235 | ,000 | ,849 | 235 | ,000 |
| LXM5M6 | ,234 | 235 | ,000 | ,883 | 235 | ,000 |
| LXM5M7 | ,251 | 235 | ,000 | ,876 | 235 | ,000 |
| LXM6M2 | ,244 | 235 | ,000 | ,795 | 235 | ,000 |
| LXM6M3 | ,244 | 235 | ,000 | ,797 | 235 | ,000 |
| LXM6M4 | ,241 | 235 | ,000 | ,810 | 235 | ,000 |
| LXM6M5 | ,249 | 235 | ,000 | ,810 | 235 | ,000 |
| LXM6M6 | ,245 | 235 | ,000 | ,837 | 235 | ,000 |
| LXM6M7 | ,237 | 235 | ,000 | ,837 | 235 | ,000 |
| LXM7M2 | ,262 | 235 | ,000 | ,785 | 235 | ,000 |
| LXM7M3 | ,258 | 235 | ,000 | ,785 | 235 | ,000 |
| LXM7M4 | ,244 | 235 | ,000 | ,808 | 235 | ,000 |
| LXM7M5 | ,238 | 235 | ,000 | ,809 | 235 | ,000 |
| LXM7M6 | ,239 | 235 | ,000 | ,834 | 235 | ,000 |
| LXM7M7 | ,239 | 235 | ,000 | ,830 | 235 | ,000 |
| LXM8M2 | ,248 | 235 | ,000 | ,866 | 235 | ,000 |
| LXM8M3 | ,234 | 235 | ,000 | ,873 | 235 | ,000 |
| LXM8M4 | ,220 | 235 | ,000 | ,870 | 235 | ,000 |
| LXM8M5 | ,245 | 235 | ,000 | ,872 | 235 | ,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| LXM8M6 | ,224 | 235 | ,000 | ,886 | 235 | ,000 |
| LXM8M7 | ,232 | 235 | ,000 | ,882 | 235 | ,000 |
| LXM9M2 | ,257 | 235 | ,000 | ,874 | 235 | ,000 |
| LXM9M3 | ,240 | 235 | ,000 | ,877 | 235 | ,000 |
| LXM9M4 | ,251 | 235 | ,000 | ,879 | 235 | ,000 |
| LXM9M5 | ,241 | 235 | ,000 | ,884 | 235 | ,000 |
| LXM9M6 | ,210 | 235 | ,000 | ,888 | 235 | ,000 |
| LXM9M7 | ,226 | 235 | ,000 | ,882 | 235 | ,000 |
| LXM10M2 | ,303 | 235 | ,000 | ,801 | 235 | ,000 |
| LXM10M3 | ,289 | 235 | ,000 | ,826 | 235 | ,000 |
| LXM10M4 | ,266 | 235 | ,000 | ,846 | 235 | ,000 |
| LXM10M5 | ,269 | 235 | ,000 | ,845 | 235 | ,000 |
| LXM10M6 | ,263 | 235 | ,000 | ,862 | 235 | ,000 |
| LXM10M7 | ,272 | 235 | ,000 | ,856 | 235 | ,000 |
| LXM11M2 | ,255 | 235 | ,000 | ,804 | 235 | ,000 |
| LXM11M3 | ,255 | 235 | ,000 | ,817 | 235 | ,000 |
| LXM11M4 | ,249 | 235 | ,000 | ,823 | 235 | ,000 |
| LXM11M5 | ,278 | 235 | ,000 | ,814 | 235 | ,000 |
| LXM11M6 | ,269 | 235 | ,000 | ,851 | 235 | ,000 |
| LXM11M7 | ,267 | 235 | ,000 | ,845 | 235 | ,000 |
| LXM12M2 | ,177 | 235 | ,000 | ,899 | 235 | ,000 |
| LXM12M3 | ,200 | 235 | ,000 | ,910 | 235 | ,000 |
| LXM12M4 | ,188 | 235 | ,000 | ,912 | 235 | ,000 |
| LXM12M5 | ,171 | 235 | ,000 | ,904 | 235 | ,000 |
| LXM12M6 | ,170 | 235 | ,000 | ,902 | 235 | ,000 |
| LXM12M7 | ,169 | 235 | ,000 | ,900 | 235 | ,000 |
| LXM13M2 | ,329 | 235 | ,000 | ,724 | 235 | ,000 |
| LXM13M3 | ,310 | 235 | ,000 | ,694 | 235 | ,000 |
| LXM13M4 | ,302 | 235 | ,000 | ,667 | 235 | ,000 |
| LXM13M5 | ,349 | 235 | ,000 | ,610 | 235 | ,000 |
| LXM13M6 | ,362 | 235 | ,000 | ,591 | 235 | ,000 |
| LXM13M7 | ,347 | 235 | ,000 | ,603 | 235 | ,000 |
| Posts | ,235 | 235 | ,000 | ,742 | 235 | ,000 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Reasons for Enrolment

Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| ,641 | 8 |

Correlations – Reasons for Enrolment

| | | M2.1 | M2.2 | M2.3 | M2.4 | M2.5 | M2.6 | M2.7 | M2.8 |
|---|---|---|---|---|---|---|---|---|---|
| M2.1 | Pearson Correlation | 1 | ,505** | ,264** | ,316** | ,216** | ,128** | -,016 | ,076** |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,000 | ,000 | ,581 | ,010 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.2 | Pearson Correlation | ,505** | 1 | ,192** | ,238** | ,219** | ,090** | -,038 | ,104** |
| | Sig. (2-tailed) | ,000 | | ,000 | ,000 | ,000 | ,002 | ,200 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.3 | Pearson Correlation | ,264** | ,192** | 1 | ,577** | ,195** | ,195** | ,208** | -,003 |
| | Sig. (2-tailed) | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,929 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.4 | Pearson Correlation | ,316** | ,238** | ,577** | 1 | ,242** | ,225** | ,202** | ,033 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,257 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.5 | Pearson Correlation | ,216** | ,219** | ,195** | ,242** | 1 | ,496** | ,214** | ,001 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,983 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.6 | Pearson Correlation | ,128** | ,090** | ,195** | ,225** | ,496** | 1 | ,325** | -,030 |
| | Sig. (2-tailed) | ,000 | ,002 | ,000 | ,000 | ,000 | | ,000 | ,316 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| M2.7 | Pearson Correlation | -,016 | -,038 | ,208** | ,202** | ,214** | ,325** | 1 | ,060* |
| | Sig. (2-tailed) | ,581 | ,200 | ,000 | ,000 | ,000 | ,000 | | ,041 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M2.8 | Pearson Correlation | ,076** | ,104** | -,003 | ,033 | ,001 | -,030 | ,060* | 1 |
| | Sig. (2-tailed) | ,010 | ,000 | ,929 | ,257 | ,983 | ,316 | ,041 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

EDL competence statements

Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| ,975 | 17 |

Correlations – EDL competence statements

| | | D1S1a | D1S2a | D2S1a | D2S2a | D2S3a | D2S4a | D3S1a | D3S2a | D4S1a | D4S2a | D4S3a | D4S4a | D5S1a | D5S2a | D6S1a | D6S2a | D6S3a |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1S1a | Pearson Correlation | 1 | ,812** | ,754** | ,690** | ,692** | ,655** | ,646** | ,661** | ,672** | ,622** | ,632** | ,644** | ,632** | ,636** | ,626** | ,617** | ,606** |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D1S2a | Pearson Correlation | ,812** | 1 | ,789** | ,718** | ,745** | ,643** | ,736** | ,663** | ,742** | ,704** | ,720** | ,703** | ,649** | ,661** | ,635** | ,591** | ,610** |
| | Sig. (2-tailed) | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D2S1a | Pearson Correlation | ,754** | ,789** | 1 | ,814** | ,803** | ,731** | ,728** | ,701** | ,729** | ,671** | ,700** | ,677** | ,631** | ,640** | ,608** | ,603** | ,626** |
| | Sig. (2-tailed) | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D2S2a | Pearson Correlation | ,690** | ,718** | ,814** | 1 | ,810** | ,681** | ,739** | ,632** | ,710** | ,644** | ,669** | ,679** | ,642** | ,665** | ,619** | ,584** | ,645** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D2S3a | Pearson Correlation | ,692** | ,745** | ,803** | ,810** | 1 | ,737** | ,714** | ,652** | ,726** | ,665** | ,708** | ,723** | ,693** | ,719** | ,632** | ,606** | ,660** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D2S4a | Pearson Correlation | ,655** | ,643** | ,731** | ,681** | ,737** | 1 | ,621** | ,684** | ,630** | ,579** | ,596** | ,610** | ,595** | ,585** | ,577** | ,589** | ,641** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D3S1a | Pearson Correlation | ,646** | ,736** | ,728** | ,739** | ,714** | ,621** | 1 | ,726** | ,815** | ,784** | ,788** | ,740** | ,664** | ,689** | ,609** | ,554** | ,600** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D3S2a | Pearson Correlation | ,661** | ,663** | ,701** | ,632** | ,652** | ,684** | ,726** | 1 | ,733** | ,696** | ,715** | ,692** | ,661** | ,651** | ,582** | ,585** | ,578** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D4S1a | Pearson Correlation | ,672** | ,742** | ,729** | ,710** | ,726** | ,630** | ,815** | ,733** | 1 | ,844** | ,847** | ,806** | ,708** | ,726** | ,641** | ,602** | ,637** |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D4S2a | Pearson Correlation | ,622** | ,704** | ,671** | ,644** | ,665** | ,579** | ,784** | ,696** | ,844** | 1 | ,865** | ,783** | ,668** | ,673** | ,598** | ,548** | ,581** | |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D4S3a | Pearson Correlation | ,632** | ,720** | ,700** | ,669** | ,708** | ,596** | ,788** | ,715** | ,847** | ,865** | 1 | ,857** | ,740** | ,751** | ,637** | ,606** | ,630** | |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D4S4a | Pearson Correlation | ,644** | ,703** | ,677** | ,679** | ,723** | ,610** | ,740** | ,692** | ,806** | ,783** | ,857** | 1 | ,801** | ,801** | ,669** | ,620** | ,658** | |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D5S1a | Pearson Correlation | ,632** | ,649** | ,631** | ,642** | ,693** | ,595** | ,664** | ,661** | ,708** | ,668** | ,740** | ,801** | 1 | ,906** | ,670** | ,648** | ,662** | |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D5S2a | Pearson Correlation | ,636** | ,661** | ,640** | ,665** | ,719** | ,585** | ,689** | ,651** | ,726** | ,673** | ,751** | ,801** | ,906** | 1 | ,689** | ,644** | ,680** | |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D6S1a | Pearson Correlation | ,626** | ,635** | ,608** | ,619** | ,632** | ,577** | ,609** | ,582** | ,641** | ,598** | ,637** | ,669** | ,670** | ,689** | 1 | ,825** | ,779** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D6S2a | Pearson Correlation | ,617** | ,591** | ,603** | ,584** | ,606** | ,589** | ,554** | ,585** | ,602** | ,548** | ,606** | ,620** | ,648** | ,644** | ,825** | 1 | ,809** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| D6S3a | Pearson Correlation | ,606** | ,610** | ,626** | ,645** | ,660** | ,641** | ,600** | ,578** | ,637** | ,581** | ,630** | ,658** | ,662** | ,680** | ,779** | ,809** | 1 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

**. Correlation is significant at the 0.01 level (2-tailed).

GRIT

Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| ,765 | 8 |

Correlations - GRIT

| | | G6.1 | G6.2 | G6.3 | G6.4 | G6.5 | G6.6 | G6.7 | G6.8 |
|---|---|---|---|---|---|---|---|---|---|
| G6.1 | Pearson Correlation | 1 | ,006 | ,467** | ,056 | ,421** | ,399** | ,168** | ,140** |
| | Sig. (2-tailed) | | ,847 | ,000 | ,058 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| G6.2 | Pearson Correlation | ,006 | 1 | ,040 | ,325** | ,074* | ,143** | ,202** | ,240** |
| | Sig. (2-tailed) | ,847 | | ,173 | ,000 | ,012 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.3 | Pearson Correlation | ,467** | ,040 | 1 | ,182** | ,571** | ,478** | ,294** | ,207** |
| | Sig. (2-tailed) | ,000 | ,173 | | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.4 | Pearson Correlation | ,056 | ,325** | ,182** | 1 | ,192** | ,249** | ,459** | ,579** |
| | Sig. (2-tailed) | ,058 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.5 | Pearson Correlation | ,421** | ,074* | ,571** | ,192** | 1 | ,584** | ,308** | ,215** |
| | Sig. (2-tailed) | ,000 | ,012 | ,000 | ,000 | | ,000 | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.6 | Pearson Correlation | ,399** | ,143** | ,478** | ,249** | ,584** | 1 | ,317** | ,254** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.7 | Pearson Correlation | ,168** | ,202** | ,294** | ,459** | ,308** | ,317** | 1 | ,607** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |
| G6.8 | Pearson Correlation | ,140** | ,240** | ,207** | ,579** | ,215** | ,254** | ,607** | 1 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 | 1147 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Overall Learning Experience

Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| ,919 | 18 |

Correlations – Overall Learning Experience

| | | LX1 | LX2 | LX3 | LX4 | LX5 | LX6 | LX7 | LX8 | LX9 | LX10 | LX11 | LX12 | LX13 | LX14 | LX15 | LX16 | LX17 | LX18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LX1 | Pearson Correlation | 1 | ,642** | ,455** | ,631** | ,394** | ,330** | ,206** | ,235** | ,322** | ,079 | ,090 | ,173** | ,239** | ,335** | ,259** | ,366** | ,219** | ,344** |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,000 | ,000 | ,001 | ,000 | ,000 | ,230 | ,167 | ,008 | ,000 | ,000 | ,000 | ,000 | ,001 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX2 | Pearson Correlation | ,642** | 1 | ,538** | ,548** | ,340** | ,428** | ,241** | ,229** | ,270** | ,258** | ,178** | ,322** | ,241** | ,292** | ,317** | ,376** | ,203** | ,434** |
| | Sig. (2-tailed) | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,006 | ,000 | ,000 | ,000 | ,000 | ,000 | ,002 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX3 | Pearson Correlation | ,455** | ,538** | 1 | ,653** | ,478** | ,465** | ,376** | ,375** | ,486** | ,306** | ,241** | ,353** | ,307** | ,376** | ,286** | ,453** | ,300** | ,476** |
| | Sig. (2-tailed) | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX4 | Pearson Correlation | ,631** | ,548** | ,653** | 1 | ,481** | ,538** | ,415** | ,366** | ,402** | ,207** | ,172** | ,266** | ,308** | ,316** | ,177** | ,398** | ,238** | ,376** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,001 | ,008 | ,000 | ,000 | ,000 | ,006 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX5 | Pearson Correlation | ,394** | ,340** | ,478** | ,481** | 1 | ,530** | ,411** | ,349** | ,389** | ,174** | ,101 | ,250** | ,411** | ,313** | ,372** | ,392** | ,309** | ,336** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,007 | ,122 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX6 | Pearson Correlation | ,330** | ,428** | ,465** | ,538** | ,530** | 1 | ,668** | ,539** | ,487** | ,324** | ,170** | ,357** | ,472** | ,503** | ,393** | ,540** | ,342** | ,479** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,009 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LX7 | Pearson Correlation | ,206** | ,241** | ,376** | ,415** | ,411** | ,668** | 1 | ,630** | ,519** | ,354** | ,271** | ,346** | ,394** | ,429** | ,330** | ,493** | ,326** | ,424** |
| | Sig. (2-tailed) | ,001 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX8 | Pearson Correlation | ,235** | ,229** | ,375** | ,366** | ,349** | ,539** | ,630** | 1 | ,609** | ,374** | ,348** | ,374** | ,461** | ,442** | ,413** | ,456** | ,295** | ,432** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX9 | Pearson Correlation | ,322** | ,270** | ,486** | ,402** | ,389** | ,487** | ,519** | ,609** | 1 | ,385** | ,314** | ,421** | ,506** | ,466** | ,440** | ,518** | ,398** | ,493** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX10 | Pearson Correlation | ,079 | ,258** | ,306** | ,207** | ,174** | ,324** | ,354** | ,374** | ,385** | 1 | ,635** | ,541** | ,318** | ,295** | ,279** | ,259** | ,189** | ,351** |
| | Sig. (2-tailed) | ,230 | ,000 | ,000 | ,001 | ,007 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,004 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX11 | Pearson Correlation | ,090 | ,178** | ,241** | ,172** | ,101 | ,170** | ,271** | ,348** | ,314** | ,635** | 1 | ,517** | ,244** | ,238** | ,138* | ,235** | ,168** | ,295** |
| | Sig. (2-tailed) | ,167 | ,006 | ,000 | ,008 | ,122 | ,009 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,035 | ,000 | ,010 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX12 | Pearson Correlation | ,173** | ,322** | ,353** | ,266** | ,250** | ,357** | ,346** | ,374** | ,421** | ,541** | ,517** | 1 | ,363** | ,416** | ,323** | ,388** | ,276** | ,460** |
| | Sig. (2-tailed) | ,008 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX13 | Pearson Correlation | ,239** | ,241** | ,307** | ,308** | ,411** | ,472** | ,394** | ,461** | ,506** | ,318** | ,244** | ,363** | 1 | ,616** | ,482** | ,557** | ,475** | ,581** |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX14 | Pearson Correlation | ,335** | ,292** | ,376** | ,316** | ,313** | ,503** | ,429** | ,442** | ,466** | ,295** | ,238** | ,416** | ,616** | 1 | ,560** | ,713** | ,586** | ,579** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX15 | Pearson Correlation | ,259** | ,317** | ,286** | ,177** | ,372** | ,393** | ,330** | ,413** | ,440** | ,279** | ,138* | ,323** | ,482** | ,560** | 1 | ,620** | ,533** | ,527** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,006 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,035 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX16 | Pearson Correlation | ,366** | ,376** | ,453** | ,398** | ,392** | ,540** | ,493** | ,456** | ,518** | ,259** | ,235** | ,388** | ,557** | ,713** | ,620** | 1 | ,698** | ,726** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| LX17 | Pearson Correlation | ,219** | ,203** | ,300** | ,238** | ,309** | ,342** | ,326** | ,295** | ,398** | ,189** | ,168** | ,276** | ,475** | ,586** | ,533** | ,698** | 1 | ,657** |
| | Sig. (2-tailed) | ,001 | ,002 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,004 | ,010 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |
| OLX18 | Pearson Correlation | ,344** | ,434** | ,476** | ,376** | ,336** | ,479** | ,424** | ,432** | ,493** | ,351** | ,295** | ,460** | ,581** | ,579** | ,527** | ,726** | ,657** | 1 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 | 235 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).