OLMEdu

OLMEdu: Open Lab for the up skilling of higher educational staff in on-line Management Education

Training content for the up skilling of higher educational staff in the use of ICT technologies and on-line training in management education

Intellectual Output 1

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Executive summary

In English

The attention to e-learning in higher education (HE) has been raised in the past years after the arrival of the massive online open courses (MOOCs) while digitalization in HE stands high on policy agendas at European and national levels (Bologna Process Implementation Report, 2018). The Covid-19 pandemic has caused the largest disruption of education in history having an impact on learners and trainers in all levels and types of education (United Nations, 2020). The transition to online training was not an easy task and particularly not for the educational staff. The higher education staff (HES) and particularly those that teach more theoretical topics do not necessarily have the appropriate ICT knowledge and skills to successfully support online training. Successful online training is not only accomplished by using online educational methods and tools, but also the appropriate online delivery pedagogy that engages students through online learning. In management education (ME) this process is even more demanding since it involves a set of social and economic studies and is associated with solving problems and decision-making situations (Carneiro, 2004). Thus, theory, practice and reflection must continuously be linked in the learning process. In this context HE educators should integrate technologies and pedagogies in order to create and maintain positive learning environments, where students are actively engaged, cooperate, analyze situations, make decisions, face and solve problems.

OLMEdu project aims at the creation of an open lab for the up-skilling of HES staff in online management education which includes: a) the training content for the up-skilling of HES in the use of ICT technologies and online training in management education b) the learning material for the use of online training and ICT technologies in teaching management, c) a Toolbox for developing online simulations in management education and d) an online learning repository for HEI educational staff.

The present report **"Training content for the up-skilling of higher educational staff (HES) in the use of ICT technologies and on-line training in management education"** constitutes the first intellectual output of OLMEdu which is necessary for specifying the appropriate approach for the achievement of the overall objective - to create tailor-made training content and materials for HES in using ICT and on-line training in management education.

The first part of the report refers to the outcomes of a research for the mapping of the theoretical foundation and the needs that determine the development of the OLMEdu training approach. Desk Research and analysis of first–hand data collected through consultations were employed. More specifically this part includes:

a) Country-specific information related to the profile of HES and challenges imposed by Covid-19 in training delivery using online technologies;
b) Overview of the global and European context of the challenges and trends in online HE training and the new trends in educational technologies and in providing online courses in management field;
c) Input from adult and distance learning theory as to the methodological requirements for the development of online training provision skills;
d) Overview of the requirements for teaching management.

Country-specific information related to the profile of HES and challenges imposed by Covid-19 in training delivery using online technologies

Several challenges were emerged from published materials, and consultations with 31 stakeholders (HEI training staff) and experts in online training design and support, from OLMEdu partner countries (Greece, Cyprus, and Italy), while several differences were identified between the three project countries. The need for designing and implementing online training programs for HES emerged as important for tackling the need for digitalization of training in the period of covid-19 in all cases. The main findings are the following:

- ⇒ HES lack of qualifications in using online teaching methods and technologies in all countries and lack of relevant training offers in Greece;
- ⇒ HES use of online platforms for teaching, while the use of simulations, games and 3D virtual learning environments is very restricted, only Cyprus is an exception
- ⇒ HEIs challenges such as lack of capability to use platforms, concerns for poor pedagogical approaches within the digital education tools, poor interaction etc.
- ⇒ HEIs strategies for shifting to online teaching were restricted in Greece, closer to the traditional model of teaching in Italy, while in Cyprus the strategies were more purposeful.
- ⇒ HEIs support restricted only to offering specific digital tools to HES in Greece, while in Cyprus and Italy it was breadth including various aspects;
- ⇒ HEIs support was evaluated highly in Cyprus compared to Greece and Italy
- ⇒ HES reported various challenges after the covid-19 pandemic while the majority of the experts in Cyprus stated that they did not face difficulties;
- ⇒ some government policy and support for HEIs to incorporate online teaching in all countries was identified;
- ⇒ HES in ME faced challenges such as need for digital skills, flexibility and creativity for the utilization of online resources;
- ⇒ Students in ME could benefit from online technologies in regards to analyzing skills, problem solving, engagement and collaboration;
- ⇒ Capability to digitalize simulations and games in all countries and high interest on it
- ⇒ Participation in training programmes about the use of online technologies was medium for Greece and Cyprus and very low for Italy, while the extent that they perceived them as helpful varied
- ⇒ Capability of a programme for the digitalization of the training material for helping them to tackle related problems
- ⇒ Need of knowledge related to design thinking in digital material development, augmented and virtual reality technologies in ME, digital content creation, use of E-learning platforms and learning management systems, and effectively use web conferencing tools and manage online classrooms.

More information about country specific information related to the profile of HES and challenges imposed by Covid in online training can be found here.

Overview of the global and EU context of the challenges and trends in online HE training, and educational technologies and in providing online courses in management field

According to the results effective online teaching/training in management education requires the alignment or the course delivery with learning objectives, the provision of prompt feedback, the presence of instructor in the online learning environment, the use of appropriate teaching

methods for online settings, as well as safeguarding that students' have clear expectations from the course and that they are meaningfully engaged (Salcido & Cole, 2019). For online training and professional development programs several characteristics should be accounted such as: (i) ongoing training, (ii) provision of reflection opportunities; (iii) creation of a professional learning community; (iv) training in classroom practice and current research; (v) training tailored to instructors' specific needs; and (iv) diverse training, offering a wide range of learning activities. Students should experience authentic learning experiences during the online training. The training program content should immerse the trainees in real-world and case-based learning. A wide range of resources can be used, and the training may include both synchronous and asynchronous discussions among the participants. Particular attention should be given to the online teaching pedagogy, the content, while the online teaching training program should also focus on the development of soft skills for the trainees, who need to become competent in organization, time management and self-direction. Developing a community of online instructors can function as a support system in which instructors can share experiences and best practices.

More information about the global and EU challenges in online training HE and educational technologies can be found here.

Input from adult and distance learning theory as to the methodological requirements for the development of online training provision skills.

This section provides information regarding the adult learning theories and principles and their application in online training. In addition, it addresses the distance learning theories and principles and how they are applied in asynchronous and synchronous e-Learning.

More information about the adult and distance learning theories and applied in online training can be found here.

Identification of the requirements for teaching management

Three pedagogical approaches were identified as appropriate to be used in management education, while the report also includes different teaching styles and teaching strategies, classroom management techniques and core content topics for teaching management in Higher Education.

Problem-based learning (PBL) and the Design Thinking Methodology (DTM) have been proposed by scholars as pedagogical approaches appropriate for teaching management; both encompass interdisciplinary learning and promote the development of students' soft skills and competences. A third approach is the Flipped Classroom, which has been claimed to have an effect on student learning, including the field of management education (O'Flaherty & Phillips, 2015).

In relation to teaching styles, five different profiles/ styles are reported, as suggested by Grasha (1994): teaching as expert, formal authority, personal model, facilitator, and delegator; while another teaching style that has been proposed by scholars is the hybrid or blended style (Romanelli, Bird, & Ryan, 2009). The report also includes a variety of teaching strategies which have been identified in the literature. It has been suggested by scholars, that business professors and management educators must move toward a multi-style teaching approach (e.g., multimodality of information) if all students are to reach their potential, especially in a multicultural classroom (De Vita, 2001). Moreover, classroom management plays a vital role in instruction, including instruction in management and business education, for effective student learning. Suggestions and recommendations from the literature are also reported on

how teachers and instructors in management and business education can achieve effective classroom management.

Finally, the report concludes with the mapping of content focus in management education. The main objectives of university curricula and programs in the respective fields are listed, followed by a list of the core thematic areas used in teaching management in the higher education institutions.

More information about the requirements for teaching management can be found here.

The second part of the report refers to the **identification of the training needs** and their analysis in the general learning outcomes of OLMEdu.
The training needs and the general learning outcomes are categorized in the following thematic areas:

- Planning and delivery of online training, employing design thinking approaches
- E-learning, distance and active learning pedagogies and collaborative learning in online environments in ME
- E-learning platforms, learning management systems, new technologies and smart mobile applications for educational purposes
- Web conferencing tools and online classroom management
- Digital content creation and data protection issues
- Online feedback, assessment, and monitoring
- Augmented and virtual reality technologies, online games, simulations etc. in ME

More information can be found here.

The **third part** of the report refers to the design of **the training content outline** and includes the eight modules and coherent learning units developed to correspond to the real needs. The learning outcomes accompany each module and are organized in terms of knowledge, skills, and competences, at EQF level 6. The eight modules are the following:

Module 1	Distance learning and pedagogies in online management education
Module 2	Design Thinking Approaches
Module 3	Design and delivery of online training
Module 4	Distance Learning Educational technologies, digital tools, and mobile applications
Module 5	Web conferencing tools and online classroom management
Module 6	Digital content creation and data protection issues
Module 7	Online feedback, assessment and monitoring
Module 8	Digital Reality in Management Education

More information about the training content of OLMEdu can be found here.

The **fourth part** of the report consists of the training and the assessment methodology to be followed in the OLMEdu project.

The **training methodology** presents the theoretical foundation of the training in a way easy to be followed by HES. The training methodology follows the asynchronous mode of learning, adopting learner-centered, engaging, and interactive content types. The approach is based on active, experiential, and transformational learning, project work, games, scenarios, simulations and other process-oriented learning techniques in an on-line learning environment.

More information about the Training Methodology of OLMEDU can be found here.

The OLMEdu **assessment methodology** is accounting on the recommended training methodology, which in accordance with the theoretical background entails: self-paced training, asynchronous online training, learner-centered content, elements of personalization, social interactions, and online collaborations. It also encompasses both summative and formative assessment approaches, continuous and final assessment, serving both assessment of and for learning, with particular emphasis in authentic assessment activities, as applied in online learning environments.

More information about the Assessment Methodology of OLMEDU can be found here.

In Greek

Η διαδικτυακή μάθηση στην ανώτατη εκπαίδευση (ΑΕΙ) έχει αρχίσει να αναπτύσσεται τα τελευταία χρόνια μετά την άφιξη των μαζικών ανοικτών διαδικτυακών μαθημάτων (massive open online cources - MOOCs), ενώ η ψηφιοποίηση των ΑΕΙ βρίσκεται ψηλά στις ατζέντες σε ευρωπαϊκό και εθνικό επίπεδο (Bologna Process Implementation Report, 2018). Η πανδημία Covid-19 έχει προκαλέσει το μεγαλύτερο πλήγμα στην ιστορία της εκπαίδευσης με αντίκτυπο σε μαθητές και εκπαιδευτές όλων των επιπέδων καθώς και όλων των τύπων εκπαίδευσης (United Nations, 2020). Η μετάβαση στην ηλεκτρονική εκπαίδευση δεν ήταν εύκολη υπόθεση, ιδιαίτερα για το εκπαιδευτικό προσωπικό. Στο προσωπικό της ανώτατης εκπαίδευσης και ιδιαίτερα σε όσους διδάσκουν κυρίως θεωρητικά μαθήματα, καταγράφεται έλλειψη στις κατάλληλες γνώσεις και δεξιότητες πληροφορικής για την υποστήριξη της ηλεκτρονικής εκπαίδευσης με επιτυχία. Η ηλεκτρονική εκπαίδευση δεν επιτυγχάνεται μόνο με τη χρήση ψηφιακών εκπαιδευτικών μεθόδων και εργαλείων, αλλά και με την κατάλληλη διαδικτυακή παιδαγωγική παράδοση που προσελκύει τους μαθητές μέσω της ηλεκτρονικής μάθησης. Για την εκπαίδευση στη διοίκηση, αυτή η διαδικασία είναι ακόμη πιο απαιτητική, αφού περιλαμβάνει ένα σύνολο κοινωνικών και οικονομικών μελετών και σχετίζεται με την επίλυση προβλημάτων και καταστάσεων λήψης αποφάσεων (Carneiro, 2004). Έτσι, η θεωρία, η πρακτική και η αυτοαξιολόγηση πρέπει να συνδέονται με τη μαθησιακή διαδικασία. Σε αυτό το πλαίσιο, οι εκπαιδευτικοί της ανώτατης εκπαίδευσης θα πρέπει να ενσωματώσουν τεχνολογίες και παιδαγωγικές μεθόδους στη διδασκαλία τους προκειμένου να δημιουργήσουν και να διατηρήσουν θετικά περιβάλλοντα μάθησης, όπου οι μαθητές θα εμπλέκονται ενεργά, θα συνεργάζονται, θα αναλύουν καταστάσεις, θα λαμβάνουν αποφάσεις, αντιμετωπίζοντας και λύνοντας προβλήματα.

Το έργο OLMEdu στοχεύει στη δημιουργία ενός ανοιχτού εργαστηρίου για την αναβάθμιση των δεξιοτήτων του προσωπικού της ανώτατης εκπαίδευσης στα πλαίσια της εκπαίδευσης στη διοίκηση στο διαδίκτυο, που περιλαμβάνει: α) το εκπαιδευτικό περιεχόμενο για την αναβάθμιση των δεξιοτήτων των εκπαιδευτών της ανώτατης εκπαίδευσης στη χρήση τεχνολογιών πληροφορικής και ηλεκτρονικής εκπαίδευσης για την εκπαίδευση στη διοίκηση, β) το εκπαιδευτικό υλικό για τη χρήση διαδικτυακής κατάρτισης και τεχνολογιών πληροφορικής στην εκπαίδευση στη διοίκηση, γ) εργαλεία για την ανάπτυξη δικτυακών προσομοιώσεων στην εκπαίδευση στη διοίκηση και δ) διαδικτυακό αποθετήριο μάθησης για το εκπαιδευτικό προσωπικό των ΑΕΙ.

Η παρούσα έκθεση **"Training content for the up-skilling of higher educational staff (HES) in the use of ICT technologies and on-line training in management education"** αποτελεί το πρώτο πνευματικό προϊόν του OLMEdu, απαραίτητο για τον καθορισμό κατάλληλης προσέγγισης για την επίτευξη του γενικού στόχου – τη δημιουργία εξατομικευμένου εκπαιδευτικού περιεχομένου και υλικού για τους εκπαιδευτές της ανώτατης εκπαίδευσης στη χρήση πληροφορικής και τη διαδικτυακή πρακτική στην εκπαίδευση στη διοίκηση.

Το πρώτο μέρος της έκθεσης αναφέρεται στα αποτελέσματα έρευνας για τη χαρτογράφηση της θεωρητικής βάσης και τις ανάγκες που καθορίζουν την ανάπτυξη της εκπαιδευτικής προσέγγισης του έργου OLMEdu. Διεξήχθη πρωτογενή έρευνα και ανάλυση των δεδομένων που συλλέχθηκαν σε συναντήσεις. Πιο συγκεκριμένα αυτό το μέρος περιλαμβάνει:

α) Πληροφορίες για συγκεκριμένες χώρες που σχετίζονται με το προφίλ του προσωπικού της ανώτατης εκπαίδευσης και τις προκλήσεις που επιβάλλονται από την πανδημία Covid-19 στην παροχή εκπαίδευσης με χρήση διαδικτυακών τεχνολογιών.

β) Επισκόπηση του παγκόσμιου και ευρωπαϊκού πλαισίου των προκλήσεων και των τάσεων στη διαδικτυακή εκπαίδευση και των νέων τάσεων στις εκπαιδευτικές τεχνολογίες και στην παροχή διαδικτυακών μαθημάτων στον τομέα της διοίκησης.
γ) Το αντίκτυπο της θεωρίας της εκπαίδευσης ενηλίκων και της εξ αποστάσεως εκπαίδευσης ως προς τις μεθοδολογικές απαιτήσεις για την ανάπτυξη δεξιοτήτων παροχής διαδικτυακής εκπαίδευσης.
δ) Επισκόπηση των απαιτήσεων για την εκπαίδευση στη διοίκηση.

Πληροφορίες για συγκεκριμένες χώρες που σχετίζονται με το προφίλ του προσωπικού της ανώτατης εκπαίδευσης και τις προκλήσεις που επιβάλλονται από την πανδημία Covid-19 στην παροχή εκπαίδευσης με χρήση διαδικτυακών τεχνολογιών.

Αρκετές προκλήσεις προέκυψαν από δημοσιευμένο υλικό και συμβουλευτικές συναντήσεις με 31 ενδιαφερόμενους φορείς (προσωπικό ανώτατης εκπαίδευσης) και ειδικούς στο σχεδιασμό και υποστήριξη ηλεκτρονικής εκπαίδευσης, από χώρες εταίρους του OLMEdu (Ελλάδα, Κύπρος και Ιταλία), ενώ εντοπίστηκαν αρκετές διαφορές μεταξύ των τριών χωρών του έργου. Η ανάγκη σχεδιασμού και εφαρμογής διαδικτυακών προγραμμάτων εκπαίδευσης για το προσωπικό της ανώτατης εκπαίδευσης κρίθηκε απαραίτητη για την αντιμετώπιση της ανάγκης ψηφιοποίησης της εκπαίδευσης την περίοδο της πανδημίας Covid-19. Τα κύρια ευρήματα είναι τα ακόλουθα:

- ⇒ Στο προσωπικό των ΑΕΙ παρουσιάζεται μία έλλειψη προσόντων στη χρήση διαδικτυακών εκπαιδευτικών μεθόδων και τεχνολογιών, σε όλες τις χώρες, και ιδιαίτερα στην Ελλάδα υπάρχει έλλειψη στη προσφερόμενη σχετική εκπαίδευση.
- ⇒ Το προσωπικό των ΑΕΙ χρησιμοποιεί διαδικτυακές πλατφόρμες εκπαίδευσης, ενώ η χρήση της προσομοίωσης, των παιχνιδιών και τρισδιάστατων εικονικών περιβαλλόντων μάθησης είναι πολύ περιορισμένη, με εξαίρεση μόνο τη Κύπρο.
- ⇒ Προκλήσεις των ΑΕΙ όπως η έλλειψη ικανότητας χρήσης πλατφορμών, προκαλούν ανησυχία για κακές παιδαγωγικές προσεγγίσεις στην επιλογή εργαλείων ψηφιακής εκπαίδευσης, κακή αλληλεπίδραση κ.λπ.
- ⇒ Οι στρατηγικές των ΑΕΙ για την μεταφορά στη διαδικτυακή εκπαίδευση είναι περιορισμένες στην Ελλάδα, στην Ιταλία είναι πιο κοντά στην κλασική μέθοδο διδασκαλίας, ενώ στη Κύπρο οι στρατηγικές είναι πιο σκόπιμες.
- ⇒ Η υποστήριξη των ΑΕΙ προς το προσωπικό της περιοριζόταν μόνο στην προσφορά συγκεκριμένων ψηφιακών εργαλείων στην Ελλάδα, ενώ στην Κύπρο και την Ιταλία ήταν ευρεία.
- ⇒ Η υποστήριξη που προσφέρουν τα ΑΕΙ αξιολογείται πιο υψηλά στη Κύπρο, σε σχέση με την Ελλάδα και την Ιταλία.
- ⇒ Το προσωπικό των ΑΕΙ ανέφερε διάφορες προσκλήσεις μετά την πανδημία Covid-19, ενώ η πλειοψηφία των ειδικών στην Κύπρο δήλωσαν πως δεν αντιμετωπίζουν δυσκολίες.
- ⇒ Προσδιορίστηκαν κάποιες κρατικές στρατηγικές υποστήριξης των ΑΕΙ για την ενσωμάτωση της διαδικτυακής διδασκαλίας σε όλες τις χώρες.
- ⇒ Το προσωπικό των ΑΕΙ της εκπαίδευσης στη διοίκηση αντιμετωπίζει προκλήσεις όπως η ανάγκη για ψηφιακές δεξιότητες, η ευελιξία και η δημιουργικότητα για τη χρήση διαδικτυακών πόρων.
- ⇒ Οι φοιτητές της εκπαίδευσης στη διοίκηση μπορούν να επωφεληθούν από τις διαδικτυακές τεχνολογίες, όσον αφορά τις δεξιότητες ανάλυσης, την επίλυση προβλημάτων και τη συνεργασία.
- ⇒ Η δυνατότητα ψηφιοποίησης προσομοιώσεων και παιχνιδιών αποτελεί ένα θέμα με μεγάλο ενδιαφέρον για όλες τις χώρες.

⇒ Η συμμετοχή σε προγράμματα κατάρτισης σε θέματα διαδικτυακών τεχνολογιών ήταν μέτρια για την Ελλάδα και τη Κύπρο, και πολύ χαμηλή στην Ιταλία, ενώ ήταν διαφορετικός ο βαθμός που τις αντιλήφθηκαν ως χρήσιμες.
⇒ Δυνατότητα προγράμματος ψηφιοποίησης του εκπαιδευτικού υλικού για να τους βοηθήσει στην αντιμετώπιση σχετικών προβλημάτων.
⇒ Ανάγκη γνώσεων σχετικά με τη σχεδιαστική σκέψη στην ανάπτυξη ψηφιακού υλικού, τεχνολογίες εικονικής πραγματικότητας στη διαχείριση της εκπαίδευσης, δημιουργία ψηφιακού περιεχομένου, χρήση πλατφορμών ηλεκτρονικής μάθησης και συστημάτων διαχείρισης μάθησης και αποτελεσματική χρήση εργαλείων διαδικτυακής διάσκεψης και διαχείριση διαδικτυακών τάξεων.

Περισσότερες πληροφορίες σχετικά με το προφίλ του προσωπικού των ΑΕΙ και τις προκλήσεις που αντιμετωπίζουν στη διαδικτυακή εκπαίδευση στην εποχή της πανδημίας Covid-19, μπορείτε να βρείτε εδώ.

Επισκόπηση του παγκόσμιου και ευρωπαϊκού πλαισίου των προκλήσεων και των τάσεων στη διαδικτυακή εκπαίδευση και των νέων τάσεων στις εκπαιδευτικές τεχνολογίες και στην παροχή διαδικτυακών μαθημάτων στον τομέα της διοίκησης

Σύμφωνα με τα αποτελέσματα, η αποτελεσματική διαδικτυακή διδασκαλία/κατάρτιση στην εκπαίδευση στη διοίκηση, απαιτεί την εναρμόνιση ή την παράδοση του μαθήματος με τους μαθησιακούς στόχους, την παροχή άμεσης ανατροφοδότησης, την παρουσία εκπαιδευτή στο διαδικτυακό περιβάλλον μάθησης, τη χρήση κατάλληλων μεθόδων διδασκαλίας για διαδικτυακές ρυθμίσεις, όπως καθώς και τη διασφάλιση ότι οι μαθητές έχουν σαφείς προσδοκίες από το μάθημα και συμμετέχουν ουσιαστικά (Salcido & Cole, 2019). Για τα διαδικτυακά προγράμματα κατάρτισης και επαγγελματικής ανάπτυξης θα πρέπει να ληφθούν υπόψη διάφορα χαρακτηριστικά όπως: (i) συνεχής εκπαίδευση, (ii) παροχή ευκαιριών προβληματισμού, (iii) δημιουργία μιας επαγγελματικής κοινότητας μάθησης, (iv) πρακτική εκπαίδευση στην τάξη και στην τρέχουσα έρευνα, (v) προσαρμοσμένη εκπαίδευση στις ειδικές ανάγκες των εκπαιδευτών, και (iv) ποικιλία στην κατάρτιση, που προσφέρει ένα ευρύ φάσμα μαθησιακών δραστηριοτήτων. Οι φοιτητές θα πρέπει να βιώσουν πρωτότυπες μαθησιακές εμπειρίες κατά τη διάρκεια της διαδικτυακής εκπαίδευσης. Το περιεχόμενο του εκπαιδευτικού προγράμματος θα πρέπει να βοηθάει τους εκπαιδευόμενους να εμβαθύνουν σε πραγματικές γνώσεις και τη μελέτη περιπτώσεων. Μπορεί να χρησιμοποιηθεί ένα ευρύ φάσμα πόρων και η εκπαίδευση μπορεί να περιλαμβάνει τόσο σύγχρονες όσο και ασύγχρονες συζητήσεις μεταξύ των συμμετεχόντων. Ιδιαίτερη προσοχή πρέπει να δοθεί στη διαδικτυακή παιδαγωγική της διδασκαλίας, στο περιεχόμενο, ενώ το διαδικτυακό εκπαιδευτικό πρόγραμμα θα πρέπει να επικεντρωθεί στην ανάπτυξη δεξιοτήτων για τους εκπαιδευόμενους, οι οποίοι πρέπει να είναι επαρκείς στην οργάνωση, τη διαχείριση χρόνου και την αυτοκατεύθυνση. Η ανάπτυξη μιας κοινότητας διαδικτυακών εκπαιδευτών μπορεί να λειτουργήσει ως σύστημα υποστήριξης στο οποίο οι εκπαιδευτές μπορούν να ανταλλάσσουν εμπειρίες και βέλτιστες πρακτικές.

Περισσότερες πληροφορίες αναφορικά με τις παγκόσμιες και ευρωπαϊκές προκλήσεις στη διαδικτυακή εκπαίδευση των ΑΕΙ και τις εκπαιδευτικές τεχνολογίες μπορείτε να βρείτε εδώ.

Δεδομένα από τη θεωρία της εκπαίδευσης ενηλίκων και της εξ αποστάσεως εκπαίδευσης ως προς τις μεθοδολογικές απαιτήσεις για την ανάπτυξη δεξιοτήτων παροχής διαδικτυακής εκπαίδευσης.

Αυτή η ενότητα παρέχει πληροφορίες σχετικά με τις θεωρίες και τις αρχές που διέπουν την εκπαίδευση ενηλίκων και την εφαρμογή αυτών στη διαδικτυακή εκπαίδευση. Επιπλέον, ασχολείται με τις θεωρίες και τις αρχές της εξ αποστάσεως εκπαίδευσης και τον τρόπο εφαρμογής τους στην ασύγχρονη και σύγχρονη ηλεκτρονική μάθηση.

Περισσότερες πληροφορίες σχετικά με τις θεωρίες της εκπαίδευσης ενηλίκων και της εξ αποστάσεως εκπαίδευσης, καθώς και το πως αυτές εφαρμόζονται στην ηλεκτρονική εκπαίδευση μπορείτε να βρείτε εδώ.

Αναγνώριση των απαιτήσεων για τη διδασκαλία της διοίκησης

Προσδιορίστηκαν τρεις παιδαγωγικοί μέθοδοι ως οι πιο κατάλληλοι για τη χρήση τους στην εκπαίδευση στη διοίκηση, ενώ η αναφορά θα περιλαμβάνει επιπλέον εναλλακτικούς τρόπους και στρατηγικές διδασκαλίας, τεχνικές διαχείρισης αιθουσών διδασκαλίας και βασικά θέματα διδασκαλίας στην ανώτατη εκπαίδευση.

Η μάθηση με δραστηριότητες επίλυσης προβλημάτων και η μεθοδολογία με διαδικασίες σχεδιαστικής σκέψης έχουν προταθεί από μελετητές ως η πιο κατάλληλη παιδαγωγική προσέγγιση για τη διδασκαλία της διοίκησης, και οι δύο μέθοδοι προάγουν την ανάπτυξη δεξιοτήτων των φοιτητών. Μια τρίτη προσέγγιση είναι της ανεστραμμένης τάξης, η οποία έχει επίδραση στον τρόπο διδασκαλίας των φοιτητών, συμπεριλαμβανομένου και του τομέα της εκπαίδευσης στη διοίκηση (O'Flaherty & Phillips, 2015).

Αναφορικά με το στυλ της διδασκαλίας, έχουν υπολογιστεί πέντε διαφορετικά προφίλ/στυλ, σύμφωνα με το Grasha (1994): διδασκαλία ως ειδικός, επίσημος εκπρόσωπος, ατομικό προφίλ, διαμεσολαβητής και αντιπρόσωπος, ενώ ένα άλλο στυλ διδασκαλίας που έχει προταθεί από τους μελετητές είναι το υβριδικό ή μικτό στύλ (Romanelli, Bird, & Ryan, 2009). Επιπλέον, στην αναφορά περιλαμβάνεται μία βιβλιογραφική αναφορά σε ποικίλες στρατηγικές διδασκαλίας. Έχει προταθεί από τους μελετητές ότι οι εκπαιδευτικοί πρέπει να κινηθούν προς μια διδασκαλία πολλαπλών στυλ για να αναπτύξουν οι μαθητές τις δυνατότητες τους σε μια πολιτισμική τάξη (De Vita, 2001). Η διαχείριση της αίθουσας παίζει σημαντικό ρόλο στη διδασκαλία, συμπεριλαμβανομένης της αποτελεσματικής εκπαίδευσης, για την ουσιαστική εκμάθηση των μαθητών. Προτάσεις και συστάσεις από τη βιβλιογραφία αναφέρονται επίσης σχετικά με το πώς οι δάσκαλοι και οι εκπαιδευτές μπορούν να επιτύχουν αποτελεσματική διαχείριση της τάξης.

Τέλος, η αναφορά ολοκληρώνεται με την χαρτογράφηση των σημείων που θα εστιαστούν στην εκπαίδευση στη διοίκηση. Παρατίθενται οι κύριοι στόχοι των πανεπιστημιακών προγραμμάτων σπουδών στους αντίστοιχους τομείς, και ακολουθεί ένας κατάλογος βασικών θεματικών ενοτήτων που χρησιμοποιούνται στη διδασκαλία της διοίκησης σε ιδρύματα τριτοβάθμιας εκπαίδευσης.

Περισσότερες πληροφορίες για τις απαιτήσεις στη διδασκαλία της διοίκησης μπορείτε να βρείτε εδώ.

Το δεύτερο μέρος της έκθεσης αναφέρεται στον **εντοπισμό την εκπαιδευτικών αναγκών** και την ανάλυση αυτών στα γενικά μαθησιακά πλαίσια του OLMEdu.

Οι ανάγκες κατάρτισης και τα γενικά μαθησιακά αποτελέσματα κατηγοριοποιούνται στους ακόλουθους θεματικούς τομείς:

- Σχεδιασμός και παροχή διαδικτυακής εκπαίδευσης, χρησιμοποιώντας διαδικασίες σχεδιαστικής σκέψης
- Ηλεκτρονική μάθηση, εξ αποστάσεως, ενεργητική μάθηση και συνεργατική μάθηση σε διαδικτυακά περιβάλλοντα στην εκπαίδευση στη διοίκηση
- Πλατφόρμες ηλεκτρονικής μάθησης, συστήματα διαχείρισης μάθησης, νέες τεχνολογίες και έξυπνες εφαρμογές για κινητές συσκευές, για εκπαιδευτικούς σκοπούς
- Εργαλεία διαδικτυακής διάσκεψης και διαχείριση διαδικτυακής τάξης
- Δημιουργία ψηφιακού περιεχομένου και θέματα προστασίας δεδομένων
- Διαδικτυακή ανατροφοδότηση, αξιολόγηση και παρακολούθηση
- Τεχνολογίες επαυξημένης και εικονικής πραγματικότητας, διαδικτυακά παιχνίδια, προσομοιώσεις κ.α. στην εκπαίδευση στη διοίκηση

Μπορείτε να βρείτε περισσότερες πληροφορίες εδώ.

Το **τρίτο μέρος** της έκθεσης αναφέρεται στον **σχεδιασμό του περιγράμματος του εκπαιδευτικού περιεχομένου** και περιλαμβάνει τις οκτώ θεματικές ενότητες και τις αντίστοιχες μαθησιακές ενότητες που αναπτύχθηκαν για να ανταποκρίνονται στις πραγματικές ανάγκες. Σε κάθε ενότητα ορίζονται μαθησιακοί στόχοι που οργανώνονται ως προς τις γνώσεις, τις δεξιότητες και τις ικανότητες, στο επίπεδο 6 του EQF. Οι οκτώ ενότητες είναι οι ακόλουθες:

Θεματική ενότητα 1	Εξ αποστάσεως εκπαίδευση και παιδαγωγικές στη διαδικτυακή εκπαίδευση στη διοίκηση
Θεματική ενότητα 2	Προσεγγίσεις της σχεδιαστικής λογικής
Θεματική ενότητα 3	Σχεδιασμός και παράδοση διαδικτυακής εκπαίδευσης
Θεματική ενότητα 4	Εξ αποστάσεως εκπαίδευση, εκπαιδευτικές τεχνολογίες, ψηφιακά εργαλεία και εφαρμογές για κινητές συσκευές
Θεματική ενότητα 5	Εργαλεία διαδικτυακής διάσκεψης και διαχείριση διαδικτυακής τάξης
Θεματική ενότητα 6	Δημιουργία ψηφιακού περιεχομένου και θέματα προστασίας δεδομένων
Θεματική ενότητα 7	Διαδικτυακή ανατροφοδότηση, αξιολόγηση και παρακολούθηση
Θεματική ενότητα 8	Ψηφιακή Πραγματικότητα στην εκπαίδευση στη διοίκηση

Περισσότερες πληροφορίες για το εκπαιδευτικό περιεχόμενο του έργου OLMEdu μπορείτε να βρείτε εδώ.

Το **τέταρτο μέρος** της αναφοράς αποτελείται από μεθόδους διδασκαλίας και αξιολόγησης που θα εφαρμοστούν στο έργο OLMEdu.

Η **μέθοδος διδασκαλίας** παρουσιάζει με εύκολο τρόπο τη θεωρητική βάση της εκπαίδευσης που θα ακολουθήσει το προσωπικό των ανώτατων ιδρυμάτων. Η μεθοδολογία εκπαίδευσης ακολουθεί τον ασύγχρονο τρόπο μάθησης, υιοθετώντας ελκυστικό και διαδραστικό περιεχόμενο, με επίκεντρο τον μαθητή. Η προσέγγιση βασίζεται σε ενεργητική, βιωματική και

μετασχηματιστική μάθηση, εκπόνηση συνθετικών εργασιών, παιχνίδια, σενάρια, προσομοιώσεις και άλλες τεχνικές μάθησης προσανατολισμένες σε ένα διαδικτυακό περιβάλλον μάθησης.

Περισσότερες πληροφορίες για τους μεθόδους διδασκαλίας του OLMEdu μπορείτε να βρείτε εδώ.

Στη **μέθοδο αξιολόγησης** του OLMEdu λαμβάνεται υπόψη η συνιστώμενη μεθοδολογία εκπαίδευσης, που σύμφωνα με το θεωρητικό υπόβαθρο περιλαμβάνει: εκπαίδευση με προσαρμογή στο ρυθμό του ατόμου, ασύγχρονη διαδικτυακή εκπαίδευση, με τον φοιτητή στο επίκεντρο, εξατομικευμένο περιεχόμενο, κοινωνικές αλληλεπιδράσεις και διαδικτυακές συνεργασίες. Περιλαμβάνει επίσης προσεγγίσεις αθροιστικής και διαμορφωτικής αξιολόγησης, συνεχή και τελική αξιολόγηση, εξυπηρετώντας εκτός από την αξιολόγηση και τη μάθηση, με ιδιαίτερη έμφαση στις κλασικές δραστηριότητες αξιολόγησης, όπως εφαρμόζονται σε διαδικτυακά περιβάλλοντα μάθησης.

Περισσότερες πληροφορίες για τη μέθοδο αξιολόγησης του OLMEdu μπορείτε να βρείτε εδώ.

In Italian

L'attenzione all'e-learning nell'istruzione superiore (IS) è cresciuta negli ultimi anni dopo l'arrivo dei corsi di formazione aperti su larga scala (in inglese MOOCs - *Massive Online Open Courses*) inoltre la digitalizzazione nell'IS è in cima alle agende politiche a livello europeo e nazionale (Bologna Process Implementation Report, 2018). La pandemia di Covid-19 ha causato la più grande interruzione nella storia dell'istruzione con un impatto su studenti e formatori a tutti i livelli e per tutte le tipologie di istruzione (Nazioni Unite, 2020). La transizione verso una formazione online non è stata una sfida semplice, specialmente per il personale scolastico e formativo in generale. I docenti universitari (HES – *Higher Education Staff*), in particolar modo coloro i quali insegnano materie più teoriche, non possiedono necessariamente le conoscenze e le competenze informatiche (ICT) necessarie a svolgere efficacemente la formazione online. Il successo della formazione online non si basa solamente sull'utilizzo di metodi e strumenti educativi online, ma necessita di modalità formative in grado di coinvolgere gli studenti utilizzando questi strumenti. Nella formazione manageriale (FM) questo processo si dimostra ancora più impegnativo, dato che coinvolge un insieme di studi socio-economici, ed è solitamente associato alla risoluzione di problemi e situazioni di scelta (Carneiro, 2004). Dunque, la teoria, la pratica e la riflessione devono essere continuamente combinate nel processo di apprendimento. In questo contesto i docenti universitari dovrebbero integrare tecnologie e metodologie pedagogiche per creare e mantenere ambienti di apprendimento positivi, dove gli studenti sono attivamente impegnati, cooperano, analizzano le situazioni, prendono decisioni, affrontano e risolvono i problemi.

Il progetto OLMEdu mira a creare un open lab per l'aggiornamento dei docenti universitari che si occupano di formazione manageriale, il progetto prevede: a) un piano formativo per l'aggiornamento dei docenti nell'uso delle tecnologie ICT e della formazione manageriale online b) materiale didattico per l'utilizzo di metodologie di formazione a distanza e utilizzo delle ICT nell'insegnamento di programmi di management c) un set di strumenti (*Toolbox*) per lo sviluppo di simulazioni online negli ambiti di formazione manageriale d) un repository online di contenuti utilizzabili dal personale degli istituti di istruzione universitaria (HEI – *Higher Education Institute*).

Il presente report **"Contenuti formativi per l'aggiornamento dei docenti universitari (HES) sull' utilizzo delle tecnologie ICT e della formazione on-line nell'ambito della formazione manageriale"** costituisce il primo *intellectual output* di OLMEdu, necessario per definire il corretto approccio per il raggiungimento dell'obiettivo generale - creare contenuti e materiali formativi su misura per i docenti nell'utilizzo delle ICT e della formazione on-line in ambito manageriale.

La prima parte del report si riferisce ai risultati di una ricerca per la mappatura delle basi teoriche e dei bisogni che determinano lo sviluppo dell'approccio formativo OLMEdu. Sono state utilizzare la ricerca desk e l'analisi di dati primari, ricavati mediante questionari.

Più precisamente, questa parte comprende:

a) Informazioni specifiche per ciascun Paese relative al profilo dei docenti universitari e alle sfide poste dal Covid-19 nell'erogazione della formazione online;
b) Panoramica del contesto globale ed Europeo riguardo le sfide e gli andamenti nella formazione online in ambito universitario ed i nuovi andamenti e le nuove tecnologie in ambito di formazione manageriale online;

c) Contributi dalla teoria dell'apprendimento a distanza per adulti relativi ai requisiti metodologici per lo sviluppo delle competenze nell'erogazione della formazione online;
d) Panoramica dei requisiti per insegnare in ambito manageriale.

Informazioni specifiche per ciascun Paese relative al profilo del docenti universitari e alle sfide poste dal Covid-19 nell'erogazione della formazione online

Dai materiali pubblicati e dalle consultazioni con 31 stakeholder (docenti universitari) ed esperti in progettazione e supporto alla formazione online sono emerse diverse sfide nei Paesi partner di OLMEdu (Grecia, Cipro e Italia), inoltre sono state identificate alcune differenze tra i tre Paesi del progetto. In tutti i casi, la necessità di progettare e implementare programmi di formazione online per i docenti universitari si è rivelata importante per affrontare il bisogno di digitalizzazione della formazione nel periodo di covid-19. Di seguito i principali risultati:

⇒ Mancanza di competenze nell'utilizzo di metodologie didattiche online e relative tecnologie in tutti i Paese e mancanza di offerte formative adeguate in Grecia;
⇒ I docenti universitari utilizzano piattaforme online per fare lezione, mentre l'utilizzo di simulazioni, giochi e ambienti di apprendimento virtuali in 3D è molto limitato, ad eccezione di Cipro;
⇒ Le sfide per gli Istituti universitari: come la mancanza di capacità nell'utilizzare piattaforme online, la preoccupazione di un insufficiente approccio pedagogico degli strumenti di formazione digitale, la scarsa interazione etc;
⇒ Le strategie per l'adozione di insegnamenti online erano limitate in Grecia, più vicine al modello tradizionale di insegnamento in Italia, mentre a Cipro le strategie erano più mirate;
⇒ Il supporto degli istituti si limitava solo ad offrire strumenti digitali specifici per il personale in Grecia, mentre a Cipro e in Italia il supporto era ampio e comprendeva vari aspetti;
⇒ Il supporto degli Istituti è stato valutato più positivamente a Cipro rispetto alla Grecia e all'Italia;
⇒ Il docenti universitari ha segnalato diverse sfide da affrontare dopo la pandemia da Covid-19 mentre la maggior parte degli esperti di Cipro ha dichiarato di non aver incontrato difficoltà;
⇒ In ogni nazione è stata identificata una qualche politica pubblica per supportare gli Istituti nell'incorporare l'insegnamento online;
⇒ I docenti di management hanno affrontato sfide come la necessità di acquisire competenze digitali, flessibilità e creatività nell'utilizzo delle risorse online;
⇒ Gli studenti di management potrebbero trarre beneficio dalle tecnologie online relativamente alle capacità di analisi, del *problem solving*, il coinvolgimento e la collaborazione;
⇒ Elevato interesse per la possibilità di digitalizzare simulazioni e giochi in tutti i Paesi;
⇒ La partecipazione a programmi di formazione sull'utilizzo di tecnologie online è stata media per Grecia e Cipro e molto bassa per l'Italia, mentre la misura in cui tali corsi sono stati percepiti come utili è stata differente;
⇒ Possibilità di strutturare un programma di digitalizzazione dei materiali formativi per aiutare i docenti a risolvere i problemi sollevati
⇒ Necessità di conoscenze relative all'ideazione e sviluppo di materiale digitale, tecnologie di realtà aumentata e virtuale in ambito manageriale, creazione di contenuti

digitali, uso di piattaforme di E-learning e sistemi di gestione dell'apprendimento, e uso efficace di strumenti per organizzare conferenze web e gestione di aule online

Maggiori informazioni sulle informazioni specifiche del paese relative al profilo di HES e alle sfide imposte da Covid nella formazione online possono essere trovate qui.

Panoramica del contesto globale ed Europeo riguardo le sfide e gli andamenti nella formazione online in ambito universitario e i nuovi andamenti e tecnologie in ambito di formazione manageriale

Basandosi sui risultati ottenuti, un insegnamento/una formazione online è efficace in ambito manageriale quando il corso è allineato con gli obiettivi di apprendimento, prevede un feedback rapido, prevede la presenza del docente nell'ambiente di apprendimento online, l'uso di metodi di insegnamento adeguati alle situazioni online, nonché la tutela che gli studenti abbiano chiare aspettative dal corso e che siano coinvolti in modo sensato (Salcido & Cole, 2019).

Per la formazione online e i corsi di formazione professionale dovrebbero essere prese in considerazione diverse caratteristiche come: (i) formazione continua, (ii) previsione di momenti di confronto e discussione; (iii) creazione di una comunità di studenti; (iv) formazione pratica in aula e su ricerche recenti; (v) formazione su misura per i bisogni specifici dei docenti; e (iv) formazione diversificata, offrendo una vasta gamma di attività di apprendimento. Gli studenti dovrebbero sperimentare esperienze di apprendimento autentiche durante la formazione online. Il contenuto del programma di formazione dovrebbe portare gli studenti a calarsi nel mondo reale e in un apprendimento basato su casi pratici. È possibile utilizzare una vasta gamma di strumenti, che includano momenti di confronto sia sincroni che asincroni. Un'attenzione particolare nel definire il contenuto della formazione dovrebbe essere dedicata alla pedagogia dell'apprendimento online, mentre il programma di formazione dovrebbe concentrarsi anche sullo sviluppo e l'accrescimento delle *soft skills* nei partecipanti, i quali dovrebbero poi essere in grado di organizzarsi, gestire il proprio tempo e gestirsi in generale. Sviluppare una community online di docenti potrebbe essere un ambiente di supporto all'interno del quale gli stessi docenti possono condividere esperienze e buone pratiche.

Maggiori informazioni riguardo le sfide in ambito globale o Europeo sulla formazione online e le tecnologie educative sono disponibili qui.

Contributi dalla teoria dell'apprendimento a distanza per adulti relativi ai requisiti metodologici per lo sviluppo delle competenze nell'erogazione della formazione online

Questa sezione riporta le informazioni relative alle teorie sull'apprendimento degli adulti e le loro applicazioni nella formazione online. Inoltre, affronta teorie e principi della formazione a distanza e come questi possono essere applicati in contesti di *E-learning* sincrono ed asincrono

Maggiori informazioni riguardo i contributi della teoria dell'apprendimento a distanza per adulti applicata alla formazione online sono disponibili qui.

Definizione dei requisiti per insegnare in ambito manageriale.

Sono stati identificati tre differenti approcci pedagogici utilizzabili in ambito di formazione manageriale, sono riportati anche diversi stili e strategie di insegnamento, tecniche di gestione dell'aula e le tematiche principali per l'insegnamento in ambito manageriale nell'istruzione superiore.

L’apprendimento basato sulla risoluzione di problemi (*Problem-based learning* - PBL) e la metodologia del Design Thinking sono stati proposti dai ricercatori come approcci pedagogici adeguati per l’insegnamento in ambito manageriale; entrambi gli approcci includono un apprendimento multi disciplinare e stimolano lo sviluppo delle soft skills degli studenti. Un terzo approccio è la *flipped classroom,* approccio che ha dimostrato di avere un effetto sull’apprendimento degli studenti, anche in ambito di formazione manageriale (O’Flaherty & Phillips, 2015).

In merito agli stili di insegnamento, vengono riportati cinque differenti profili/stili, come suggerito da Grasha (1994): insegnamento come esperto, autorità formale, esempio personale, facilitatore, delegante; un altro stile di insegnamento proposto dai ricercatori è quello misto, o ibrido (Romanelli, Bird, & Ryan, 2009). Il report include anche differenti strategie di insegnamento che sono state identificate in letteratura. È stato suggerito dai ricercatori che i docenti in ambito di business e management dovrebbero orientarsi verso un insegnamento multi stile (per esempio fornire informazioni con modalità differenti) affinché tutti gli studenti raggiungano il loro potenziale, specialmente in una classe multiculturale (De Vita, 2001). Inoltre, la gestione dell’aula ha un ruolo fondamentale nella formazione, compresa quella in abito aziendale e manageriale, per un effettivo apprendimento degli studenti. Vengono anche riportati suggerimenti e raccomandazioni su come gli insegnanti possano implementare una efficace gestione dell’aula.

Infine, il report si conclude con una mappatura dei contenuti prioritari in ambito di formazione manageriale. Sono elencati i principali obiettivi dei curricula universitari e dei programmi nei rispettivi ambiti, seguiti da un elenco delle aree tematiche principali utilizzate nell'insegnamento del management negli istituti di istruzione superiore.

Maggiori informazioni relative ai requisiti per insegnare in ambito manageriale sono disponibili qui.

La **seconda parte** del report riguarda **l’identificazione dei bisogni formativi** e alla loro analisi nei risultati generali di apprendimento del progetto OLMEdu.

I bisogni formativi e gli obiettivi generali di apprendimento sono stati categorizzati come segue:

- Pianificazione ed erogazione di formazione utilizzando approcci di Design Thinking
- E-learning, metodologie di apprendimento a distanza, attivo e collaborativo online in ambito di formazione manageriale
- Piattaforme di e-learning, sistemi di gestione dell’apprendimento, nuove tecnologie e applicazioni per smartphone e dispositivi mobili per scopi educativi
- Strumenti di gestione dell’aula e delle conferenze online
- Creazione di contenuti digitali e protezione dei dati
- Feedback online, valutazione e monitoraggio
- Realtà aumentata e virtuale, giochi online, simulazioni etc in ambito di formazione manageriale
-

Maggiori informazioni sono reperibili qui.

La terza parte del report riguarda **l’identificazione dello schema del piano formativo** e include gli otto moduli e le relative unità didattiche sviluppate per rispondere alle reali necessità. Gli obiettivi formativi sono associati ad ogni modulo e sono organizzati in termini di conoscenze, abilità e competenze, in linea con il livello 6 del Quadro Europeo delle Qualifiche (EQF - Educational Qualifications Framework). Di seguito gli otto moduli:

Modulo 1	Formazione a distanza e metodologie online in ambito manageriale
Modulo 2	Approcci al Design Thinking
Modulo 3	Progettazione ed erogazione della formazione online
Modulo 4	Tecnologie di formazione a distanza, strumenti digitali e applicazioni per dispositivi mobili
Modulo 5	Strumenti per la gestione dell'aula e delle conferenze online
Modulo 6	Creazione di contenuti digitali e protezione dei dati
Modulo 7	Feedback online, monitoraggio e valutazione
Modulo 8	Realtà aumentata in ambito di formazione manageriale

Maggiori informazioni riguardo i contenuti formativi di OLMEdu sono disponibili qui.

La **quarta parte** del report riguarda la formazione e la metodologia di valutazione da seguire durante il progetto.

La **metodologia formativa** presenta la base teorica della formazione in modo che possa essere seguita agevolmente dal docenti universitari. Questa metodologia è basata sull'apprendimento asincrono, che preveda contenuti orientati allo studente, coinvolgenti ed interattivi. L'approccio è basato sull'apprendimento attivo, esperienziale e trasformativo, project work, giochi, scenari, simulazioni ed altre tecniche orientate alla gestione di un processo in ambiente virtuale.

Maggiori informazioni riguardo le metodologie formative di OLMEdu sono disponibili qui.

La **metodologia di valutazione** OLMEdu è basata sulla metodologia consigliata, che in accordo con il contesto teorico comprende: formazione autodidattica, formazione online asincrona, contenuto orientato allo studente, elementi di individualizzazione, interazioni sociali e collaborazioni online. Comprende anche entrambi gli approcci di valutazione sommativa e formativa, la valutazione continua e finale, che serve sia alla valutazione di e per l'apprendimento, con particolare attenzione alle attività di valutazione reale, applicate negli ambienti di apprendimento online.

Maggiori informazioni riguardo la metodologia di valutazione di OLMEdu sono disponibili qui.

Table of Contents

IO1.A1 Mapping the theoretical foundation and needs

Country-specific information related to the profile of HES and challenges imposed by Covid-19 in training delivery using online technologies

Introduction

This report provides country-specific information related to the profile of Higher Education Staff (HES) and the challenges they are facing after the Covid-19 pandemic in training delivery using online technologies. It is comprised of two main parts:

(a) the information that emerged through research from published materials, and

(b) the analysis of the data collected via consultations with 31 stakeholders (HEI training staff mostly in the field of management) and experts in online training design and support, from Greece, Italy and Cyprus.

Information from published materials

Higher education staff (HES) profile

Academics profile

Greece

Based on EC Eurydice Report (2017) the typical career path for academics in Greece is Lecturer, Assistant Professor, Associate Professor and Professor. According to the same report the academic staff can be categorized into three (3) main categories (a) junior, (b) intermediate, and (c) senior.

The junior categories include the entry level staff such as the special training staff and the special laboratory and teaching staff (see Figure 1.1) and are estimated to comprise the 13% of the academic staff employed in Greek Higher Education Institutions. The staff of these categories is engaged in teaching and has indefinite contracts with Higher Education Institutions. The special training staff is necessary to hold a PhD degree while the special laboratory and teaching staff is not legally obliged.

The intermediate categories include lecturers of previous Higher Education Technological Institutions (TEI) that have now incorporated in the HEIs and assistant professors, all of which represent the 36% of the population of the academic staff in the country. The staff of these categories is engaged in teaching and research and has fixed contracts with Higher Education Institutions. For lecturers and assistant professors, it is necessary to hold a PhD degree.

Finally, the senior categories include associate professors and professors which represent the 51% of the population of the academic staff. The staff of these categories is engaged in teaching and research, need to hold a PhD degree and have indefinite contracts with Higher Education Institutions.

The percentage of the other categories of academic staff which includes researchers (including doctoral candidates and postdocs), experts and practitioners (professionals teaching a subject related to their professional field), graduate students (e.g., providing tutorials) is not common in Greece. This may be a result of the fact that people in these

categories are engaged in teaching and/or research voluntarily without holding any type of contracts with Higher Education Institutions.

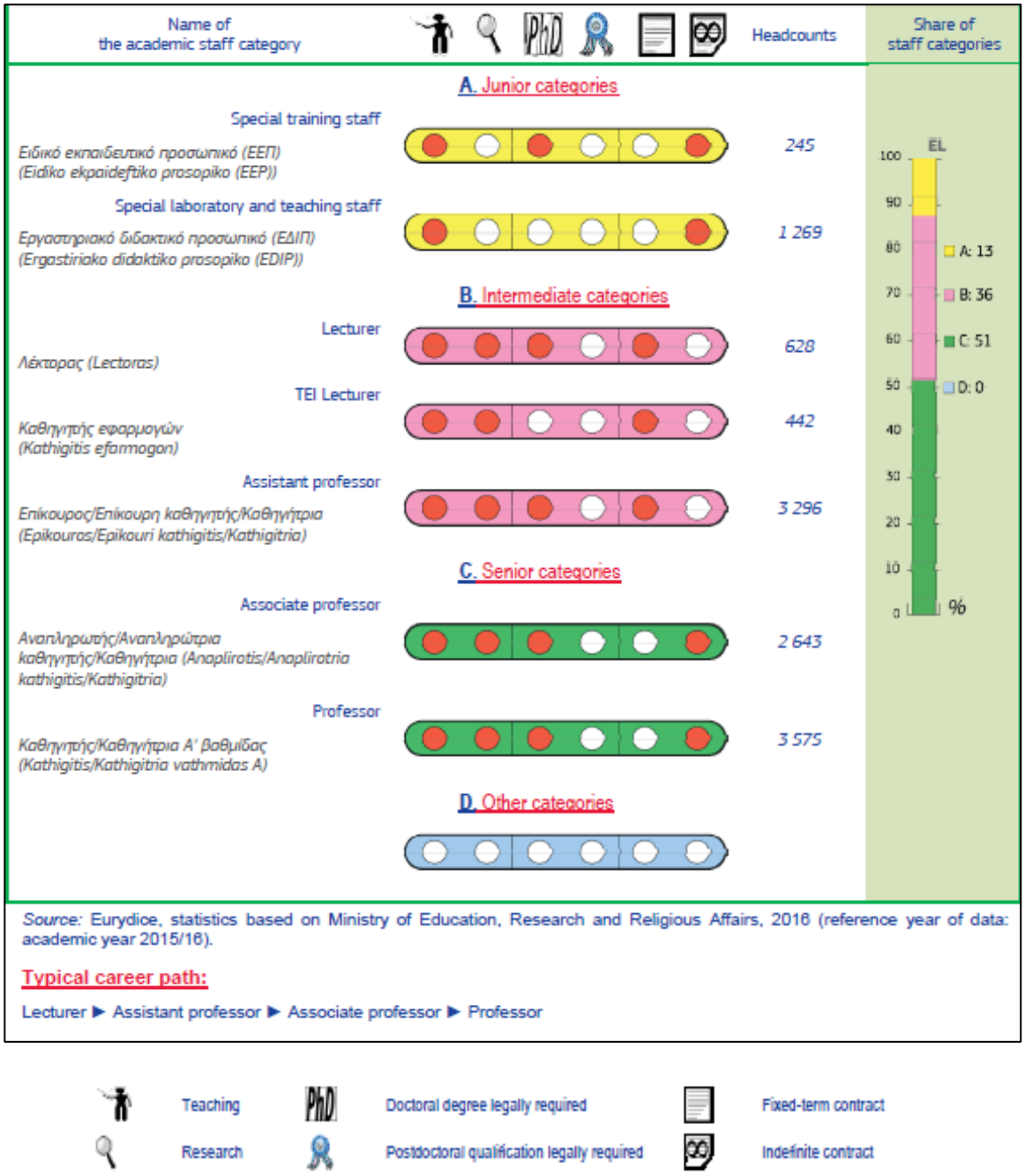


Figure 1.1 Academic staff categories in Greece (retrieved from Eurydice Report, 2017)

Cyprus

Public and private universities in Cyprus are successfully listed among the top universities in Europe and worldwide. (The world University Rankings, 2020). They are highly ranked on the world education map, and this is due to various reasons. These reasons can vary from the excellent facilities, courses' structure, interactive activities, and good dissemination to the profile of the academic staff. Cypriot Universities are high in the preferences of students from countries such as Germany, Austria, Norway, the United Kingdom, the United States, Ireland,

Israel, Russia, and Norway who prefer Cyprus for their studies. Not surprisingly, over 60% of these foreign students come from Greece.

The academic profile of HES in Cyprus reveals that the large number of academics are experienced and have great records in high-quality teaching and research in their field of expertise. Moreover, these academics have established long-lasting collaborations with research networks which offer students the opportunity to learn from leading experts in various fields. World renowned academics teach and conduct state of the art research in specialized courses of the universities' curriculum. These academics add value to the courses they teach, not only from a specialty perspective but also from a multicultural perspective as well. They are a valuable source in helping students translate the theories and concepts they learn into practice.

More specifically, about the academic profile of HES in Cyprus it is important to mention that staff positions at the public universities of Cyprus are open to anyone who has the necessary qualifications and wants to apply. These academic staff positions can vary from being a Professor, an Associate Professor, an Assistant Professor and also a Lecturer. The job postings of Professor and Associate Professor are usually filled by advertisement, call or upgrading. The post of Assistant Professor is recruited by means of advertisement or upgrading and Lecturer posts are filled by advertisement. The usual process is that a special five-member committee has the responsibility of screening the short-listed applicants. In the case of private universities, Law academic staff shall correspond to international standards. The usual way is that teaching-research staff is graded hierarchically as professors, associate professors, assistant professors and lecturers. Not surprisingly, as soon as a vacant position is announced, any qualified individual who is a citizen of the Republic of Cyprus or the European Union can apply for it. The procedure followed can be based on the respective Cypriot laws governing the Civil Service, or on special legislation passed for a specific institution. High Education staff may be appointed to the permanent staff of each institution or in a contractual basis, according to needs.

Italy

In the academic year 2019/2020, the teaching and non-teaching staff present in Italian universities amounted to just over 125,605 units. Compared to the 2010/2011 academic year, the number of university staff overall decreased by 6.5%, however a slight growth (+ 1%) was observed compared to the 2018/2019 academic year. The reduction observed involves all categories with the exception of holders of research grants, for whom an increase of 10.3% is observed (Miur, 2020).

In the academic year 2019/2020, the breakdown by type of staff shows that over half (55.6%) is dedicated to teaching and research activities and is composed of both permanent teaching staff (full professors, associate professors and researchers permanent) and by unstructured personnel (fixed-term researchers and holders of research grants). The remaining share (44.4%) is mainly made up of technical-administrative staff (43.1%) and linguistic collaborators. To the total number of staff must be added 28,576 teachers holding teaching contracts useful for acquiring university training credits (net of those already in the role of state universities) (Miur, 2020).

It is above all non-state universities that make use of contract teachers: out of 100, the total number of units employed in teaching activities (permanent and non-permanent) 70 are contract teachers. The analogous ratio calculated for state universities assumes a value of just over 28.

Overall, the male gender slightly prevails (50.7%) over the female one (49.3%), but there are differences between the various types of personnel. In fact, women represent 40.7% of teachers and researchers and 59.6% of technical-administrative staff (women prevail both among technical-administrative staff with permanent contracts (59.4%) and among all administrative-technicians with fixed-term contracts (66.4%)). Furthermore, for both types of staff, female representation is low in top career positions: in the administrative management area it stands at 39.0% while among 1st or 2nd level of professors it is reduced to just under 34% (Miur, 2020).

At national level, there are almost 98 units of technical-administrative staff for every 100 teachers, a figure that is slightly decreased compared to recent years. This ratio is reduced to 94.1 in state universities while it reaches a value of 149.5 in all non-state universities where the smaller number of permanent teaching staff probably prevails (Miur, 2020).

Finally, the technical-administrative staff mainly performs functions relating to the administrative (50.8%) and technical area

The panorama of the types of personnel belonging to university institutions is completed with:

- The holders of independent service contracts for research programs which in the year 2019 were 9,191 and mostly men (54.1%). These are work contracts with a duration generally linked to research programs for which support activities are usually carried out (for example, database implementation, measurements, translations, etc.);
- Fixed-term technologists, provided for by Law no. 240/2010 (art. 24bis), which are entrusted with the tasks of technical and administrative support for research activities and for which the possession of at least a degree and a particular professional qualification is required. This is a type of collaborators that is still not widespread but constantly increasing: in 2019 in all Italian universities there were 216 of which 119 women (55.1%).

HES Qualifications in using online technologies in teaching

Greece

According to the EC Eurydice report (2017) Higher Education Staff (HES) lacks professional development, ICT skills and use of online meeting, collaboration and management tools and services. Indeed, in Greece there is lack of (HES) qualifications in online learning methods and use of ICT-based teaching, as well as lack of training programmes' offers to them.

Based on the EC Eurydice Report (2017) there is absence of large-scale training programmes targeting academics and this is true in Greece too. It is mentioned that when considering continuing professional development (CPD) in areas such as teaching, information and communication technology (ICT), most countries reported having no programmes that would go beyond isolated activities of individual higher education institutions.

Cyprus

It is a fact that the Education sector and especially HEI invest heavily in its workforce. There is a well-developed professional development and training structure to assist with the initial and continuing training of the academics workforce, but for the sector to continue to grow, more specific professional development opportunities will be required in key areas.

Educators, as professionals and scientists who daily design the learning of their students are the most suitable to design their own vocational learning cycle, identifying their own needs, in

relation to European practices and frameworks for digital capabilities. ICT knowledge and skills that HES possess should be improved since digital education is clearly a policy focus for the state but actual implementation needs to be analyzed further. The majority of educators (61.8%) feel well or very well prepared for using ICT for teaching (EU average 37.5%) and only 10.8% report a high need of professional development in this area (EU average 18%) (OECD, 2019d). In this sense, teacher support has crucial importance to ensure beneficial action of digital education. As the continuous professional development for the Higher Education Staff on ICT is more effective when held at school (OECD, 2019), It is encouraging that the Cyprus Pedagogical Institute has expanded the provision of continuous professional development to teaching site in the recent years. As reported in the Cyprus Pedagogical Institute (2020) it is of high importance for the HES to be able to utilize online learning environments, electronic learning tools, open digital educational content and learning communities, with the aim of enhancing their ongoing professional development and the acquisition of lifelong learning skills and to develop the necessary digital skills to be effective in providing innovative learning environments in the Cypriot education system, in order to support students to acquire a basic body of knowledge but also to develop as much as possible the horizontal skills required in the 21st century , while cultivating core values and attitudes.

Italy

According to recent studies carried out in the university education field, it appears that strategic skills in terms of digital competences should be acquired by HES. In fact, It turns out that 1/3 of the teachers have no knowledge or only a superficial knowledge in this field, but in addition to this lack of knowledge there is also a lack of interest in integration in teaching, a situation that should make us reflect (Epasto, 2015).

Based on the available literature and sources on the subject, starting with the work developed by Delgado Benito under the direction of Prof. Raquel Casado Muñoz of the University of Burgos, the following are considered to be fundamental digital competences in the field of education:

Digital skills

- Knowing how to manage ICT for one's own didactic activities.
- Knowing how to create, manage and use blogs, wikis, social networks, etc. in an educational key.
- Knowing how to create and deliver asynchronous presentations and training sessions.
- Knowing how to provide useful information to students on tools for managing their organizational activities and for their learning.
- Knowing how to manage online assessment tools.
- Knowing how to use tools for online cooperation / collaboration, for file sharing, for sharing documents and files online.
- Knowing how to organize and manage courses on LMS platforms.

The skills described are functional to make a professional profile multipurpose and flexible, able to develop, in the teacher, the ability to adapt to the changing and varied situations that the university institutional context inevitably proposes.

Challenges imposed by covid-19 in training delivery using online technologies

HEIs challenges in shifting from face-to-face to online education

Greece

Many universities worldwide have used online courses from platforms such as Coursera, Jove etc, while others developed e-learning systems to fulfill their educational needs (Raikou, Kaltsidis, Kedraka, Karalis, 2020). Greek Universities on the other hand given that courses are taught in Greek were not able to use these platforms which use the English language and thus most academics adapted their courses to distance learning. Greek universities such as the University of Patras and the Democritus University of Thrace provided academic continuity for the semester via distance learning (Raikou *et al.,* 2020). Indeed, a significant number of courses is now in place, combining existing asynchronous teaching platforms with synchronous distance learning (CEDEFOP, 2020). Data from the education ministry regarding tertiary education institutions nationwide have shown that the University of Crete and Charokopeio University offer 93% of their courses via distance learning, while University of Patras 91% (CEDEFOP, 2020).

In addition there are some concerns for poor pedagogical approaches within the digital education tools and HES abilities and skills to turn this modern, convenient, flexible, and ubiquitous mode of teaching to an interesting learning experience for their students (Raikou *et al.,* 2020).

Other challenges reported for Greece refer to the impact of online education to the students such the perception that the HEIs are not able to meet their needs or the new demands, lack of the vividness of face-to-face courses, inability to work with their classmates, lack of adequate communication, poor interaction and unsatisfactory cooperation and socialization in the academic context (Raikou *et al.,* 2020). In addition, all laboratories interrupt their function with minor exceptions in the field of medicine. Students' internships were also interrupted and no further support was provided for students.

Cyprus

The research conducted under this survey has revealed that Cypriot universities and its academic staff is shifting towards a more modern model in distance education, for certain the use of technology in education will continue to play an important role for local education institutions. (Siathas M, Cyprus Profile, 2020) Online distance learning has become a daily habit of thousands of students due to the unprecedented situation with the pandemic COVID-19. Long distance education which is one of the most popular options in education nowadays, needs a lot of work and consistent effort to be implemented and function successfully for all levels and degrees. The Distance Education Unit of Universities implement an integrated pedagogical model, which is adapted to the needs and special characteristics of long-distance education COVID-19 pandemic in 2020 is the reason why Cypriot Universities completely altered their teaching methods, instead of the traditional type. Overall, the HEIs acted relatively early and quickly. It can be said that the staff managed to cope with the spread successfully. However, higher Education Institutions faced various challenges in shifting totally from face-to-face to online education.

Despite the fact that there was not a lot of time for preparation given to the teachers to prepare and enhance their digital skills prior to online teaching it needs to be highlighted that the transformation in such a short term was characterized with success. Education in Cyprus has rapidly become digital and distance learning is now an inevitable part of teaching. The commitment of higher education staff in providing high quality learning to students in both public and private sector is something that undoubtedly helped the learning process of the students. For more than one year, universities in all cities and all over the island, became

more flexible than ever before and spent many hours in finding ways to adapt to the situation. HEI staff, worked around the clock to ensure that they could cover all the aspects of the training curriculum and that their students would not be left behind. The universities had to find methods to assist both teachers and students and find tools that could change quickly teaching from a physical mean to an online one. During this time the international students had the option to return back to their own home countries and keep up with their studies in the same level of education.

Italy

With the global crisis caused by COVID-19 and the closure of traditional structures, the continuity of learning can only be ensured thanks to digital skills, the flexibility and creativity of teachers and trainers for the utilization of creative interactive solutions with online resources. During the pandemic, the digital delivery of courses, which allows the continuation of studies through online learning opportunities for students caused problems for teaching management online. Although, on the positive side of this approach is the flexibility that it offers in terms of time and place, distance education was the only option, and it's possible consequences in terms of effectiveness are still unknown . Online teaching platforms are equipped with different facilities to enable teachers and students to make the best use of the learning environment. These classes are more flexible and convenient. In this aspect, life-long learning and computer literacy are promoted as well while saving a lot of money by participating in online classes. Nevertheless, this does not happen without problems. It was more difficult for the instructors to monitor students' behavior and check their contribution and progress and it may create a sense of isolation resulting in depression or other negative feelings. Under the current conditions, online modules were incorporated for the development of digital skills but significantly important is the provision of mandatory equipment with the necessary digital gadgets and devices. Unfortunately though, not all teachers and Higher Education staff are equally prepared for this process.

Some of the most problematic parts of this process that teaching management had to overcome were:

- Lack of access to equipment and internet connection for provision of distance education
- Lack of digital skills and abilities for effective use of training platforms
- Lack of experience in creating digital teaching content
- Lack of experience in e-learning and others effective distance learning especially for the teaching of practical courses
- Concerns about privacy, copyright and data protection

The accompanying document of 30 September 2020 to the "Digital Education Plan (2021-2027), Resetting education and training for the digital age", adopted by the European Commission in response to the impact of the pandemic crisis on the organisation and operation of the various levels of education, shows that most of the players in Europe who were called upon to deal with digital teaching and learning had never used it before. This exposed teachers and students, albeit to varying degrees in different countries, to a digital divide which had not even allowed for equal access to distance teaching and learning.

In a time when the emergency has not yet ended, the pandemic has forced the Italian higher education to evolve and to experiment with a new strategic behavior. Comparing two different situations, the situation before Covid-19 outbreak and that characterized by the need to face it, the aim was to observe and describe the resilience of the Italian education system. More precisely, the focus was on the strategy of emergency remote education adopted by

universities, hypothesizing how the future of the Italian higher education could be (with distance learning that will probably become a usual and structured practice).

Indeed, after the first and timid attempts to exploit technologies in education performed by Italian universities, it is during the pandemic crisis that distance learning has been used as emergency remote education and has been transformed from a support for traditional means to the only instrument to ensure continuity in education and, at the same time, public health protection for all.

Of course, it brings a series of disadvantages, represented by the risk students or points in education quality, confirming the value of real interactions and the need, for universities, to remain a place of sociality and growth for students.

Over this last period, the digital transition has brought several challenges which have had an impact on the teachers' side as well as on the students. The Italian school infrastructure was not yet ready to embark on this digital transformation. Main challenges were registered in terms of inadequacy and lack of competences on the teaching staff side as well as on the IT tools side. Another crucial challenge has been to first reach out and then engage all the students: in fact, due to lack of connectivity or appropriate or necessary tools, inadequate space and lack of means many students have experienced harsh times over the pandemic.

HEIs strategies for shifting to online teaching

Greece

HEIs in Greece decided to shift to online teaching so as to avoid the discontinuation of their function. They showed a profound commitment for creating the best possible learning environments for their students and being quick to replace face-to-face lectures with online learning (Papaioannou, 2021). HEI also considered the move to distance learning as an opportunity to expand flexible learning modalities and for setting the step for a continuous shift towards more online learning in the future (Papaioannou, 2021). It has been also reported that using technology HEIs in Greece combined existing asynchronous teaching platforms with synchronous distance learning and managed to offer huge amount of their courses online (Papaioannou, 2021).

Cyprus

With programs related to high technology innovation and its countless academic and scientific distinctions, universities in Cyprus are considered as poles of attraction for students from all over the world. The rich study programs offered by universities are extremely important for students who wish to stand out in innovative fields. Cyprus is considered one of the most important university and research centers in Euro-Mediterranean Region (University of Cyprus webpage, 2021). The planning of HEI is to offer innovative distance learning programmes at Bachelor and Master level, and use the most up-to-date technologies and state-of-the-art learning design theory to deliver their courses. Integral part of this approach to the learning design of these courses is to help our students develop higher-order skills of critical analysis, reflection, and problem-solving. HEIs also support learners in building knowledge collaboratively through social learning.

The strategies that are implemented for online teaching are currently:

- Planned to provide solutions to problems.
- Designed by established competent services of the Ministry of Education, Culture and Sports that undertake the management and coordination.
- Organized to provide quality distance e-learning.

- Adapted taking into consideration the necessary internet network installations in schools and to have the necessary logistical infrastructure (PC, Tablet).
- Supporting teachers in distance e-learning.
- Not undermining the unequal level of financial, educational and family status of students, elements that limit online teaching effectiveness
- Able to provide learning assistance, inspiration and motivation to the weakest students.

Italy

A working paper developed by the University of Turin and the research centre Luigi Bobbio has sum up the key points for the definition of an online teaching strategy implemented over the pandemic:

1. Define a shared development project at the institute / university level, to ensure the creation of a teaching-learning environment suited to the needs of teachers and students encourage an adequate share of resources to support the quality of teaching-learning with the help of digital resources

2. Collect the evaluations of students and families with respect to the experience of the DaD (distance learning) made in the emergency phase

3. Identify shared quality standards to support the enhancement of DaD in teaching / learning practices organize internal training courses to support the development of specific skills related to the exercise of the role within the new teaching / learning environments

4. Support continuous training through internal or external peer learning processes (mentoring, tutoring, peer observation) accompany the redesign of teaching activities in order to provide for the enhancement of good practices in teaching-learning processes

5. Redefine the development strategies and priorities of the institute / university to encourage the enhancement of digital technologies in organizational and educational processes provide self-assessment paths for teachers to encourage reflection and socialization of skills and innovations gained in the emergency period

6. Establish a service center for the promotion, experimentation and evaluation of digital environments and resources to be integrated into teaching-learning processes

Furthermore, according to the same research, there has been a drastic downsizing of the most innovative experiences. The teaching has been simplified, getting closer to the traditional model, the transmissive one, although enriched by the discussion with the students.

- The first strategy that of transmission-dialogic, has doubled its diffusion. With the DaD it was practiced by 47% of teachers.
- The second strategy that of interactive transmission, has remained almost constant. It was practiced by 31% of teachers.
- The third strategy the collaborative-innovative one, is instead more than halved. It was practiced by 22% of teachers.

The same simplification process was also observed in the conduct of the exams. Where face-to-face teaching allowed richer and more articulated methods of verifying learning, with the DAD the latter have been considerably simplified.

HEIs support to HES in the shifting from face-to-face to online education

Greece

In Greece, specific digital tools became available to the academic staff to facilitate the transformation from face-to-face to online education from the HEI. According to a study conducted in Greece by Pappa (2020) with a sample of 181 professors in HEIs, professors in Greece are more satisfied with the support of their HEIs towards their elearning activities, something which may be related with the fact that online learning has become a regular part of the teaching method.

However, no specific support or training has been identified to be provided for the HES.

Cyprus

HES and educators strive to meet the new demands and the new challenges revealed and they need empathy, support and more investment in time and resources than ever before from the Higher Education Institutions they are working for. All the universities, to varying degrees, ensured their continuity of the learning processes for all HES through the development of practices and groundbreaking initiatives to support them. Christina Papapoliviou, Specialist Project Support Scientist at the Press and Public Relations Office University of Cyprus stated that With the help of technology, the shifting transition from face to face to online education model acts as an alternative emergency solution due to the pandemic situation and without Downgrading the learning level of the offered knowledge.

HES should have all the necessary skills and gadgets available but also promising future opportunities for their continuous professional development. While it can be said that COVID-19 is pushing our societies to change, creating new challenges and roles for HES, it is deemed necessary and vital since it can have other significant effects on learning and well-being of the HES.

Specialized attempts have been made by Higher Education Institutions to support and enhance Higher Education staff in this unprecedented situation. This shifting in the online education is deemed necessary and there was the need to solve all the problems that arised in a short period of time.

HEIs implemented the following in order to support teachers and higher education staff in Cyprus:

- Provision of Innovative material and distance learning modules for digital development of e-learning skills and pedagogical practices
- Equipping universities with the necessary digital devices
- Caring for the well-being of teachers and VET trainers

Italy

Most of the teaching was carried out from home, with a sufficient technological infrastructure to guarantee the running of the lessons (Miur, 2020)

- 68% of the teachers offered lessons from home, 17% from other environments used for personal study.
- In 88% of cases, the internet connection and the IT equipment available to teachers was adequate to make the choices deemed most educationally appropriate.
- Although the lessons were prepared from private homes, the vast majority of teachers (89%) received support from their universities for the transition to distance learning.
- The support was mainly centralized at the university level and took the form of informative emails (61% of cases), notes written on the university website or intranet (55%), video tutorials on the use of the platforms (48 %); technical help desks (45%); training sessions (25%).

- Although to a lesser extent, information also came from decentralized structures (departments, study courses, schools, etc.), mostly in the form of emails (35%), notes written on websites (24%), technical help desks (24%).

The support networks were important in dealing with the emergency, especially from a technical point of view.

- In 53% of cases, the institutional support networks (offices and staff of the University, of the School and of the department, managers of study courses) provided (much or enough) help from a technical point of view and in 22% of cases also from the didactic point of view.
- Professional networks, that is the relationships with colleagues or collaborators, in 33% gave a technical contribution and in 23% didactic.
- Non-professional networks (mostly friends and family), on the other hand, were more marginal, giving a technical contribution in 12% of cases and didactic in 5%.

HES challenges in shifting from face-to-face to online education

Greece

Professors' role in online education is completely different to the role required for face to face education. Consequently, HES had to deal with various challenges in this transformation and especially a significant number of them that had no experience with online learning. This held true also in Greece.

One of the most important challenges were to familiarize with the distance learning tools, softwares and platforms, with related skills for the active engagement of students and to be able to resolve any technical issues that may arise (Farrell, Brunton, Costello, Donlon, Trevaskis, Eccles, & Ní Shé, 2019).

They also have to deal with the fact that in many cases students are not willing to engage in the processes and prefer to sign in without attending the courses (Karalis, Kedraka, Raikou, & Kaltsidis, 2021). The challenges of this type of education regarding the collaboration and communication between students and professors but also between students is something that has raised concern.

They are not also able to see students' reactions so as to offer more clarifications (Karalis et al., 2021). This is particularly important given that not all students are familiar with expressing their inquiries in the chat (Karalis et al., 2021).

In addition, various fields of study require specific technical equipment. It is true that there are various subjects which include the development of professional competences through practice (IESALC, 2020). Professors of these subjects face greater uncertainty and difficulties for delivering knowledge online and adapting face-to-face processes virtually.

Overall, HES in Greece face difficulties in designing online interactive courses that actively engage students; discomfort due to the new working conditions; increase in working hours and complexity; pressure to familiarize fast with online teaching environments and protect themselves and students from disconnecting from the real world.

Cyprus

Education is one of the areas that has been hit hard by the COVID-19 pandemic. This is because the need to use digital and electronic technology to be able to fill the educational gap caused by the pandemic, found it unprepared. The research experience is not the same when

it comes to utilizing online tools and methods since they cannot easily replace the physical contact with the original monographs and volumes of the published excavation programs, but since we have to work under these special conditions we must adapt accordingly as stated by Maria Iakovou, Professor of Prehistoric and Prehistoric Archeology, Department of History and Archeology of University of Cyprus.

Thus, the education system was found under an emergency situation in a few days. Once again, the great burden of defending the educational good, of supporting the students under any circumstances, is lifted by the combative educational world and more specifically HES.

Although, distance learning offers obvious benefits to both teachers and students, such as continuity, flexibility and mutual support, many HES struggle to adapt to online teaching due to the inevitably tight timeframes. In addition, it is difficult for teachers to ensure that the interest of all students, especially those from disadvantaged backgrounds and younger students, will remain undiminished and that they will participate in online lessons. Moreover, one of the most challenging parts of this transition is the online examinations that had to be completed ensuring that this had no cost to the quality. Another challenge that aroused with the replacement of physical attendance in the teaching process with an online one, is the issue with the technical lessons. How to deal with the laboratories that cannot be replaced by online courses is still a problem for HES.

As far as the available educational material as a whole, this is another issue of concern, since the material is either very deficient, or there is no pre-selection-organization by the University they are working for, resulting in chaos. Based on researches, HES frequently mentioned that they need further support measures and clear guidance. There are numerous difficulties, but the most common of all is access to technology for both students and HES, as well as increased workload and stress at work from home. Several difficulties were identified related to student support referring to their digital abilities, as well as to the HES digital gaps. Despite the challenges faced when integrating ICT, namely, shortage of resources, network connection, lack of support and capacity of the lecturers to ensure that teaching strategies are in line with proposed innovations, there are some pockets of good practice where some lecturers use e-learning systems effectively to enhance learning environments.

Italy

According to a study conducted by the research Centre “Luigi Bobbio”, Italian professors and researchers give a positive opinion both of the way in which their universities and departments have dealt with the emergency - with few variations between the universities of the north, center and south of the country and between large and small universities - and their own distance learning experience.

Their responses, however, also highlight the difficulties encountered and the negative and stressful aspects of the emergency:

- most of those who carried out coordination roles at the university, department or degree program level were very busy in organizational meetings, in coordinating teachers and communicating with students;
- Most teachers saw an increase in the time needed to prepare lessons and the time needed to organize and conduct exams.

Professionals interviewed encountered didactic problems related to the limited time available to adapt their teaching to online teaching, the lack of familiarity with new technological

platforms, the difficulties in interacting with students, the reduced access to educational resources and the difficulty of carrying out exercises/practices.

A substantial minority of teachers reported logistical problems related to the lack of adequate space at home, the difficulty of reconciling teaching with the co-presence and care of family members, the need to provide technical assistance to students, or privacy problems related to the fear that the materials created for teaching can be used and disseminated improperly, that data protection is at risk and that academic authorities can exercise greater control and reduce the teaching autonomy of teachers.

Finally, a small minority had technical problems related to the quality of the internet connection or computer equipment.

According to the Luigi Bobbio research centre the problems encountered during the emergency can be classified into 4 categories.

1. Technological problems, connected to the quality of the internet connection or of the IT equipment. They concerned just 14% of teachers.
2. Technical-logistical problems, connected to the lack of adequate space at home, to the difficulty of reconciling teaching with the co-presence and care of one's family, the need to provide technical assistance to students. They concerned 31% of teachers.
3. Privacy problems, related to the fear that the materials created for teaching could be used and disseminated improperly, that data protection is at risk and that academic authorities could exercise greater control and reduce autonomy teaching of teachers. They concerned 31% of teachers.
4. Didactic problems, connected with the limited time available, with the lack of familiarity with the platforms for the DDA, with the difficulties of interacting with students, with less access to didactic resources (librarians, etc.), with difficulty in adapting one's subject to online teaching, with the problematic nature of practical exercises. One or the other of these problems were reported by 70% of teachers.

Moreover, the research “Measuring the effect of the Covid-19 pandemic on the Italian Learning Ecosystems at the steady state: a school teachers’ perspective” shows that over 92% of teachers said it took two weeks to adapt to online education and that with distance learning, contact with 6-10% of students was lost.

According to the teachers who participated in the study, the lockdown changed their daily work routine. According to 65% of the survey participants, in fact, the perceived work was higher than that carried out in a situation of normality before the pandemic. In fact, in order to carry out the lessons, 82% of teachers said they took more than 4 hours a day, including 29% said they had been busy for more than 8 hours a day.

Government policy and support for HEIs to incorporate online teaching

Greece

In Greece the Ministry of Education and Religious Affairs offered for free several digital tools to facilitate the academic staff to shift to the online teaching, such as Google and Microsoft platforms (Ministry of Education and Religious Affairs, 2021) in order to support the completion of the academic year.

In addition, the Greek government created a new legal framework which focuses on internationalisation. Through this 2019 legislation the Greek Ministry of Education and

Religious Affairs aims to remove any obstacles concerning the mobility of students, academics and administrative staff (Papaioannou, 2021). The particular law aims to enhance internationalisation in various ways. It states that higher education institutions have a mission to promote cooperation with other educational institutions and research bodies in the country and abroad so that they can take part in the European and international academic community (Papaioannou, 2021). It also allows universities to offer English-taught undergraduate programmes for international students and provide joint programmes with international universities through very simple and quick procedures (Papaioannou, 2021).

Cyprus

It is undeniable that physical education is an indispensable element of education and this is well known as stated on behalf of the Ministry of Education Sports and Culture of Cyprus. Digital means that allow long distance education are considered as saviors in this emergency situation. At the same time based on governmental statements, ‘’despite the hard work that has been going on since the evolution of the pandemic, there is a huge need for more.’’ What is needed is a more modern approach including freely access materials, clear guidelines and better infrastructure for all HES and students. These are some of the issues that should be incorporated in the governmental policies in a way that they provide new opportunities and unlimited access to long distance digitized education.

There is an urgent need for the Ministry of Education, Sports and Culture, and the State to reduce and eliminate both the recent inequalities created by the pandemic and those created by the socio-economic inequalities that exist in society. The governmental, responsible officers and they are well aware of this need. Not every student has the same economic background that can enable him/her to continue their studies ultimately in an online base. The government should establish new policies for this matter, to avoid damage in the economy and education level of the country. Achieving a high level of education is an element of democracy, rights, equality and justice.

The inability of public education to cope immediately and to fully adopt the new structures provided by e-learning was due to the long delay in modernization, to the fact that the use of technology was mainly occasional, and to its inability to leave behind bureaucracy and automate some procedures. What can be said is that the dynamics of the pandemic will be crucial for the evolution of teaching and for the creation of new policies. According to OECD report, ‘’certain system level policies, can help mitigate socio-economic inequalities whereas others, such as grade repetition and early tracking, may amplify them.’’(2017)

Not to mention that the forthcoming changes are of course expected to lead to job losses and a slowdown in the research activities of the institutions. Financial support measures taken by the government, using local or European funds are urgently needed in order for higher education institutions to cope with the situation and overcome these difficulties. Consequently, the great recession that will be observed in the international student market will have frightening short- and long-term effects on education.

The handling of the pandemic by the Ministry of Education in Cyprus is also affecting the future planning of the island. For the upcoming academic year, many institutions are already preparing to offer on-campus and online tuition for students who may not be able to travel until the situation becomes clearer. Many private institutions are working on the idea of introducing a lower tuition framework that will only cover long distance learning and this might also be applicable in the case of public universities master’s programmes.

Italy

During the pandemic, the Italian government provided economic support to universities through the issuance of various measures, so as to allow the structures to better face the challenge of distance learning. Here are some of them:

The D.L. 18/2020 (Law 27/2020: art.100, co. 1) established, for 2020, in the forecast of the Ministry of University and Research (MUR), the Fund for the emergency needs of the universities, even legally recognized non-state universities, of AFAM institutions (as well as public research bodies supervised by the MUR), with an endowment of € 50 million, providing that the resources could also benefit accredited university colleges of merit. Subsequently, the D.L. 34/2020 (Law 77/2020: art.236, co. 1) provides for an increase of € 62 million for 2020 of the Fund, to be used primarily for initiatives in support of students who need services or tools for access to research or distance learning. The D.L. 41/2021 (art.33) increased the Fund, for 2021, by € 78.5 million. In particular, the increase is intended for the purchase of digital devices for students, or for digital platforms for research or distance learning, as well as for structural and technological modernization of infrastructures for carrying out research or teaching activities.

The D.L. 22/2020 (Law 41/2020: art.6, co. 2) provided that with decrees of the Minister of University and Research it could be identified, among other things, different procedures from the ordinary ones, including remote modalities, for practical or internship activities foreseen in the framework of the didactic regulations of the study courses in force

The D.L. 34/2020 (Law 77/2020: art.236, co. 3) provides for an increase in the Fund for the ordinary funding of universities (FFO) for 2020 of € 165 million and an increase in the Fund for the administration and teaching of the AFAM institutions of € 8 million, in order to increase the number of students benefiting from the total or partial exemption from the payment of the annual all-inclusive fee.

Subsequently, the 2021 Budget Law (L. 178/2020: art.1, co. 518) confirmed, starting from 2021, the increase of the FFO € 165 million per year and of the Fund for the administrative and educational functioning of state AFAM institutions of € 8 million per year, in order to increase the number of students who benefit from the total or partial exemption from the payment of the annual all-inclusive fee.

Challenges specifically for teaching management online

It is generally accepted that higher education in management needs to be practically oriented, thus theory along with practice and reflection should be constantly connected in order to provide actionable learning experiences (Carneiro, 2004).

Technology is a key component for the success of management education processes. According to Carneiro (2004) the questions that educators should take into consideration are the following:

- How do students perceive and use the attributes of these technologies?
- How can management educators be motivated to create more qualified graduates using teaching techniques based on these technologies?
- Which technologies should be integrated to generate high knowledge levels in order to improve the quality of offering alternatives?
- Finally, all these findings should be integrated into a University Education

For developing new teaching techniques in complex decision-making which includes the analysis of a decision from a variety of perspectives and incoming with an integrative decision,

management educators and scholars should deal with various challenges and focus on the following (Carneiro, 2004):

- Use effective communication techniques with students.
- Demonstrate knowledge and understanding of all matters.
- Create and maintain positive learning environments in which students are actively engaged in learning social interaction, cooperative learning, and self-motivation.
- Provide experimental knowledge of effective managerial practices.
- Define and implement models and methods of classroom management.
- Develop students' skills in complex decision making, that is, analysing a decision from a variety of perspectives and arriving at an integrative decision.
- Create the ability to analyse different situations integrated into strategic scenarios.
- Train the ability to face problems from a conceptual point of view and to use theories, models and other abstractions in solving problems and making decisions.
- Develop the capacity of understanding different types of problem-solving processes.
- Develop study groups as effective problem-solving and task teams.
- Create the capacity to formulate strategies and to deal with implementation processes.

Consultation with stakeholders and experts

Profile of HES and challenges imposed by Covid-19 in training delivery using online technologies

General Information about the participants

No	Country	Name of HEI (Optional)	Current Position (Field of Expertise)
1	Greece	University of Peloponnese	Associate Professor
2	Greece	Deree - The American College of Greece	Adjunct Lecturer/Lecturer
3	Greece	Democritus University of Thrace	Assistant Professor
4	Greece	University of Patras	Associate Professor
5	Greece	Deree - The American College of Greece	Assistant Professor
6	Greece	University of Patras	Assistant Professor
7	Greece	University of Patras	Adjunct Lecturer/Lecturer
8	Greece	University of Patras	Adjunct Lecturer/Lecturer
9	Greece	University of Peloponnese	Adjunct Lecturer/Lecturer
10	Greece		Adjunct Lecturer/Lecturer
11	Greece		Assistant Professor
12	Cyprus	Frederick University Cyprus	Prof ICT In ESD
13	Cyprus	Frederick University Cyprus	Lecturer Of Educational Management & Leadership
14	Cyprus	Frederick University Cyprus	Adjunct Lecturer/ Educational Leadership And Policy

15	Cyprus	Frederick University Cyprus	Collaborating Academic Staff (Educational Leadership)
16	Cyprus	Frederick University Cyprus	Special Teaching Staff
17	Cyprus	Frederick University Cyprus	Associate Professor In Educational Technology
18	Cyprus	Frederick University Cyprus	Officer & Collaborating Academic Staff
19	Cyprus	Frederick University Cyprus	Senior Education Planning Officer (Moec)
20	Cyprus	Frederick University Cyprus	Scientific Collaborative Staff
21	Cyprus	Frederick University Cyprus	Collaborating Teaching Staff (Educational Effectiveness Research)
22	Italy	Accademia Delle Arti E Nuove Tecnologie	Professor
23	Italy	University Of Rome Tor Vergata	Adjunct Lecturer/Lecturer
24	Italy	University Of Catanzaro Magna Grecia	Professor
25	Italy	Sapienza University Of Rome	Professor
26	Italy	Politecnico Di Milano, Design Department	Adjunct Lecturer/Lecturer
27	Italy	University of Catanzaro Magna Grecia	Adjunct Lecturer/Lecturer
28	Italy	University of Rome "Tor Vergata"	Adjunct Lecturer/Lecturer
29	Italy	University of Rome “Tor Vergata”	Adjunct Lecturer/Lecturer
30	Italy	University of Rome "Tor Vergata"	Assistant Professor
31	Italy	University of Rome "Tor Vergata"	Professor

Challenges faced after covid-19

The responders were asked to rate the challenges they faced after the covid-19 pandemic.

Greece

The challenges that most of the participants stated that affected them to a great deal were increase in working hours and complexity, pressure to familiarize fast with online teaching environments and protect themselves and students from disconnecting from the real world and lack of resources. Difficulty in designing online interactive courses that actively engage students and discomfort due to the new working conditions were both challenges that affected them the least. Other challenges that they added were:

- Increase in communication load
- Lack of Nonverbal communication
- Sense of separation from the audience/lack of interaction

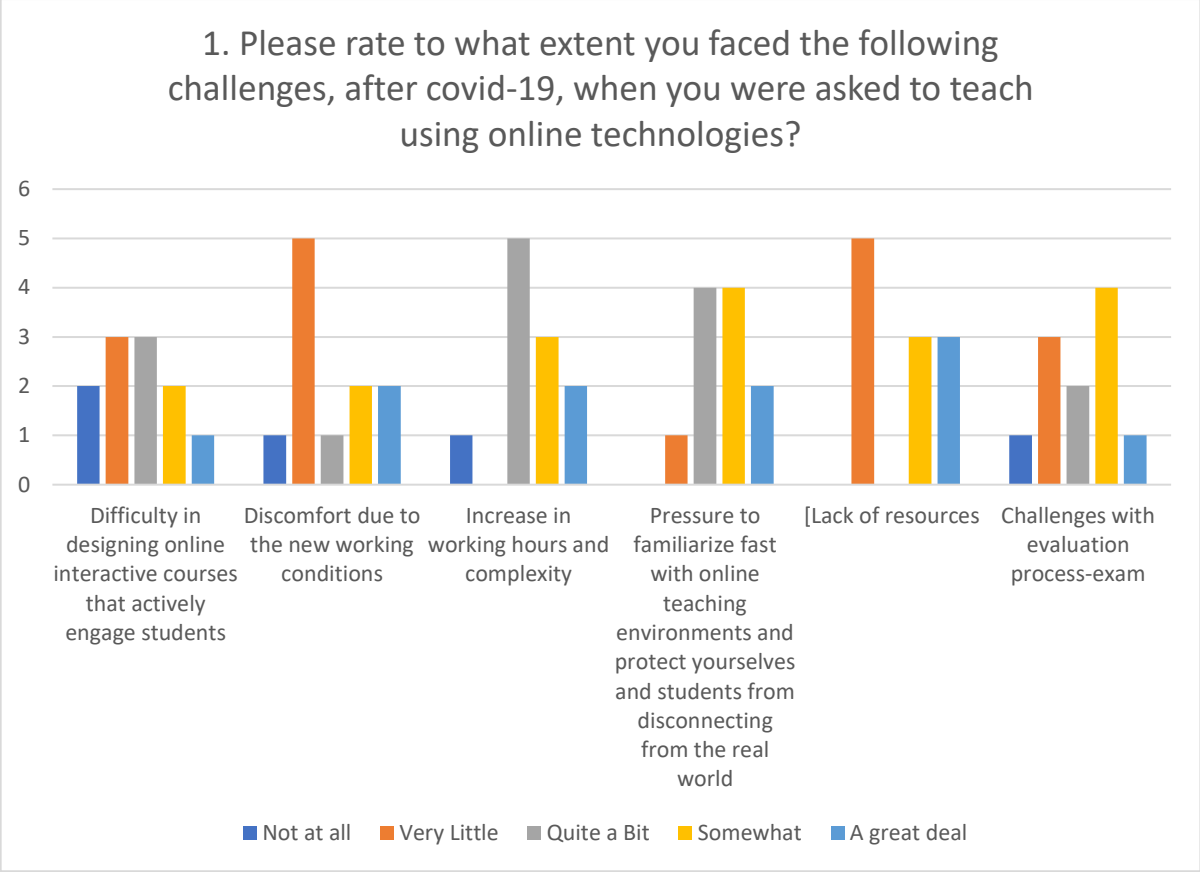


Figure1.2 Challenges faced for teaching using online technologies in Greece

Cyprus

The majority of the respondents stated that they did not face any difficulties in designing online interactive courses that actively engage students or if they did, this was to a very small extent. The same approach can be seen in identifying the discomfort levels due to the new working conditions and the lack of resources. Regarding the rest of the challenges, experts did not have to deal regularly with the increase in working hours and complexity, the pressure to familiarize fast with online teaching environments and the evaluation process-exam. In general, they all managed the situation effectively.

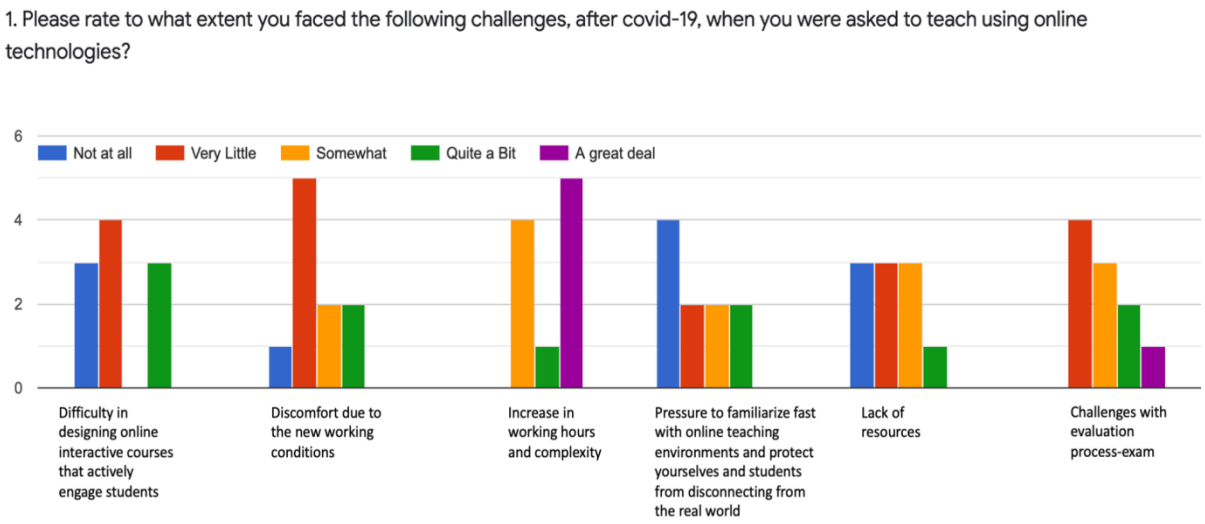


Figure1.3 Challenges faced for teaching using online technologies in Cyprus

Italy

The majority of the respondents stated that they face very little challenges in designing online interactive courses that actively engage students or if they did, this was to a very small extent. The same approach can be seen in identifying the discomfort levels due to the new working conditions and the lack of resources. Regarding the rest of the challenges, experts have to deal regularly with the increase in working hours and complexity, the pressure to familiarize fast with online teaching environments and the evaluation process-exam.

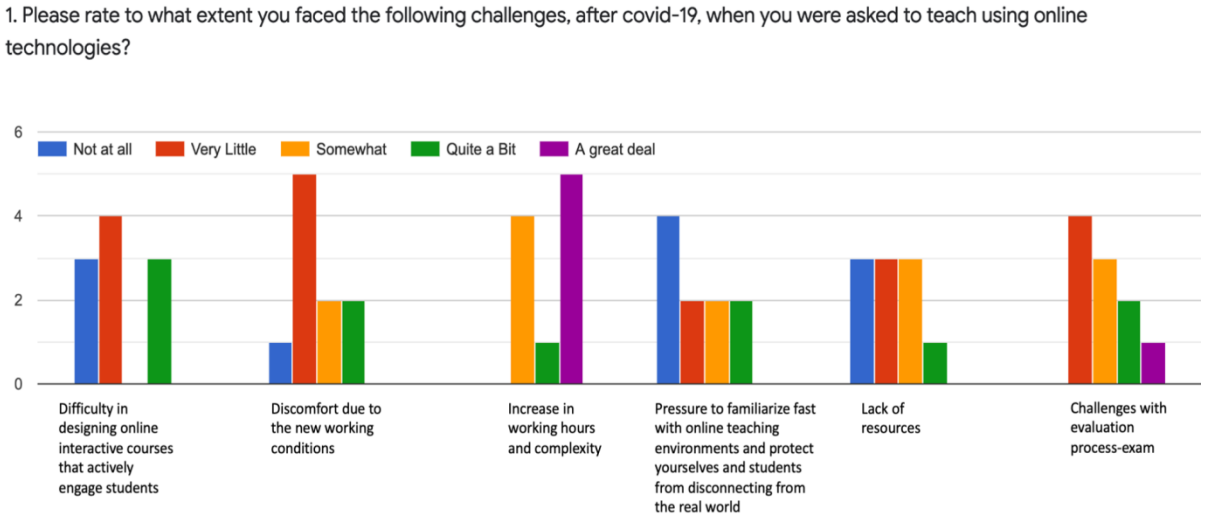


Figure1.4 Challenges faced for teaching using online technologies in Italy

Perceptions about holding the adequate qualifications

Greece

Only 5 out of 11 respondents reported that they hold knowledge and skills and experience for teaching using online technologies to a great deal. It is interesting that 1 respondent stated that he has no familiarity at all. Respondents also mentioned that:

- Although they were very familiar with technologies, continuous updating of the applications is overwhelming
- Training will always be useful

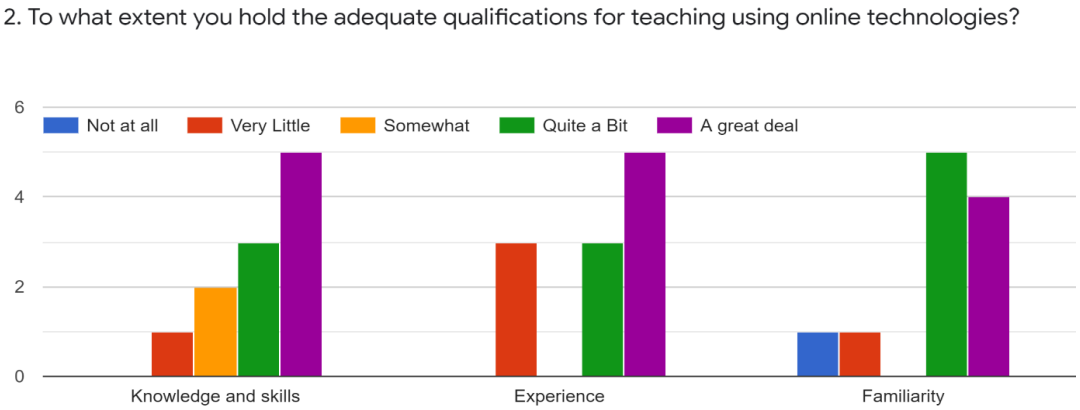


Figure 1.5 Perceptions about holding the adequate qualifications for teaching using online technologies in Greece

Cyprus

The 10 experts in education management were asked to express their opinion and state up to what extend they have the necessary qualifications in the three sections: Knowledge and skills, experience and familiarity. More specifically, knowledge and skills, experience and familiarity received 7 fully positive answers, while the rest three responders for each category received the second most positive score (quite a bit).

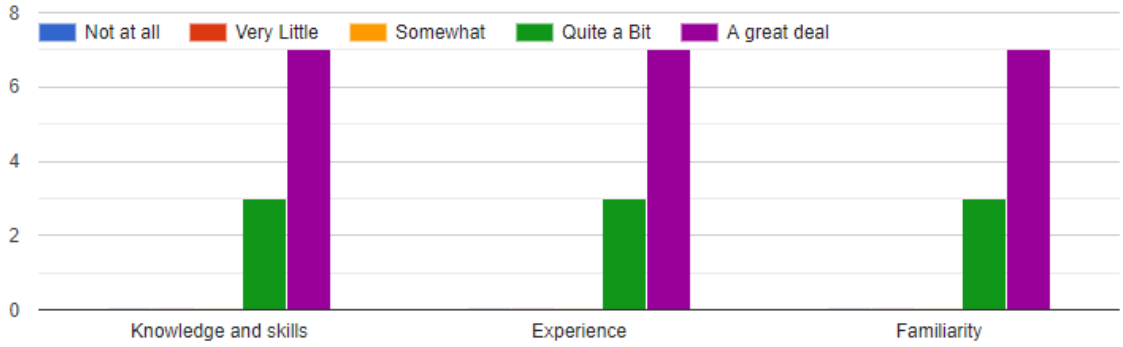


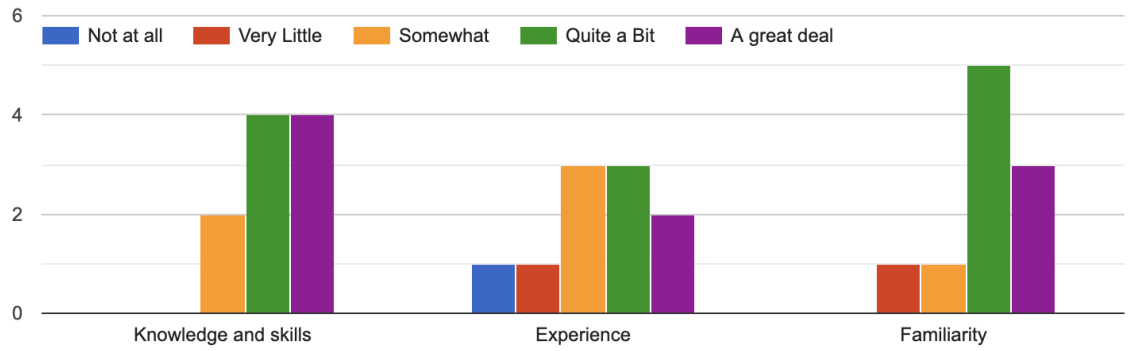
Figure 1.6 Perceptions about holding the adequate qualifications for teaching using online technologies in Cyprus

Italy

With regard to the "knowledge and skills" part, answers "great deal" and "quite a bit" registers the highest scores. Whereas, with regard to "Experience" the most chosen answers were

"quite a bit" and "somewhat". The familiarity category has reached a majority of "quite a bit" answers, followed by the "great deal" choice.

Figure 1.7 Perceptions about holding the adequate qualifications for teaching using online technologies in Italy



Kind of technologies used in online teaching

Greece

Online platforms were used by all respondents in teaching (for lectures, exams, discussion), while simulations, games and 3D virtual learning environments by very few. Respondents also added:

- the use of the e-class platform for communication and exams
- online quizzes

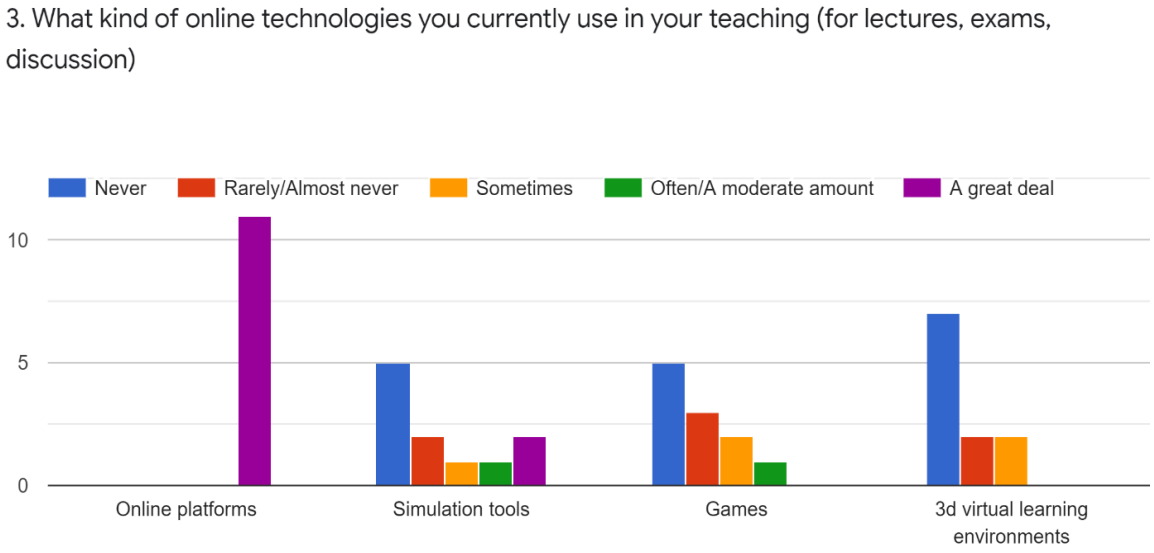


Figure 1.8 Kind of technologies used in online teaching in Greece

Cyprus

The experts stated their preferences on utilizing online technologies during their teaching. Higher in the list of favorites for almost all the responders is the usage of online platforms during the learning process. It was interesting to see that the responders rarely make use of simulation tools and games as well as 3D virtual learning environments.

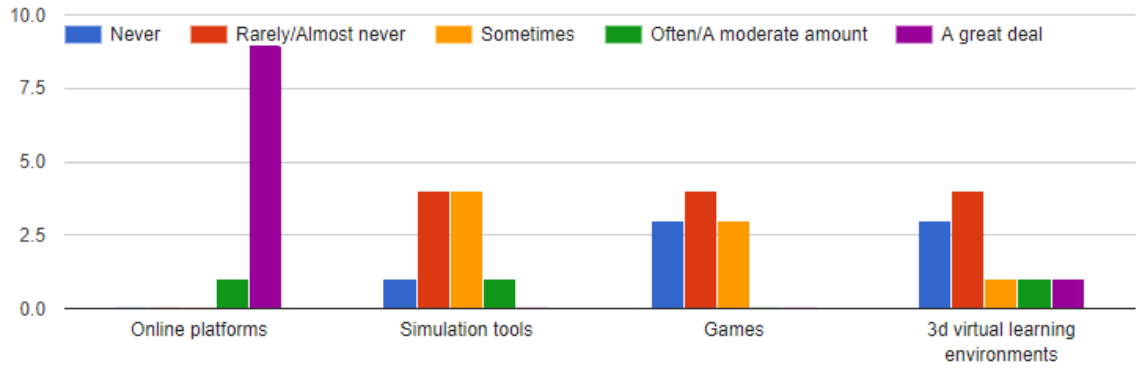


Figure 1.9 Kind of technologies used in online teaching in Cyprus

Italy

Higher in the list of favorites for almost all the responders is the usage of online platforms during the learning process. It was interesting to see that the responders never use 3D virtual learning environment and games, while sometimes and often make use of simulation tools.

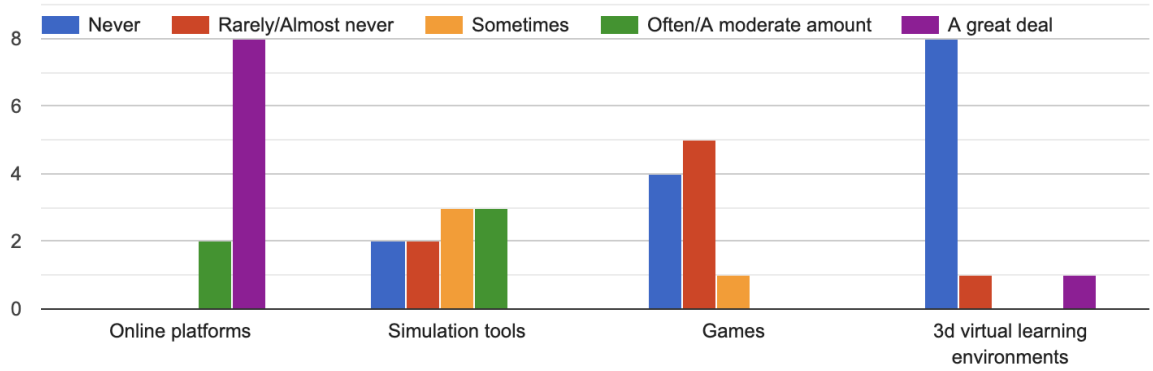


Figure 1.10 Kind of technologies used in online teaching in Italy

How students in management education could benefit from online technologies

Greece

Analyzing skills were identified as the most prominent students' skills that could be improved by using the online technologies in management education by the respondents. Problem solving was also evaluated highly. The same held true for decision making but to a lower extent, while students' engagement and collaboration received both lower rates of agreement.

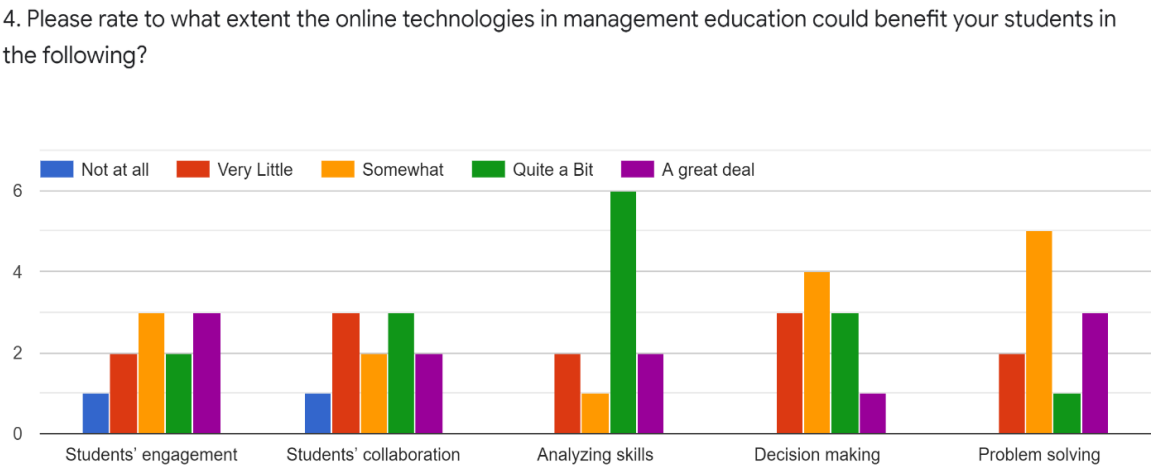


Figure 1.11 Benefits of online technologies for students in management education in Greece

Cyprus

In the choices of the experts, it is evident that technology could work in benefit of the students in a large degree since the most popular answers for all these options were ''a great deal and quite a bit''. More specifically 6/10 believe that it could positively affect Students' engagement and 7/10, Students' collaboration. Also, it was mentioned that online technologies in management education can benefit students in cultivating various 21st century skills (e.g. critical thinking, reflective practice, collaboration and metacognitive skills).

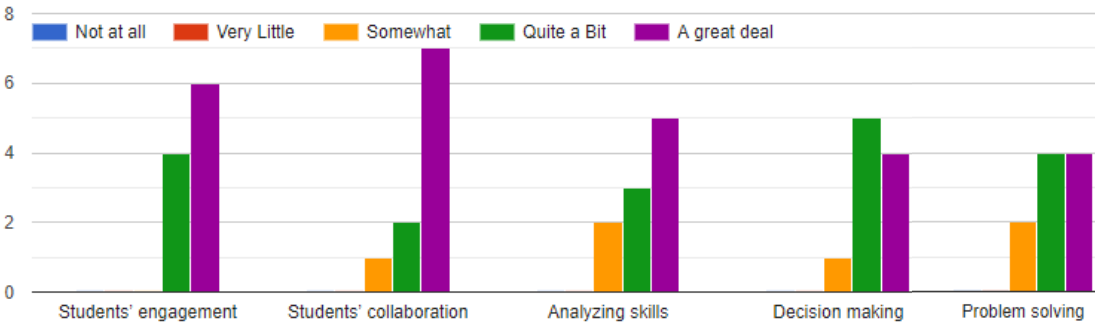


Figure 1.12 Benefits of online technologies for students in management education in Cyprus

Italy

It is evident that technology could work somewhat in analyzing skills, problem solving, and students' engagement. While student's collaboration and decision making receive a tie between somewhat and quite a bit. It is interesting to see a tie also regarding the student's engagement.

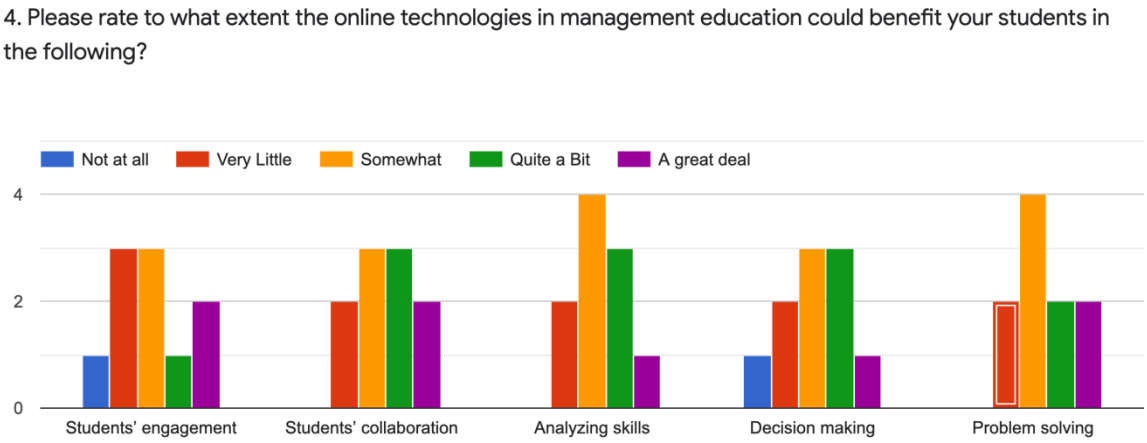


Figure 1.13 Benefits of online technologies for students in management education in Italy

Use of simulations and games in teaching

The responders were asked to answer whether they are using alternative practices such as simulation and other games during their teaching time.

Greece

3 respondents stated that they do not use practices such as simulation, games etc. in their teaching, 1 stated that he uses them rarely, while 3 of the respondents stated that they use the Markstrat Simulation Game, experiential activities and simulations of the operations in a bank or an industry.

Cyprus

Most of the HEI staff felt that they were comfortable with utilizing these practices and also case studies. It was stated that sometimes students were invited to play roles such as principal role, teacher etc. Experts are also implementing a large variety of case studies to enhance student's problem solving skills within the educational organization. The most common practice used is mainly online platforms for online synchronous and asynchronous discussion between the students, aiming at supporting interaction, critical thinking and collaboration. As well as using blogs to present educational scenarios on which students are asked to reflect on individually or in groups. Simulations and scenarios from school- based settings are popular methods as well.

Italy

The HEI staff interviewed upon the use of simulations and games in teaching has answered as follow:

5. Do you use practices such as simulation, games etc. in your teaching? Please explain the most common examples that you use.

5 risposte

So far I did not

online visual collaboration platform (such as miro.com, milanote, etc.) and video conferences – online and blended - platform (such as cisco webex, webex teams, microsoft times, etc.), real time quiz (such as socrative, etc.)

I do not use simulation or other games.

Normally, I approach practical lessons with a general presentation of the workflow. Then, I usually divide students into different classrooms in order to practice with smaller groups. By doing so, it is also possible to make different exercise (normally on online Excel files) and then confront all of them at the end of the lesson. This confrontation leads to the analysis of the logic behind exercises rather than on the final output.

Mostly I use simulation of some practice situation, is like a simulation of real situation

Capability to digitalize simulations and games

Greece

Slightly above half of the respondents reported that they are capable to digitalize the practices such as simulations and games.

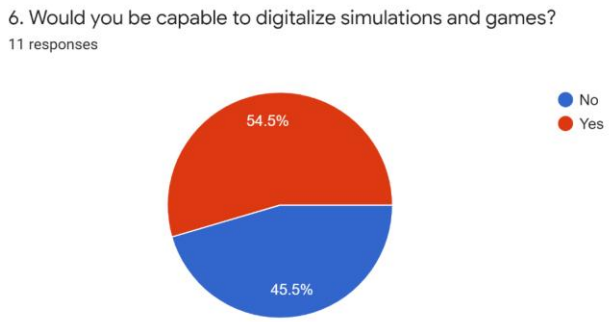


Figure 1.14 Perceptions on capability to digitalize simulations and games in Greece

Cyprus

The experts in a large degree are capable of digitalizing these practices (namely 66,7%) while only the rest 33,3% were negative about it.

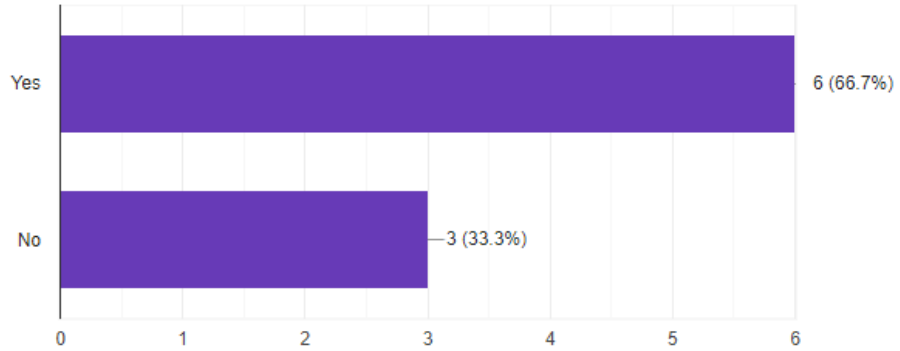


Figure 1.15 Perceptions on capability to digitalize simulations and games in Cyprus

Italy

60% of the respondents stated that they are capable of digitalizing these practices.

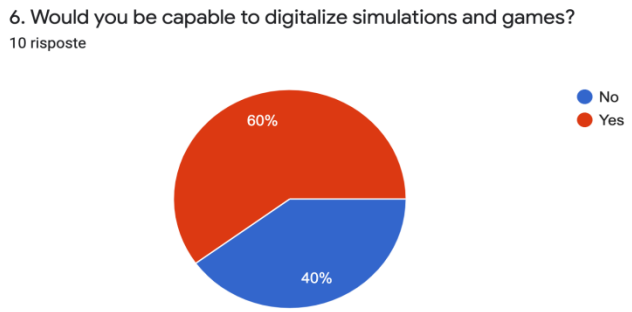


Figure 1.16 Perceptions on capability to digitalize simulations and games in Italy

Interest in digitalization of simulations and games

Greece

The vast majority of the respondents reported that they are interested in using simulations and games in a digitalized form.

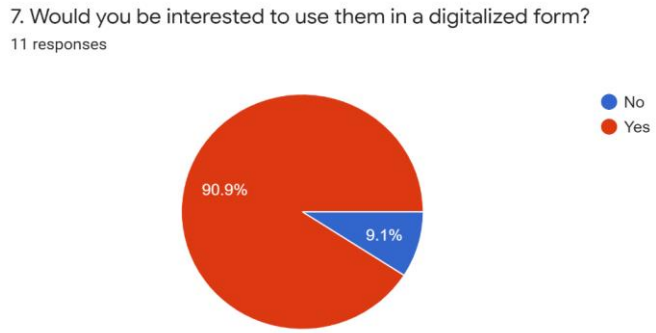


Figure 1.17 Interest in digitalization of simulations and games in Greece

Cyprus

The 100% of the experts stated that they would.

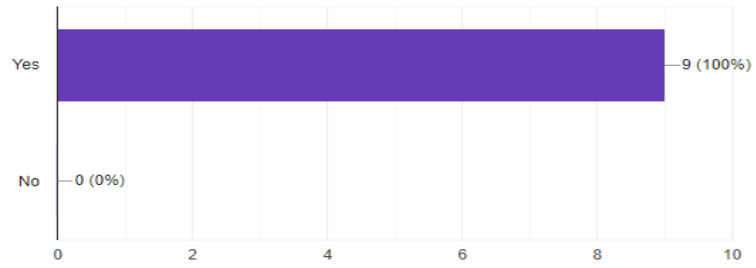


Figure 1.18 Interest in digitalization of simulations and games in Cyprus

Italy

All respondents reported that they are interested in using simulations and games in a digitalized form.

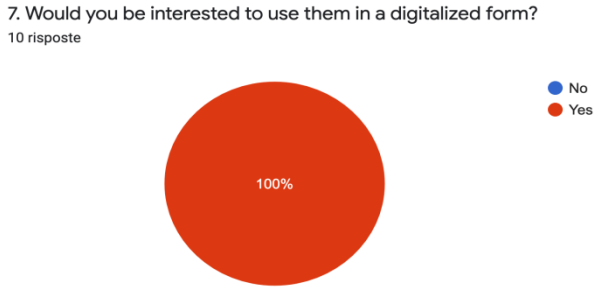


Figure 1.19 Interest in digitalization of simulations and games in Italy

Existing training programmes for academics about the use of online technologies

Greece

Most of the respondents (7 out of 11) reported that they are aware of training programs for academics on the use of online technologies for teaching.

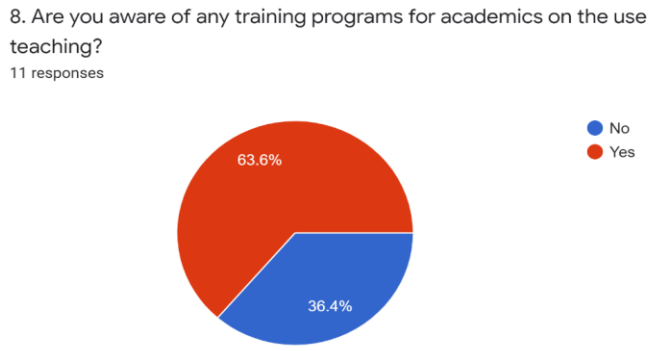


Figure 1.20 Awareness for existing training programmes for academics about the use of online technologies in Greece

Cyprus

Not surprisingly, the participants are well aware of the training programmes that are available and target on enhancing online teaching. 90% of the participants answered this question positively.

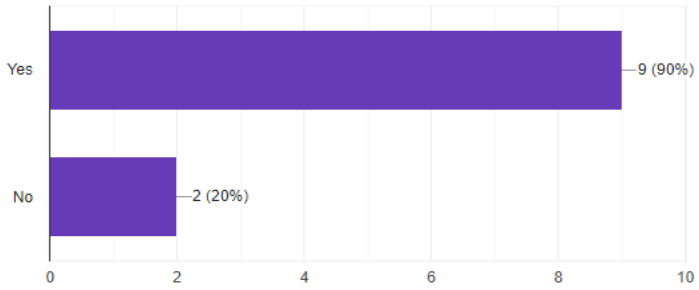


Figure 1.21 Awareness for existing training programmes for academics about the use of online technologies in Cyprus

Italy

60% of the respondents reported that they are not aware of any training programs for academics on the use of online technologies for teaching.

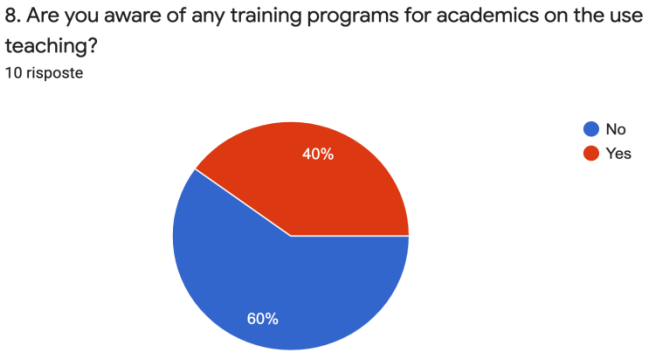


Figure 1.22 Awareness for existing training programmes for academics about the use of online technologies in Italy

Participation in relevant programs

Greece

Slightly above half (6 out of 11) of the respondents reported that they have not attended any relevant program.

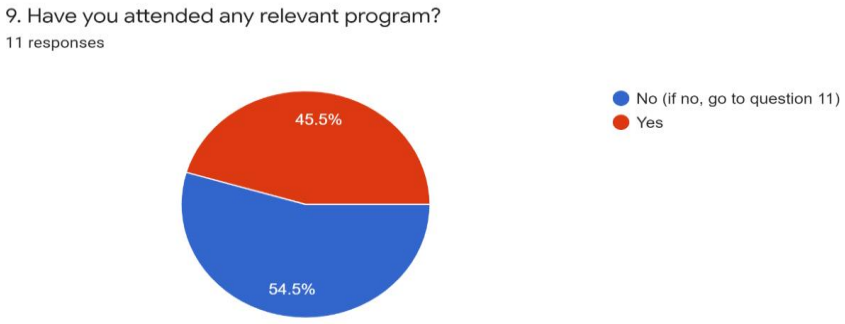


Figure 1.23 Participation in relevant programs in Greece

Cyprus

60% of the responders have already attended similar programs. The rest 40% answered negatively.

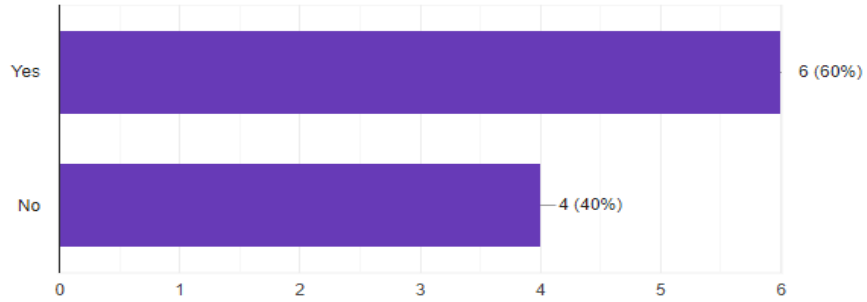


Figure 1.24 Participation in relevant programs in Cyprus

Italy

The majority (8 out of 10) of the respondents reported that they have not attended any relevant program.

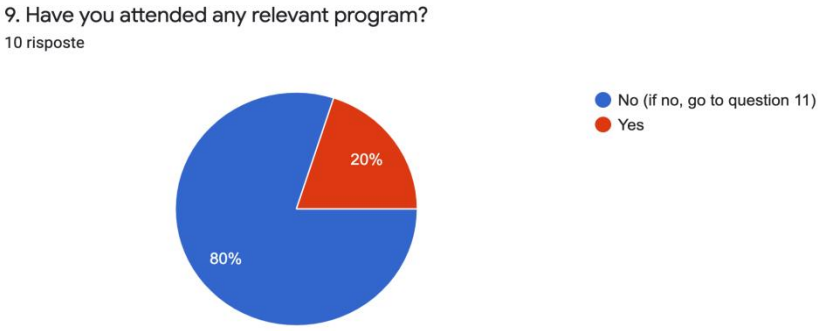


Figure 1.25 Participation in relevant programs in Italy

Greece

Only 1 of them stated that it was helpful to a great deal, while 2 stated that it was quite a bit helpful.

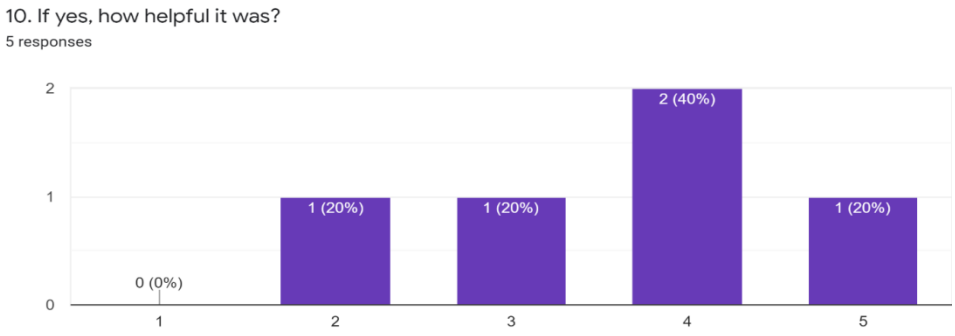


Figure 1.26 Helpfulness of the relevant programs in Greece

Cyprus

These programmes were described by the six responders who attended similar programs as extremely helpful.

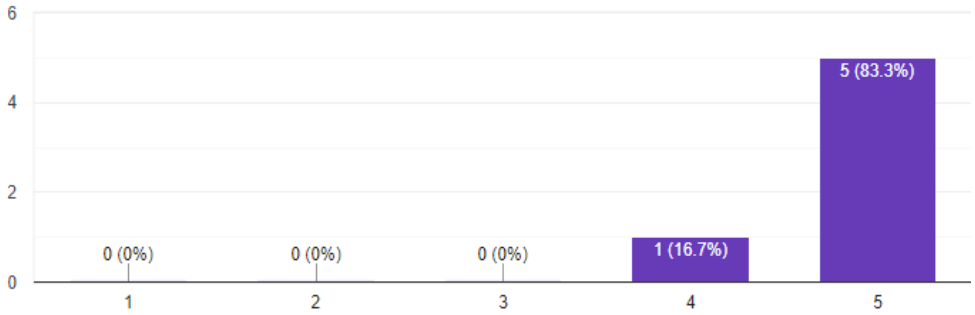


Figure 1.27 Helpfulness of the relevant programs in Cyprus

Italy

Only 2 responders who attended similar programs reported that these were somewhat or quite a bit helpful.

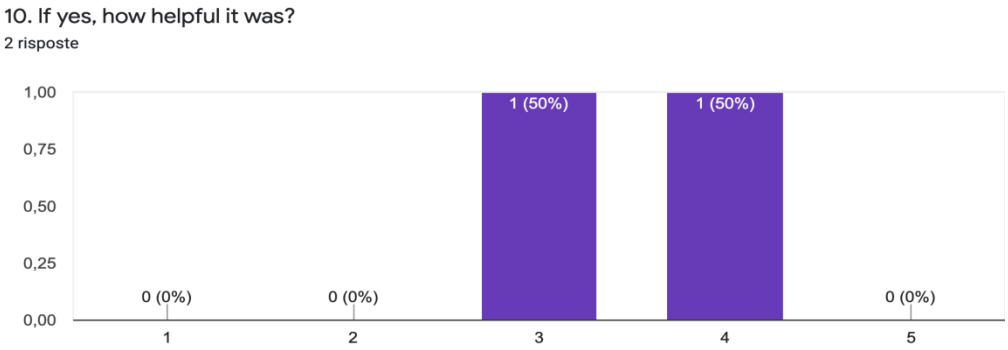


Figure 1.28 Helpfulness of the relevant programs in Italy

Capability to help tackle the digitalization of the training material challenges in the period of covid-19

This question aimed to identify whether a programme for the digitalization of the training material during the pandemic could help HES tackle related problems.

Greece

All of the respondents reported that it could help them tackle the digitalization of the training material in the period of covid-19.

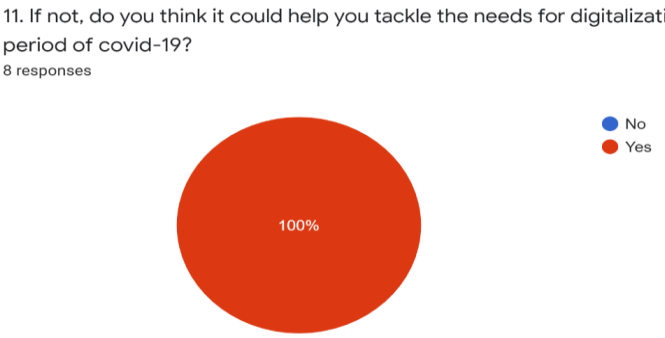


Figure 1.29 Capability to help tackle the digitalization of the training material challenges in the period of covid-19 in Greece

Cyprus

All responders believe that it could help.

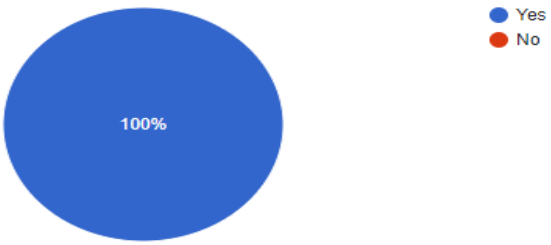


Figure 1.30 Capability to help tackle the digitalization of the training material challenges in the period of covid-19 in Cyprus

Italy

All of the respondents reported that it could help them tackle the digitalization of the training material in the period of covid-19.

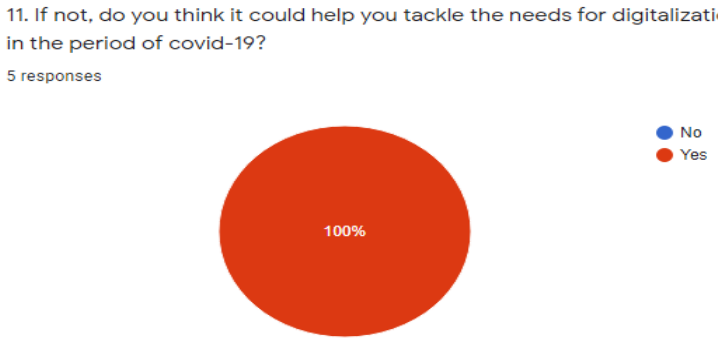


Figure 1.31 Capability to help tackle the digitalization of the training material challenges in the period of covid-19 in Italy

Needed knowledge

Greece

The most prominent knowledge that most of the respondents want to acquire if they have had the opportunity to participate in such a training program refer to design thinking in digital material development, augmented and virtual reality technologies, scenarios, games, simulations etc. in ME, digital content creation: How to integrate audio, subtitles, notes, videos etc., use of open source digital tools and E-learning platforms and learning management systems. Web conferencing tools and online classroom management, smart mobile applications for educational purposes, data protection issues, GDPR and copyrights, online feedback, assessment, monitoring and polling were also emerged as significant for respondents but to a lower extent.

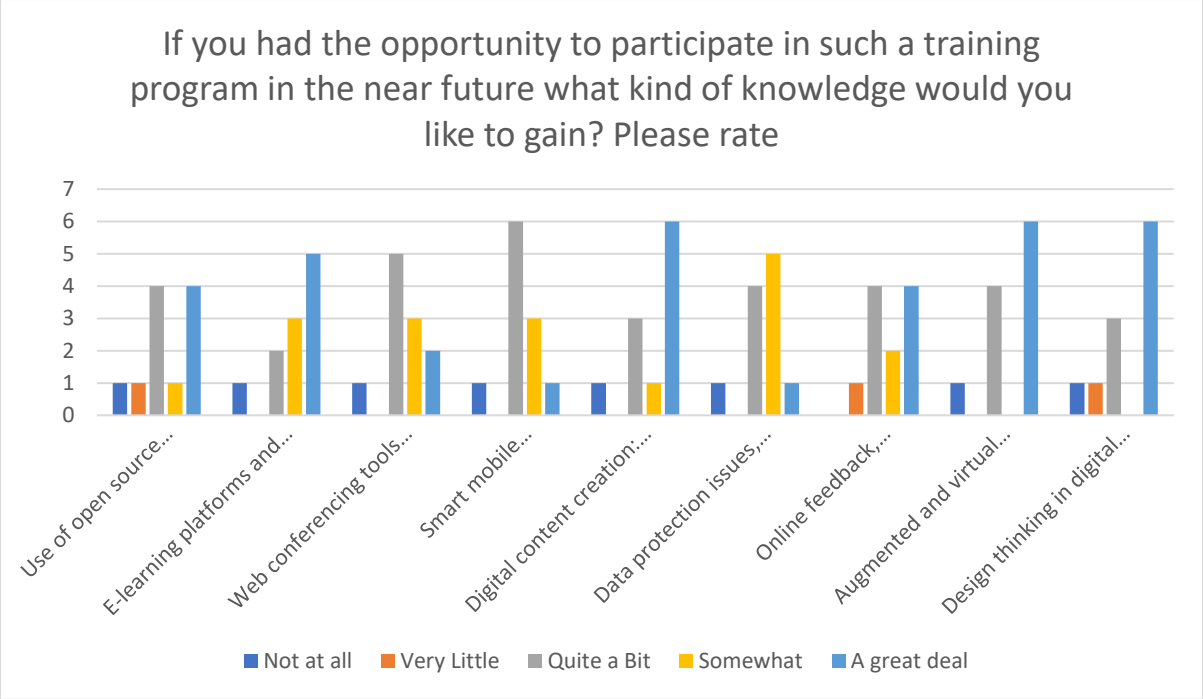


Figure 1.32 Needed knowledge in Greece

Cyprus

If the experts had the opportunity to take part in such a seminar or a training programme it would be very helpful for them since they could gain both the theoretical and practical knowledge on integrating online technologies/resources in distance learning. Below there is the most preferred answer in each category.

- Use of open-source digital tools – Quite a bit 5/10
- E-learning platforms and learning management systems – A great deal 4/10
- Web conferencing tools and online classroom management - A great deal 5/10
- Smart mobile applications for educational purposes - A great deal 4/10
- Digital content creation: How to integrate audio, subtitles, notes, videos etc. - A great deal 6/10
- Data protection issues, GDPR and copyrights - A great deal 4/10
- Online feedback, assessment, monitoring and polling - A great deal 5/10
- Augmented and virtual reality technologies, scenarios, games, simulations etc. in ME
- A great deal 7/10
- Design thinking in digital material development - A great deal 4/10

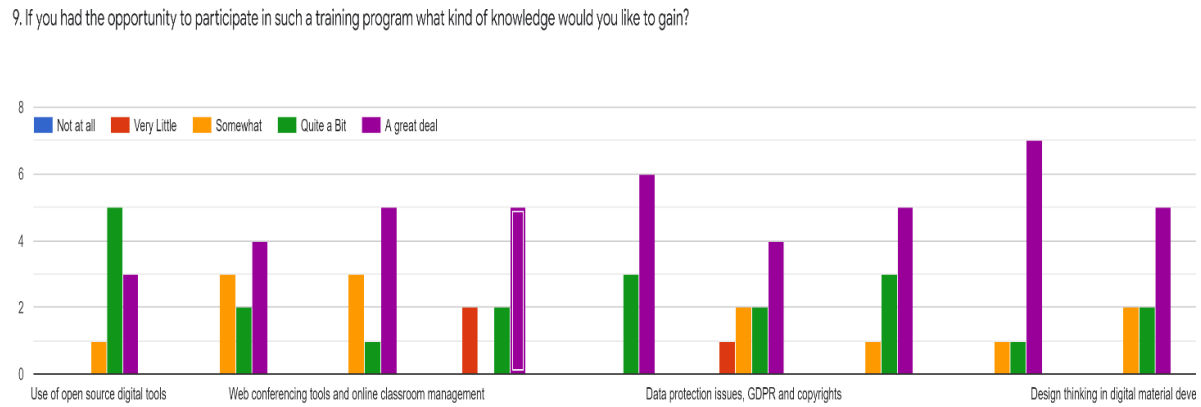


Figure 1.33 Needed knowledge in Cyprus

Italy

If the experts had the opportunity to participate to training programme they would choose:

- Use of open-source digital tools – Quite a bit 4/10- 2/10 a great deal
- E-learning platforms and learning management systems – Quite a bit 6/10- 3/10 very little
- Web conferencing tools and online classroom management - A great deal 3/10- Quite a bit 3/10
- Smart mobile applications for educational purposes - Somewhatl 6/10
- Digital content creation: How to integrate audio, subtitles, notes, videos etc. - A great deal 5/10- quite a bit 5/10
- Data protection issues, GDPR and copyrights - A great deal 4/10
- Online feedback, assessment, monitoring and polling - A great deal 4/10
- Augmented and virtual reality technologies, scenarios, games, simulations etc. in ME - Quite a bit 4/10
- Design thinking in digital material development - Quite a bitl 4/10

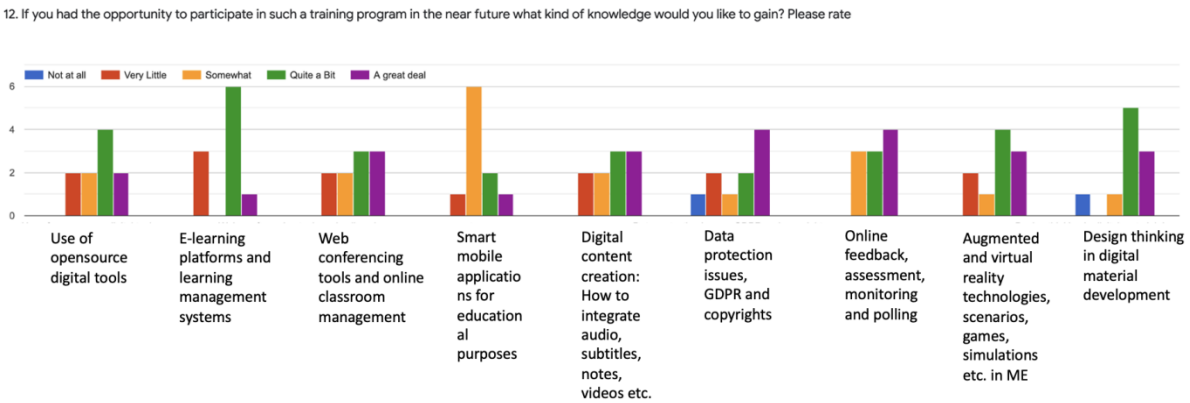


Figure 1.34 Needed knowledge in Italy

Institutions support to the staff for teaching using online technologies

Greece

Slightly above half (6 out of 11) of the respondents reported that their institution has provided so far to the staff support for teaching using online technologies.

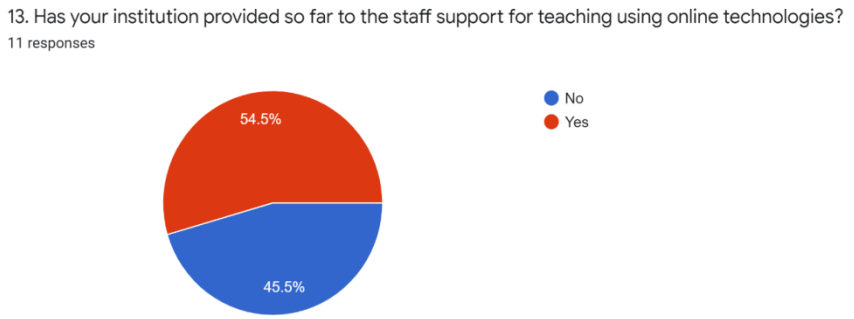


Figure 1.35 Institutions support to the staff for teaching using online technologies in Greece

Cyprus

All the respondents answered that their institution managed to provide adequate support for their staff in using online technologies.

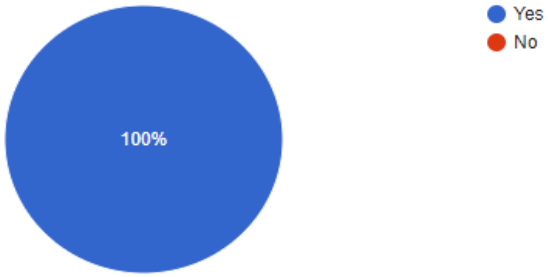


Figure 1.36 Institutions support to the staff for teaching using online technologies in Cyprus

Italy

Half of the respondents reported that their institution has provided so far to the staff support for teaching using online technologies and half not.

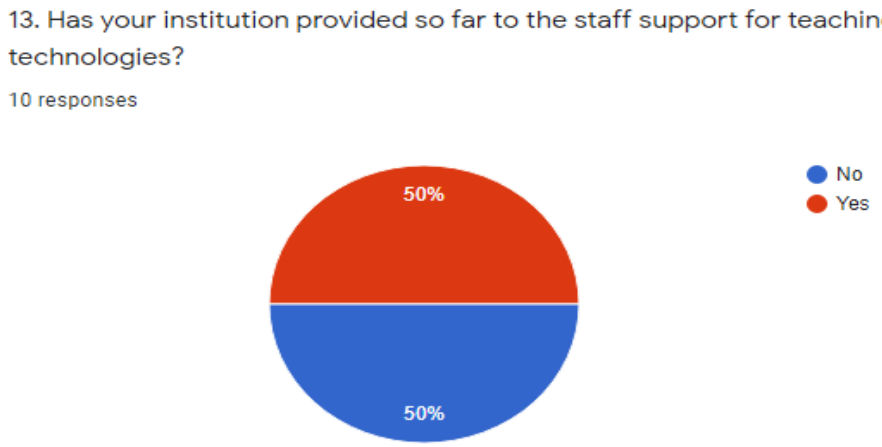


Figure 1.37 Institutions support to the staff for teaching using online technologies in Italy

Kind of support

Greece

4 respondents stated that their institution provided to the staff the above support for teaching using online technologies:

- Online Training
- Seminar for the use of teaching platforms
- Group and individual workshops, increased digital infrastructure
- Web seminar regarding the use of teaching platforms

Cyprus

The experts expanded their capabilities through trainings and professional online learning seminars for teaching development and improvement. Not to mention that some of the participants received extra teaching supporting material. Furthermore, in some cases, responders received personal help and guidance in creating online environments . Various seminars took place within the institutions for the proper use of available tools. Through a series of online workshops and professional development training they managed to boost their competences in developing interactive material.

Italy

Respondents mentioned the following:

- The institution hired an IT specialist who was always traceable
- Support for blended classes

Conclusions

The aim of this report was to provide country-specific information related to the profile of Higher Education Staff (HES) and the challenges they are facing after the Covid-19 pandemic in training delivery using online technologies. Several challenges were emerged from published materials, and consultations with 31 stakeholders (HEI training staff) and experts in online training design and support, while several differences were identified between Greece,

Cyprus and Italy. The need for designing and implementing training programs for HES emerged as important for tackling the digitalization of the training material in the period of covid-19 in all cases. The main findings are the following:

HES Qualifications in using online technologies in teaching

- lack of professional development, ICT skills and use of online meeting technologies, collaboration and e-learning platforms management tools and services for HES (Greece)
- lack of (HES) qualifications in online learning methods and use of ICT-based teaching, as well as lack of training programmes' offers to them (Greece)
- absence of large-scale training programmes targeting academics on how to use online training tools (Greece)

HES and experts' perceptions about holding the adequate qualifications

In Greece, only 5 out of 11 respondents reported that they hold knowledge and skills and experience for teaching using online technologies to a great deal. The level of these skills is higher in Cyprus, 7 out of 10 reported that they have at a great deal these knowledge and skills, while Italy reported lower level (4 out of 10).

Kind of technologies that HES and experts used in online teaching

In Greece, Online platforms are used by all respondents in teaching (for lectures, exams, discussion), while simulations, games and 3D virtual learning environments by very few. Respondents also added that they use the e-class platform for communication and exams and online quizzes.

In Cyprus, HES participants in the consultations also use online platforms during the learning process. It was interesting to see that the responders rarely make use of simulation tools and games as well as 3D virtual learning environments.

In Italy, HES participants in the consultations also use online platforms during the learning process. Responders never use 3D virtual learning environments and games, while sometimes and often make use of simulation tools.

HEIs challenges in the transformation from face-to-face to online education

- lack of capability of HEIs to use platforms which use the English language (when using for example Greek language for teaching) (Greece)
- concerns for poor pedagogical approaches within the digital education tools and HES abilities and skills to turn this modern, convenient, flexible, and ubiquitous mode of teaching to an interesting learning experience for their students (Greece)
- lack of adequate communication, poor interaction and unsatisfactory cooperation and socialization in the academic context (Greece)
- Time needs (Cyprus)
- Risk students or points in education quality, confirming the value of real interactions and the need, for universities, to remain a place of sociality and growth for students (Italy

HEIs strategies for shifting to online teaching

- Combination of existing asynchronous teaching platforms with synchronous distance learning for offering huge amount of their courses online (Greece)
- Offer of innovative distance learning programmes at Bachelor and Master level (Cyprus)
- Use the most up-to-date technologies and state-of-the-art learning design theory to deliver their courses (Cyprus)
- Provision of support to learners for building knowledge collaboratively through social learning (Cyprus)
- Provision of support to teachers in distance e-learning (Cyprus)
- Provision of learning assistance, inspiration and motivation to the weakest students (Cyprus)
- Drastic downsizing of the most innovative experiences (Italy)
- Teaching simplified, getting closer to the traditional model, the transmissive one, although enriched by the discussion with the students. (Italy)
- Simplification process in the conduction of the exams (Italy)

HEIs support to HES in the shifting from face-to-face to online education

- Specific digital tools became available to the academic staff by the HEIs (Greece)
- Specialized attempts have been made by Higher Education Institutions to support and enhance Higher Education staff in this unprecedented situation (Cyprus)
- Provision of Innovative material and distance learning modules for digital development, acquisition of e-learning skills and online pedagogical practices (Cyprus)
- Equipping staff with the necessary digital devices (Cyprus)
- Caring for the well-being of teachers (Cyprus)
- The support was mainly centralized at university level and took the form of informative emails, notes uploaded on the university website or intranet, video tutorials on the use of the platforms; technical help desks; training sessions (Italy)
- Although to a lesser extent, information also came from decentralized structures (departments, study courses, schools, etc.), mostly in the form of emails, notes uploaded on websites, technical help desks (Italy)
- Institutional support networks provided (much or enough) help from a technical point of view and didactic point of view. (Italy)
- Professional networks, that is the relationships with colleagues or collaborators, gave technical and didactic contribution. (Italy)
- Non-professional networks (mostly friends and family), on the other hand, were more marginal, giving technical and didactic contribution to a lower extent. (Italy)

HES and experts' perceptions on the HEIs support to the HES for teaching using online technologies

In Greece, above half (6 out of 11) of the respondents (HES) reported that their institution has provided so far to the staff support for teaching using online technologies, in Cyprus all of them and in Italy half of them.

Kind of support to the HES by HEIs for teaching using online technologies

In Greece, 4 out of 11 respondents stated that their institution provided support for teaching regarding:

- Online Training
- Seminar for the use of teaching platforms
- Group and individual workshops, increased digital infrastructure
- Web seminar regarding the use of teaching platforms

In Cyprus, the experts expanded their capabilities through trainings and professional online learning seminars for teaching development and improvement, some of the participants received extra teaching supporting material. In some cases, they received personal help and guidance in creating online environments. Through a series of online workshops and professional development training they managed to boost their competences in developing interactive material.

In Italy, respondents mentioned that the institution hired an IT specialist and offered support for blended classes.

HES and experts challenges after the covid-19 pandemic

In Greece, the challenges that most of the consultations participants stated that affected them to a great deal were:

- increase in working hours and complexity
- pressure to familiarize fast with online teaching environments, and protect themselves and students from disconnecting from the real world, and
- lack of resources

Other challenges that they added were:

- Increase in communication load
- Lack of Nonverbal communication
- Sense of separation from the audience/lack of interaction

In Cyprus, the majority of the consultations respondents stated that they did not face any difficulties in designing online interactive courses that actively engage students or if they did, this was to a very small extent.

HES challenges in shifting from face-to-face to online education

- development of new (digital) professional competences through practice (Greece)
- Professors of management topics face greater uncertainty and difficulties for delivering knowledge online and adapting face-to-face processes virtually. (Greece)

- Difficulties in designing online interactive courses that actively engage students; discomfort due to the new working conditions; increase in working hours and complexity; pressure to familiarize fast with online teaching environments and protect themselves and students from disconnecting from the real world (Greece)
- The great burden of defending the educational good, of supporting the students under any circumstances, is lifted by the combative educational world and more specifically HES. (Cyprus)
- Many HES struggle to adapt to online teaching due to the inevitably tight timeframes. (Cyprus)
- It is difficult for teachers to ensure that the interest of all students, especially those from disadvantaged backgrounds and younger students, remain undiminished and that they participate in online lessons. (Cyprus)
- Challenging parts of this transition is the implementation of online examinations. (Cyprus)
- HEI staff faces several issues with the technical lessons. How to deal with the laboratories that cannot be replaced by online courses is still a problem for HES. (Cyprus)
- As far as the available educational material as a whole, this is another issue of concern, since the material is either very deficient, or there is no pre-selection-organization by the HEIs, resulting in chaos. (Cyprus)
- Difficulties were identified related to student support referring to their digital abilities, as well as to the HES digital gaps. (Cyprus)
- Most teachers saw an increase in the time needed to prepare lessons and the time needed to organize and conduct exams. (Italy)
- Problems related to the lack of adequate space at home, the difficulty of reconciling teaching with the co-presence and care of family members, the need to provide technical assistance to students, or privacy problems related to the fear that the materials created for teaching can be used and disseminated improperly, that data protection is at risk and that academic authorities can exercise greater control and reduce the teaching autonomy of teachers. (Italy)
- Didactic problems, connected with the lack of familiarity with the e-learning platforms difficulties of interacting with students, less access to didactic resources (librarians, etc.), difficulty in adapting their subjects to online teaching, the problematic nature of practical exercises. (Italy)
- Online teaching platforms that are equipped with different facilities to enable teachers and students to make the best use of the learning environment should be explored
- It is more difficult for the instructors to monitor students' behavior and check their contribution and progress, which may create a sense of isolation resulting in depression or other negative feelings.
- Not all of HES are equally prepared for this process.

- Lack of access to equipment and internet connection for provision of distance education
- Lack of digital skills and abilities for effective use of training platforms
- Lack of experience in creating digital teaching content
- Lack of experience in e-learning and others effective distance learning especially for the teaching of practical courses
- Concerns about privacy, copyright, and data protection

Government policy and support for HEIs to incorporate online teaching

- Free several digital tools to facilitate the academic staff to shift to the online teaching. (Greece)
- Legislation to enhance internationalisation in various ways. It states that higher education institutions have a mission to promote cooperation with other educational institutions and research bodies in their countries and abroad so that they can take part in the European and international academic community. (Greece)
- The universities were allowed to offer English-taught undergraduate programmes for international students and provide joint programmes with international universities through very simple and quick procedures in many countries. (Greece)
- Offer of on-campus and online tuition for students who may not be able to travel until the situation becomes clearer (Cyprus)
- Economic support to HEIs (Italy)
- Purchase of digital devices for students, or for digital platforms for research or distance learning, as well as for structural and technological modernization of infrastructures for carrying out research or teaching activities. (Italy)

Challenges specifically for teaching management online

- Management needs to be practically oriented, thus theory along with practice and reflection should be constantly connected in order to provide actionable learning experiences
- Technology is a key component for the success of management education processes.
- For developing new teaching techniques in complex decision-making which includes the analysis of a decision from a variety of perspectives and incoming with an integrative decision, management educators and scholars should deal with various challenges
- Digital skills, flexibility and creativity of teachers and trainers for the utilization of creative interactive solutions with online resources need to be employed.
- The digital delivery of courses, which allows the continuation of studies through online learning opportunities for students caused problems for teaching management online

HES and experts' perceptions on how students in ME could benefit from online technologies

In Greece, analyzing skills were identified as the most prominent students' skills that could be improved by using the online technologies in ME by the respondents. Problem solving was also evaluated highly. The same held true for decision making but to a lower extent.

In Cyprus, they most stated that it could positively affect students' engagement, collaboration and cultivating various 21st century skills (e.g. critical thinking, reflective practice, collaboration and metacognitive skills).

In Italy, they reported that technology could work somewhat in analyzing skills, problem solving, and students' engagement.

HES and experts use of simulations and games in teaching

In Greece, only 1 out of 11 respondents stated that he uses them rarely, while 3 of them stated that they use the Markstrat Simulation Game, experiential activities and simulations of the operations.

In Cyprus, most reported that they were comfortable with utilizing these practices and also case studies. It was stated also that sometimes students were invited to play roles such as principal role, teacher etc. Experts are also implementing a large variety of case studies to enhance student's problem-solving skills within the educational organization. They also use blogs to present educational scenarios on which students are asked to reflect on individually or in groups. Simulations and scenarios from school- based settings are popular methods as well.

HES and experts' capability to digitalize simulations and games

In Greece, half of the respondents (HES) reported that they are capable to digitalize the practices such as simulations and games, in Cyprus 66,7% of experts and in Italy 60% of the respondents (HES).

HES and experts' interest in digitalization of simulations and games

The vast majority in Greece and all respondents in Cyprus and Italy reported that they are interested in using simulations and games in a digitalized form**.**

HES and exerts participation in training programmes for academics about the use of online technologies

In Greece, 6 out of 11 respondents (HES) reported that they have not attended any relevant program. In Cyprus, 60% of the responders have already attended similar programs, while in Italy the majority (8 out of 10) reported that they have not attended.

In Greece only 1 respondent found it helpful to a great deal, in Cyprus 6 responders who attended similar programs found them extremely helpful, while in Italy they stated that they were somewhat or quite a bit helpful.

HES and exerts perceptions on the capability of a programme for the digitalization of the training material could help HES tackle related problems

All respondents from all countries reported that it could help them tackle related problems.

HES and exerts needed knowledge

In Greece, most respondents (HES) stated that if they had the opportunity to participate in such a training program in the near future they would like to gain knowledge regarding design thinking in digital material development, augmented and virtual reality technologies, scenarios,

games, simulations etc. in ME, digital content creation: How to integrate audio, subtitles, notes, videos etc., use of open source digital tools and E-learning platforms and learning management systems.

In Cyprus, most reported the Web conferencing tools and online classroom management, the digital content creation: How to integrate audio, subtitles, notes, videos etc., the online feedback, assessment, monitoring and polling and the augmented and virtual reality technologies, scenarios, games, simulations etc. in ME.

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Overview of the global and EU context of the challenges and trends in online HE training, and educational technologies

Introduction

In the digital era many stakeholders (European and National educational bodies, policymakers, educators, researchers in management education) have emphasized the contribution of educational technologies and many digital tools to improving the educational procedure. As a result, many educators have been engaged with these learning activities and even more during Covid 19. The pandemic has created challenges in the teaching-learning procedure in higher education institutions and has influenced the engagement of teachers and students. As a consequence of the pandemic, Higher Education Institutes were constrained to carrying out their educational process with students exclusively online. Higher Educational Staff are confronted with the need to adapt the online teaching-learning process and semester examinations. Therefore, it's time to rethink gravely on this matter with emphasis on use of online education and need to adjust HE management education and improve the on-line educational strategies to meet the students' expectations. This document defines an overview of the global and EU challenges and trends in online HE training and educational technologies. COVID-19 pandemic is both creating challenges and providing opportunities to support community voices and empower citizens.

Acronyms

HE – Higher Education

IO – Intellectual output

OL – Output Leader

HEI: Higher Education Institute

ME: Management Education

VET: Vocational Education and Training

HES: Higher Education Staff

Global and EU Digital Education Policies, Good Practices and Content

Digital Education policies

European

DigCompEdu

DigCompEdu is a framework which helps to guide policy and can be adapted so as to implement regional and national tools for training programmes. In addition, it provides a common language and approach that helps the dialogue and exchange of best practices through borders. The DigComp framework has been endorsed by EU Member States representatives in the Education and Training 2020 Programme Thematic Working group on "ICT and Education".Many universities have been implemented this framework for improving students 'digital skills and digital tools in academic courses such as University of Copenhagen's strategy, *Talent and collaboration,* that identifies four special focus areas for the University's development until 2023. Also, Deakin University uses the framework to

manage course requirements, stay in control of study, improve skills and find the way across campus, all at the touch of a button.

DigEduPol

DigEduPol is a study designed and funded by the European Commission's, Joint Research Centre – Institute for Prospective Technological Studies on behalf of the European Commission's Directorate General Education and Culture. The study is being carried out by CARSA and the Department of Education of the University of Oxford. DigEduPol namely "Overview and Analysis of Policy Models for the Integration and Innovative Use of Digital Technologies in Education (DigEduPol)" aims to expand the already existing knowledge based on the way that digital education policies are currently been implemented in an EU and global level as a way to comprehend and understand more the key enablers, success factors and barriers in digital education. The outcome of this study is to seek information, act as a manual guide and inspire policy makers at all governance levels (local, regional, national, international) in designing new policy initiatives, or in adapting or re-designing existing ones in the field of digital education. The Department of Education at the University of Oxford is committed to enhancing diversity and promoting equality and inclusion amongst all our staff and students. Education is at the heart of systemic change and they are working assiduously to remove barriers to equality and developing a working, learning, and social space where individual rights and the dignity of all our members are respected.

Global

A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2

The Digital Literacy Global Framework (DLGF) is used for developing a methodology that can be used as a major tool for the Sustainable Development Goal (SDG) thematic Indicator 4.4.2: "Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills". The proposed DLGF is created for monitoring, assessing, and further developing digital literacy, taking into consideration different levels of development. The framework identifies the following notions recurred constantly: "access", "manage", "understand", "integrate", "communicate", "evaluate" and "create". The framework have been used by the University of Hong Kong for the project, *Developing a global framework of reference on digital literacy skills for SDG indicator 4.4.2*. The goal of this project is to propose a definition and a global competence framework of digital literacy skills for indicator 4.4.2, which can be used to guide the monitoring, assessment and further development of digital literacy in a way that is sensitive to different developmental contexts including HES.

National

National Coalition of Digital Skills (GR)

The National Alliance for Digital Skills & Employment is a coalition of organizations from the public, private sector, and civil society with the aim of reducing the digital divide and promoting digital skills in Greek society. One of the main aims is to seek the enrichment and digital transformation of learning and teaching of pupils and students. This effort provides motivational opportunities for teacher training in the digital area.Exists many actions which support that policy in national level. One of that is Patras Science Festival occurred in 2017, showcasing to people of all ages that science is not only made up of knowledge but can also

be compelling and entertaining. Every year the adult audience (HE students, researchers, HES) can participate in a series of seminars and scientific dialogues, as well as to attend interesting speeches by distinguished researchers and academics.

Grow Digital CY (CY)

Grow Digital CY, led by the Deputy Ministry of Research Innovation and Digital Strategy, aims to promote the diffusion and the improvement of digital skills in order to address the mismatch between a low number of ICT professionals and higher number of vacancies, in areas such as increasing industry-led training, certifying skills, improving school and university curricula, and raising awareness about ICT careers, especially among young people and women (European Commission, 2018). The activities target the education sector (70%) to a great extent, followed by activities targeting the labour force, ICT professionals and all citizens.

Digital Education in Cyprus (CY)

The Cyprus Ministry of Education, Culture, Sports and Youth appointed an Advisory Committee on eLearning (Advisory Committee on the Utilization of Digital Technology in Education, Electronic Applications and Distance Learning), with academic experts across the island in e-learning and digital technologies, for offering their support and advice to the Ministry on distance learning matters (MOEC, 2020). In December 2020, and following the shift to distance and online teaching and learning, mandated by emergency pandemic measures, the Cyprus Ministry of Education, Culture, Sports and Youth, in collaboration with local universities in Cyprus, organized an online conference on “Digital Education in Cyprus“. The aim of this conference was to support and strengthen educational efforts to integrate digital technologies in learning.The aim of this conference was to support and strengthen educational efforts to integrate digital technologies in learning including HES.

Higher Education Good Practices in online training

Global Level

The Global Skills Academy (GSA)

The Global Skills Academy (GSA), is an initiative launched by UNESCO on World Youth Skills Day in July 2020 in which its scope is to build skills for employability and resilience by June 2021, is still in progress around the world. Under the umbrella of the Global Education Coalition, the GSA offers high-quality free online lessons and training to respond to the growing consequences of COVID-19 on skills development around the world, with a priority focus on the least developed countries. . Actions in higher education have been developed in this context such as Skooler– Tools to turn Microsoft Office software into an education platform-that Use these tools for higher education to combine Moodle courses with Microsoft and Seesaw– Enables the creation of collaborative and sharable digital learning portfolios and learning resources-that universities spark engagement on collaboration, efficiency and teamwork.

EU Level

EPALE-

The EPALE Resource Centre is a repository of materials that will help keep you up to date in adult education best practices and initiatives and reference documents. This center publishes case studies of innovative adult education approaches, reports, and policy documents as well as magazine and newspaper articles such as Ireland’s Education Yearbook that is a guide to

the world of education in Ireland, bridging the gap between practitioners, managers, researchers, educators, staff of Higher Education and policy-makers. Successful case studies include Dublin City University and National University of Ireland.

EDEN-

The European Distance and E-Learning Network exists to share knowledge and improve understanding amongst professionals in distance and e-learning and to promote policy and practice across the whole of Europe and beyond. EDEN is open to institutions and individuals dealing with e-learning, and – more broadly speaking – open and distance education. Providing versatile expertise, the Association embraces all levels of formal and non-formal education and training including higher education. EDEN has been consistently instrumental in the promotion of networking, international co-operation and professional development. A good practice includes "The Use of ICT in Higher Education – A Mirror of Europe". EDEN contributed with a thought-provoking paper on the expectations, opportunities, achievements and realities regarding ICT, e-learning and ODL in Central and Eastern Europe.

National Level

Citizens' Digital Academy (GR)

It is an initiative of the Ministry of Digital Governance to gather educational content that improves the digital skills of citizens. At the Digital Academy, the citizen can choose free of charge and without complicated registration procedures the courses that suit his/her needs, interests and level of knowledge and skills. A good example that could be used by Higher Education Staff is the course titled:'Digital Trainer'

Department of Educational Technology DET (CY)

The Department of Educational Technology of the Cypriot Ministry of Education, Culture, Sport and Youth implements programmes of continuing professional development in the areas of information and communication technologies (ICT) research and practice, proposes new educational implementations and promotes innovation related to the use of new technologies in education. At the same time, it provides pedagogical and technical support facilitating the effective use of ICT. The Educational Technology Department projects include various seminars and workshops on: basic and specific skills in the use of information and communication Technologies (ICT), the integration of information and communication technologies in the teaching and learning process, the design and production of educational films. Also, support of teacher coaches in the school unit for the use of ICT in the learning process, online learning environments (synchronous and asynchronous) and handling of educational software repositories. Moreover, it promotes learning design and educational material with the use of ICT in learning, examines case studies on the integration of ICT in the learning process, tools to organize conferences, workshops and conventions to inform on the integration of ICT in education, as well as how to deal with web portals with educational material and safe Internet use, etc.The website is a useful source for higher education for example an initiative of the Open University of Cyprus collaborates with the Ministry of Education, Culture, Sport and Youth and other educational institutions for the implementation of the European project "CYberSafety III"

Curricula for Digital Education

#1 Curriculum

Title: Digital Education
Training provider: National and Kapodistrian University of Athens
Duration: 9months (306h)
Certification: YES, ECVET: 12,24
Focus group: graduates of pedagogical / teachers' studies/educator/trainer/Higher Educational Staff
Basic Learning outcomes: The purpose of the Program is to get acquainted with the required knowledge and applied skills in the field of digital learning and teaching (digital education) in formal and non-formal education.
WEB: 1.Digital Education | E-Learning Πανεπιστήμιο Αθηνών (elearningekpa.gr)

#2 Curriculum
Title: Reflections on 2020 and New Perspectives for 2021
Training provider: Centre for Innovation – Leiden University
Duration: 3h
Certification: -
Focus group: anyone involved in education at Leiden University in 2020 and 2021, including lecturers, support staff, students and policy makers.
Basic Learning outcomes: The seminar will have a diverse selection of workshops. The participants are able to choose from presentations on best practices and lessons learned, creative sessions on using tools and media in education, reflections on a different way of working in education, hands-on workshops and more.
URL: https://www.centre4innovation.org/stories/digital-education-seminar-leiden-university/

#3 Curriculum
Title: Curriculum for teaching basic digital skills to adults
Training provider: Frederick University
Duration: 36 teaching hours
Certification: YES, ECVET: 12,24
Focus group: This Curriculum refers to adult trainers (including HES), who are teaching IT to adults with high digital skills, but also to adults with low digital skills, such as elders. It is also targeted at various adult population groups such as the general adult population, elders, population living in the countryside, unemployed people, inactive and immigrants
Basic Learning outcomes: This Curriculum is expected to help educators teach digital skills to adults to enrich their knowledge and learn specific methods and techniques which they can use according to the topic they are teaching
URL: https://slowlearning.eu/portfolio/1st-best-practice-and-experience-from-cyprus/

#4 Curriculum
Title: Transforming Digital Learning: Learning Design Meets Service Design
Training provider: Deakin University (via Future Learn)
Duration: 2 weeks
Certification: -
Focus group: This Curriculum refers to adult trainers, who are teaching IT to adults with high digital skills, but also to adults with low digital skills, such as

elders or HES. It is also targeted at various adult population groups such as the general adult population, elders, population living in the countryside, unemployed people, inactive and immigrants
Basic Learning outcomes: By the end of the course, enrolled individuals are expected to be able to: ● Describe the diverse needs of global digital learners ● Apply digital learning approaches to design and create premium digital learning experiences ● Explain the role of team teaching and social learning in digital learning practices ● Produce a reflective professional practice plan
URL: https://www.futurelearn.com/courses/digital-learning

#5 Curriculum
Title: Curriculum Development and Instruction, Sciences and Technology
Training provider: Frederick University
Duration: The duration of the program lasts one and a half academic years (i.e. 3 semesters) for full time study or four academic years (i.e. 6 semesters) for part time study students.
Certification: MSc
Focus group: The “MSc in Curriculum Development and Instruction” aims at effectively preparing teachers and researchers (and other HES) thus making them able to respond to the increasing complexity of the educational and social environment and be able to provide effective teaching and quality learning experiences and opportunities to all students.
Basic Learning outcomes: ● Adapt to the constantly changing social reality that demands a flexible and adaptive educational system and educators that effectively promote educational policy. ● Demonstrate skills that exploit the benefits offered by technology in lesson planning and learning experiences. ● Demonstrate skills for investigating educational issues and design intervention programs for solving problematic situations in education. ● Apply a wide range of teaching methods, techniques and methodological approaches in order to be able to integrate various social issues in education. ● Engage in critical study of educational policy and educational programs or activities implemented in schools. ● Employ effective techniques for developing research programs within accepted ethical research guidelines. ● Demonstrate working knowledge skills in information and communication technologies, the use of multimedia and supervisory devices, both for learning purposes and exchanging information and facilitate students and educators’ access to pedagogy-related resources. ● Apply the results of educational research in schools and society in general. Develop innovative curriculum and teaching materials. ● Synthesize broad knowledge, skills, interconnections, and epistemology in an educational setting.
URL: https://www.frederick.ac.cy/ma-in-educational-studies-program-structure/ma-in-educational-studies-courses/sciences-and-technology-courses

#6 Curriculum
Title: MSc in Information & Communication Technologies in Education for Sustainable Development
Training provider: Frederick University
Duration: The duration of the program lasts one and a half academic years (i.e. 3 semesters) for full time study or four academic years (i.e. 6 semesters) for part time study students.
Certification: MSc
Focus group: This MSc program is open to qualified graduates from recognised higher education institutions from around the world who wish to develop knowledge, skills and capacities for infusing ESD enabled through ICTs, in various working areas.
Basic Learning outcomes: Use problem-based learning and service learning as methodologies for integrating sustainability issues in formal and non-formal education environments. • Enhance knowledge for informed decision and policy-making on education for sustainable development issues. • Develop a deeper understanding of the relationship between education policy and planning in the field of ESD; the institutional structures needed to support ESD policies; and the role of various actors and entities in shaping educational policy and change for sustainability. • Enhance critical, analytical and integrative skills for developing ICT-enabled ESD curricula and training programmes. • Produce professional experts on ICT-enabled ESD having the capacity to become reflective practitioners and agents of change, locally as well as globally. • Offer a virtual learning environment supported by critical pedagogies in contextualising sustainability issues with innovative use of ICTs as means, as resources and as enabling transformative tools.
URL: https://dl.frederick.ac.cy/en/ict-in-esd-welcome-message

Challenges and new trends in using ICT in HE (national/EU/global levels)

Challenges in online HE training (applied for national/ EU/ global levels

Online education in its various modes, including online training in HE, has been growing steadily worldwide due to the development of wide use of new technologies, global adoption of the Internet, and demand for a workforce trained periodically for the ever-evolving digital economy. The great affordances that ICT brings into the teaching and training practice, are accompanied though with several challenges that need to be encountered as well, in an effort to successfully deliver online training of high quality and with a significant and positive impact on higher education users' learning and training experiences. A list of core challenges in online training are listed below:

- In the face of this reality, EU, should redefine university education in all dimensions: the teachers' teaching skills, the professional competences of the students, the university relationship with the society, in general, and the relationship between education and research. Thus, EU (Christensson, Staaf, Dakovic, Peterbauer &

Zhang, 2019) argue for a creative, active and innovative learning environments in HE, one of the main challenges that this study tries to address

- One of the fundamental needs of the educational system is the improvement of teaching practices at the universities in the context of the development and integration of digital technologies in all areas of work in the labor market, which could lead to the improvement of the graduates competences(Salceanu, 2020)

- Variation among higher education institutions in their levels of digital capacity exists, which is linked to the existence of a substantial knowledge and experience gap, both within and across institutions (EC, 2020).

- Teachers/ educators' digital skills and competences (EC, 2020; Gillett-Swan, 2017; Wolf, 2006). Teachers' digital skills and competences has been assessed as one of the most important components of digital education, followed by leadership and vision in the educational institution, suitable digital content, and infrastructure (EU, 2020). Teachers and educators need the confidence and skills to use technology effectively in their teaching/ training practice, and creatively to engage and motivate their learners/trainees, support the acquisition of digital skills by learners/trainees and to ensure that digital tools and platform used are accessible to all learners/trainees. The acquisition and/or enhancement of teachers' digital skills and competences can be achieved through teacher professional development, including initial teacher education. Teachers and trainers should also have access to ongoing opportunities for professional learning and development tailored to their needs and their discipline.

- Meaningful integration of digital technologies in practice, framed by an appropriate pedagogy and accounting on the users' needs (EC, 2020; Gregory & Salmon, 2013; Kirkwood & Price, 2014; Salmon, 2014).

- Dealing with educators' perceptions on the use of technologies in education, which may in turn be influenced by the organizational culture (Ayub, et al., 2015).

- Ensuring learner engagement and adapting instructional design to online learning (Gillett-Swan, 2017).

Higher Education trends in online training

- MOOC (Massive Open Online Course) is a free, massive, open, online course, that allows unlimited participation

MOOC(s) stands for: Massive(ly) (large scale 100+ from worldwide) Open (free of charge, no requirements), Online (access at any time around the globe, synchronous and asynchronous communication), Course(s) (learning materials, assessment, networking tools, learning analytics tools) (Yousef, et al., 2014). Massive Open Online Courses (MOOCs) are a form of web-based distance learning, and are one of the more widespread forms of online learning, are recognized by job seekers and workers as an effective tool for acquiring the skills needed in the labor market and for keeping them updated (Gonzalez Vazquez, 2019). The MOOC literature categorizes MOOCs into two main types cMOOCs and xMOOCs (Smith & Eng, 2013). New forms have emerged from xMOOCs, including smOOCs' and bMOOCs (Firmin et al., 2014). cMOOCs emphasize on Connectivisim (Siemens, 2004, itself built on the earlier foundations of Constructivism, see: Bruner, 1990) and social constructivism (Bruner, 1990; Piaget, 1963). "cMOOCs are based on a connectivist pedagogical model that views

knowledge as a networked state and learning as the process of generating those networks and adding and pruning connections" (Siemens, 2013, p. 4). cMOOC philosophy embraces artifact creation by the members of the community and knowledge sharing. cMOOCs are largely open in terms of the activities that learners can pursue related to the theme, with limited structure and weekly themes

- Open Educational Resources (OER) are open-license materials (freely accessible) that can be used for teaching and learning.

OER can be defined as: "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. There are many repositories with different kinds of OER, provided by many organizations. A big list of OERs is provided by the University of PittsBurgh in the Library System that includes any type of educational material that is freely available for teachers and students to use, adapt, share, and reuse. Inside this list, anyone can choose from a variety of free STEAM repositories. Guidelines outline key issues and make suggestions for integrating OER into higher education (Unesco, 2011)

Implications in using digital technologies in Higher Education

Higher education institutions and policy dynamics of HE systems differ across time, between countries and political regimes, with complex socioeconomic variations and implications in all areas. Yet, HEIs have the same fundamental functions, to offer a high quality of education using appropriate teaching strategies to transfer the latest knowledge through exploratory research and training (Lei, 2017). The integration of digital technologies in HE can facilitate blended, on-line and mobile learning (Tulinayo, Ssentume, & Najjuma, 2018) and can affect teaching and learning (i.e., the activity of students and instructors in different ways, principally in terms of access, use, competence, diversity, and quality education) (Ştefan, 2019), but also research, or knowledge generation and knowledge transfer, for accelerating, amplifying, and expanding the impact of teaching practices (Duţă & Martínez-Rivera, 2015; Mansell, 1999). A series of implications arise for HEIs when integrating digital technologies in practice and thus following digital education policies.

a. First, the use of digital technologies in HEI requires infrastructure advancements and digital transformation (Benavides, 2020).
b. Second, HES and faculty members need to be well trained professionally and methodically and have an appropriate level of digital competence (EC, 2020; Ştefan, 2019).
c. Third, HES should also be well trained on how to appropriately integrate digital technologies in their classes and have positive attitudes towards integrating technologies in their practice, since research suggests that regardless of how sophisticated and capable the technology may be, its effective implementation, let alone effective integration in education, depends upon users having a positive attitude toward it (Huang & Liaw, 2005).

Therefore, HEI should be capable of delivering training sessions to academic and HE staff for achieving the above. Plans for technology in education sometimes promised to improve the efficiency of education processes, delivering better results at lower cost (OECD, 2015). HEI must create long-term structural changes that will allow universities to provide a safe, positive environment for students under the umbrella of Digital Education in any education field. It is a fact that digital transformation has a significant impact in many aspects of education, such as

the research process, engagement and management activities of HEIs. The education system should adapt, evolve to take advantage of new technologies and tools and to develop strategies and actions that can play an active role in this digital shifting process. HEIs will eventually become drivers of digital innovation, by providing various types of skills to the students, skills and capabilities that are generally needed to navigate this drastic change. All HEIs had to cope with digital transformation and focus on finding ways to introduce new digital methods in their organisations, find alternative digital teaching methods and tools that are still interactive and can attract the interest of the students in achieving many skills and competencies. As a matter of facts, there are some challenges that HEIs had to overcome such as integrating ICT in curriculums, shortage of resources, problematic network connection, inadequate support and capacity of the lecturers, as well as lack of needed infrastructure that can ensure that all the teaching strategies are implemented correctly. HEIs, with innovative policies and support from the government at the same time can also assist in the evolution of SMEs since adopting emerging technology and acquire relevant digital skills for their workers (OECD, 2019a). HEIs have the needed know-how that startups need directly linked to new research results in the digital field (OECD, 2019a).

New technologies in support of teaching

Trends in Educational Technologies

The new trends in Educational Technologies have a positive impact in Education. More specific, learners are motivated, engaged, and foster problem solving and critical thinking. In parallel there is a better learning environment, experience, and instant feedback. A list of new trends is following:

- Digital Storytelling

Digital Storytelling is considered one of the educational methods that allows the development of digital literacy and the 21st century skills for training. “Digital storytelling allows the creation of innovative learning experiences, supported and extended by the application of user contributed content Web 2.0 technologies, empowering teachers’ abilities to communicate and integrate technologies into the curriculum” (Banzato, 2014)

- Gamification & game-based learning (GBL)

Current studies review the potential educational benefits of deep learning on enjoyment, engagement, and learning in higher education. GBL can be applied to enhance the learning procedure of students in various age levels including Higher education (Crocco & Hernadez, 2016)

- Chatbots in HE

A trend in educational technologies relates to the use of chatbots and conversational agents in Higher Education. Chatbots – also called machine conversation systems, virtual agents, dialogue systems, and chatterbots – comprise computer programs that are used to simulate auditory and/or textual conversations with users, or other chatbots using natural languages (Shawar & Atwell, 2007; Winkler & Söllner; 2018; ZEMČÍK, 2019). Education comprises an important field of application for the chatbots as their added value can become significant. A chatbot solution might offer support for different teaching and learning tasks, depending on its architecture and technology used [i.e., retrieval-based models (Ma et al., 2019) and generative

models (Sheikh, Tiwari, & Singhal, 2019)]. On the one hand, chatbots have the potential to facilitate students' learning and offer interactive learning experiences for the students. On the other hand, chatbots can ease the instructors' workload, by acting as teaching assistants and enacting the role of tutors, e.g., by answering student's questions and to Frequently Asked Questions (FAQs), by sending reminders to the students for upcoming deadlines, or even by conducting online assessments (Tsivitanidou & Ioannou, 2021b). In recent years, there has been an attempt to exploit chatbots' capabilities beyond simple querying of information followed by a programmed response and institutions are looking to deploy chatbots with much broader capability. However, according to Winkler and Söllner (2018), chatbots are still in the very beginning of being exploited in education, for supporting students' learning in a meaningful manner. In a study examining higher Education users (i.e., instructors and university students) needs and expectations of the use of chatbots in HE, it has been shown that Higher Education Instructors envision pedagogical uses of chatbots in HE in terms of chronological integration into the learning process: prospective, on-going, and retrospective. Under each one of those higher-order categories, specific learning domains can be supported (i.e., cognitive, affective), besides administrative tasks (Tsivitanidou & Ioannou, 2021a; 2021b).

- Social Media in Learning

Social media originated in 2005 after the Web2.0 existence into reality and can be defined as "a group of Internet-based applications that build on the ideological and technological foundation of web 2.0 and allow creation and exchange of user-generated contents (Kaplan & Haenlein, 2010). The use of social media is becoming increasingly ubiquitous in students' daily lives, given the rapid development of mobile devices and applications which are revolutionizing the concept of socializing as well as mobile computing and learning. Social media encompass (i) social networking tools, such as instant messengers (e.g., Skype), Facebook, and so on; (ii) social publishing or sharing tools including blogs, wikis, Twitter, social bookmarking or tagging tools, such as Symbaloo, Delicious, Diggo, photo or sharing tools, like Flickr, YouTube or Picassa, collaborative office or brainstorming tools, like Google Docs; (iii) social and content management tools, including Moodle, internet-based tools used for surveys, calendars and polls; and (iv) virtual worlds and gaming environments, such as PlayStation Network (Mao, 2014). Given the great attention that social media have received in recent years, their exploitation for learning purposes has been also considered at large. In fact, these technological innovations gave birth to a new kind of learning culture, based on the principles of collective exploration and interaction (Selwyn, 2012). For instance, social media and mobile devices allow the students to create, edit and share content in textual, video or audio forms. Also, mobile devices and social media provide opportunities to the students for accessing resources, materials, course contents, and increased opportunities for interacting with their mentors and colleagues (Greenhow, 2011a, 2011b). Scholars suggest that social media can be used as effective learning tools, while students' prior affordances with these tools should be accounted for the design of social media and use in the teaching and learning practice (Mao, 2014). In addition, it has been shown that online social media used for collaborative learning have a significant impact on interactivity with peers, teachers and online knowledge sharing behavior, which in turn has a significant impact on students' engagement and subsequently their academic performance (Ansari & Khan, 2020). The same authors suggest that the use of online social media for collaborative learning facilitates students to be more creative, dynamic and research oriented.

- Blockchain Technology

There are many benefits to using blockchain technology in learning institutions as well as different applications of blockchain in education. It is a fact that as the trends in education keep changing, blockchain technology is here to stay. Blockchain is a modern way of transforming record-keeping of certificates and student credentials in the learning institutions. There is no need for an intermediary in verifying degrees, certificates, diplomas, and other academic papers with blockchain technology. Accreditation is easier than ever before since in most countries find it clanging to certify and accredit most learning institutions. With blockchain technology, it will be much easier to verify the qualifications that higher institutions offer. Also, due to the objectives that blockchain pursues, it is one of the most secure systems since it blocks fraud in education by forbiting fraud and hacking. In this case, hackers cannot manipulate and delete information from education systems to award fake certificates. Blockchain technology will be useful in the development of better online learning platforms. Higher Education Institutions have developed alternative yet competitive education systems and projects that are directly connecting students and teachers. Using blockchain in education, higher institutions can effectively enhance access and sharing of study materials. Students are able to download learning materials and access other education services in a more secure manner.

- Artificial Intelligence

As a matter of facts, artificial Intelligence is one of the disruptive techniques to customize the experience of different learning groups, teachers, and tutors. Artificial Intelligence is an innovative way to find out what a student does and does not know, through the creation of a personalized study programme for each learner taking into consideration the knowledge gaps, even in a higher institution. This can be proved extremely effective since it can have a direct impact on the student's specific needs, resulting in advanced efficiency. Moreover, simple administrative tasks can become more simplified than ever before covering: grading, assessing, and replying to students. These time-consuming activities can be optimized by the teachers of higher institutions using Artificial intelligence. In this case, artificial intelligence techniques are great time-savers for the teachers, as they do not need to spend extra time explaining challenging topics to students. The existence of artificial intelligence chatbots or virtual personal assistants have changed the game, providing solutions to these timely issues. Students can avoid being embarrassed by asking for additional help in front of their friends. The main advantage of AI is the possibility to train it to perform a long list of tasks, offering in such a way a personalized approach to education. It's a universal solution to get a set of tools tailored to the specific needs of learners and educators to optimize their routine, increase efficiency, improve accessibility, and scale the processes.

Trends requirements-challenges for providing online ME courses

Challenges in providing online ME courses

Personalized learning

The potential challenges of PL in HE is:

Students are encouraged to customize their learning experiences to reflect their interests. Any use of technology should go hand in hand with these learning outcomes. The role of the teacher is as important in personalized learning as in traditional education and should not be viewed as being supplanted by technology. Rather technology can be used to allow teaching staff more time to give individual attention to the students who most need it.

Virtual reality (VR) and augmented reality (AR)

The potential challenges of VR applied to higher education include:

Visualization of difficult theoretical concepts and practical exploration of the theory through tangible examples. Also, it help the natural interaction with online teaching material and effective collaboration and discussion amongst the participants.

Management educators in HE, have been increasingly engaged in the use of online delivery of instruction (Aguinis & Kraiger, 2009; Chapman & Henderson, 2010). Several advantages do exist for students in online learning in ME courses, including flexible scheduling in which the pace of learning relied on the students (Gagne & Shepherd, 2001). Flexible scheduling has proven to be of great value, especially for students with irregular schedules due to work or parenting obligations (Hiltz & Wellman, 1997). Further to that, online ME increases the opportunities for attending the courses, especially for those who live in hard-to-reach or geographically distant from the campus areas (Gagne & Shepherd, 2001; Hay, Hodgkinson, Peltier, & Drago, 2004). Also, there is a possibility to increase student enrollment through online classes without the expense of building new classrooms (Gagne & Shepherd, 2001).

However, challenges for providing online ME courses also do exist. Chau (2010) cautioned against the expansion of online education, citing a lack of quality in this method of delivery. According to Dellana et al., changing the dynamics of interaction between instructors and students may undermine the quality of education delivered (Dellana, Collins, & West, 2000). Other problems reported when instruction is delivered online often deal with delayed feedback from peers and teachers, which provokes anxiety and irritation in students (Hiltz & Wellman, 1997). Further to that, Arbaugh (2000) argues that online contexts may negatively impact student involvement and participation, mainly due to lack of informal learning opportunities that occur through peer interaction in traditional contexts. The above mentioned challenges may relate also to high dropout rates that have been experienced in online courses (Sapp & Simon, 2005). In addition, the delivery of ME courses, and HE courses in general, often requires a quite substantial allocation of budget on the behalf of the HEI for infrastructure. Even though online classes do not require classroom space in buildings on campus, costs for online classes generally exceed costs for traditional classes (Smith & Mitry, 2008). Also, online delivery of ME courses requires an adequate access of students to university computers, to a Learning Management System (LMS) (e.g., Blackboard platform), organizational support, such as web cameras, voice-over production, and other areas of IT support. In the absence of the adequate IT support and infrastructure, the online delivery of instruction may not be beneficial to students, especially when resources are scarce and investment in equipment, programs, and personnel may be needed for quality online delivery of instruction (Cater, Michel, & Varela, 2012).

Good Practices in online training in Management Education

In the new era which the pandemic of COVID-19 inaugurated, the Institute of Educational Policy (IEP) assigned to Hellenic Open University and University of Aegean the implementation of a new MOOC which is titled "Teacher Training in the Methodology of Distance Education ". The specific MOOC ran via the Moodle platform and was available for educators of primary and secondary level (https://learn.eap.gr/).

In the same vein, the University of Aegean designed its MOOC, “School Distance Education” (https://elearn.aegean.gr/). This strategy proved of utmost importance as plenty of educators

are training until now, testing, improving, and expanding their skills in the field of e-learning under the urgent conditions that the COVID-19 pandemic has created.

New trends in on-line ME courses

In the recent past, technology comprises a powerful teaching and learning tool in the education sector, while the covid-19 pandemic forced educational institutes worldwide to even more extensively leverage digital technologies - from cloud to Artificial Intelligence (AI) and Internet of Things (IoT) - to increase their impact and deliver better learner outcomes.

Management Education courses have also rightly embraced global technological advances such as Artificial intelligence, Digital marketing, and Robotics, which have indeed become core business tools. Emphasis is more on experiential- learning through live projects, which promotes both skill and personal growth among students. Digital technologies such as augmented, virtual, or mixed reality have enabled powerful and immersive teaching that is more interesting and engaging. Online learning programs offered by several renowned universities also support in-depth learning parallel to the college curriculum. Educational Institutes have also ventured into MOOCs, in which learners self-organize their participation according to learning goals, prior knowledge, skills, and shared interests (Kaushal, 2020).

Conclusions

Good practices in online teaching/training in general, including ME courses require an alignment or the course delivery with learning objectives, the provision of prompt feedback, instructor presence in the online learning environment, the appropriateness of the teaching methods for online settings, safeguarding that students' have clear expectations from the course and that they are meaningfully engaged (Salcido & Cole, 2019).

For online training and professional development programs to be successfully and of high-quality, the following characteristics should be accounted: (i) the training should be ongoing, (ii) provision of opportunities for reflection; (iii) supporting the construction of a professional learning community; (iv) a training grounded in classroom practice and current research; (v) a training tailored to instructors' specific needs; (iv) a diverse training, offering a wide range of learning activities. Instructors should experience authentic learning experiences during the online training and use in the training the same platforms intended to be used in teaching with students. The training program content should immerse the trainees in real-world and case-based learning. A wide range of resources can be used, including web-camera, videos, instant messaging and online whiteboards, and the training may include both synchronous and asynchronous discussions among the participants. Further to that, particular attention should be given to the online teaching pedagogy to be embraced, as well as the content, while the online teaching training program should also focus on the development of soft skills for the trainees, who need to become competent in organization, time management and self-direction. Also, developing a community of online instructors is a good practice, which can function as a support system in which instructors can share experiences and best practices.

Recommendations

To examine the ways that HES deliver good quality of online learning, this project will identify the best technology-enabled learning, teaching and assessment strategies. This includes the following:

1. To use the appropriate digital education policies to develop effective online practices to enhance the digital skills of HES using the digcompedu

2. To face the challenges in online training, to encourage HES to invest in the systematic production, adaptation and use of OER and to bring them into the mainstream of higher education in order to improve the quality of curricula and teaching and to reduce costs.

3. To form an innovative learning environment in HE and boost innovative learning experience in HES that should be well equipped, highly skilled to help support innovative ideas in students. HEI management needs to have clear visions on innovative targets and means to achieve them.

5. To update HES's competence profiles for 21st century challenges, to align higher education curricula with performance standards and education strategies and approaches.

6. To design a flexible content that is easy to use for every HES and to align in each HE curriculum such as virtual classroom, blogs, video/audio and generally using various learning technologies that HES are going to study during the open lab, as well as on the basis of common principles of higher education.

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Input from adult and distance learning theory as to the methodological requirements for the development of online training provision skills

Introduction

This report includes the input from adult and distance learning theory as to the methodological requirements for the development of online training provision skills. More specifically, it provides information regarding the adult learning theories and principles, their application in online training along with its beliefs, weaknesses and implications. In addition, it addresses the distance learning theories and principles and how they are applied in asynchronous and synchronous e-Learning.

What are the adult learning theories and principles? How are they applied in online training? What are the beliefs, weaknesses, and implications?

Adult learning theories, basic principles and pedagogical implications

According to Bélanger (2011) various learning theories have been proposed that endeavoring capture and systematize the learning processes and various specificities, while three founding theoretical approaches constitute the major orientations. These are the behaviourist theory, the cognitivist and socio- cognitivist theories and the constructivist and socio-constructivist theories (Bélanger, 2011). Based on these theories, some additional learning theories have been proposed which are considered to be closer to the precise contexts of adult learning, such as the humanist learning theory, the experiential learning theory and the transformative theory (Bélanger, 2011). Figure 1.38 depicts these theories along with their developers, key authors.

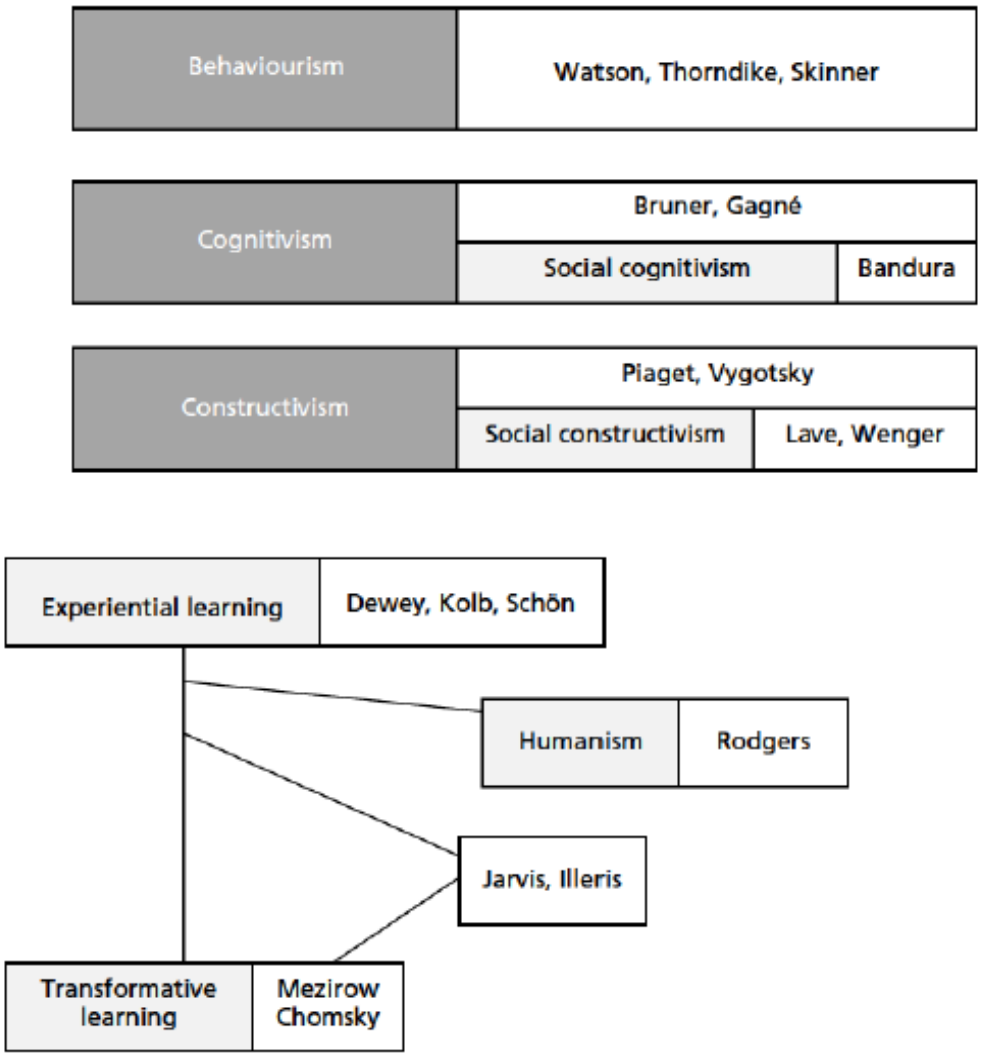

Figure 1.38 Learning theories and key authors. Source: Paul Bélanger (2011)

Behaviourism theory

This theory focuses on “empirical and discernible behaviors rather than on "mental" processes and its key concepts are (Bélanger, 2011, p. 17):

- Contiguity
- Reinforcement
- Stimulus-response
- Operant conditioning
- Contingency

The basic principles and pedagogical implications according to this theory are shown in Figure 1.39.

Epistemological orientation:	Learning is explained by combining the proper external conditions
Analytical units:	Observed behaviours Stimulus-response reinforcement
Forces that drive learning:	External social and material reinforcement
Learning situation, structure:	Highly structured situation Operant conditioning
Mistake status:	Learner's mistakes are a source of problems, not a learning experience. Mistakes have to be avoided.
Learning sequence:	Hierarchical sequence: from simple to complex, step by step.

Figure 1.39 Basic principles and pedagogical implications according to behaviourist learning theory. Source: Chart adapted from Allal (1998) and Astolfi (1997) cited in Bélanger (2011)

Cognitivist theory

Cognitivist theory interprets cognitive processes (i.e.reasoning), in terms of information handling and organisation (Legendre, 2005, cited in Bélanger, 2011). It "goes beyond extemal behaviour in order to understand what happens inside the leamer's brain in all learning instances" (Bélanger, 2011, p. 23) and its key concepts are:

- Procedural (know how) and non-procedural knowledge
- Short- and long-term memory
- Knowledge transfer
- Metacognition
- Cognitive dissonance
- Simple to complex learning sequence

The basic principles and pedagogical implications according to this theory are shown in Figure 1.40.

Epistemological orientation:	Learning is explained by internal processes confronted with external conditions.
Analytical units:	Cognitive processes and *observable* results, Learner's representations, strategies, and procedures
Forces that drive learning:	Cognitive conflict, problem situations
Learning situation, structure:	Open situations permitting discovery and exploration
Mistake status:	Learner's mistakes are a source of learning, because they generate cognitive conflict
Learning sequence:	Spiral sequence: from complex to simple to complex again

Figure 1.40 Basic principles and pedagogical implications according to cognitivist learning theory. Source: Chart adapted from Allal (1998) and Astolfi (1997) cited in Bélanger (2011)

Constructivism and socio-constructivism theory

This theory "highlights the fact that learners must actively construct their knowledge" (Bélanger, 2011, p. 27). The social constructivism sight suggests that knowledge is built

when people engage socially in conversation and action on shared projects or problems (Bélanger, 2011). The key concepts that Bélanger (2011) have shown are:

The key concepts of the constructivist approach:
• Central role of the learner (person acting) in his/her context
• Cognitive conflict, contradiction, and resolution of dilemma
• Reflective practice and abstraction
• Self-organisation and internal restructuring
• Proximal development zone (PDZ)
• Learning as an interactive process between subjective construction and external structure

Additional concepts of the socio-constructivist approach:

• Situated learning
• Social mediation, dialogue, interaction
• Dialectics between the subject AND the socio-cultural structure, between the acting person AND the constituted order
• Community of practices
• Peripheral llegitimate participation
• Holistic approaches: the cognitive, conative and psycho-motor resources mobilised by the person in her action context
• Interactive process between subject and his context

The basic principles and pedagogical implications according to this theory are shown in Figure 1.41.

Epistemological orientation:	Learning is explained by internal processes, but the emphasis is on social mediation; learning is contextualised
Analytical units:	Cognitive processes, social interaction processes, and acknowledgeable results Learner's regulations, representations, strategies and procedures
Forces that drive learning:	Social cognitive conflict, problem situations and the notion of proximal development zone
Learning situation, structure:	Open situations permitting discovery and exploration Scaffolding (teacher or peer interventions)
Mistake status:	Learner's mistakes are a source of learning, because they generate cognitive conflict Social confrontations, interactive regulations as source of social cognitive conflict
Learning sequence:	Spiral sequence: from complex to simple to complex again The sequence takes place in a relevant context

Figure 1.41 Basic principles and pedagogical implications according to social Constructivism. Source: Chart adapted from Allal (1998) and Astolfi (1997) cited in Bélanger (2011)

Adult learning-related theories

Humanist theory of adult learning

According to Bélanger (2011) the key concepts of humanist theory are:

- Self-actualisation: the inner drive to extend, to expand, to activate one's capacity, to become autonomous, to develop, to mature, to enhance the self. The tendency for self-actualisation is universal, though often latent, hidden.

- Learning experiences: the accumulated lived situations integrated by the individual through reflective practice.

- Significant learning: learning becomes significant and thus sustainable when the experience is relevant, progressive, stimulant, and inner-directed.

The facilitator should be 'other person-centered and his relationship with the learner entails genuineness, acceptance and empathy (Bélanger, 2011).

Experiential learning

According to Bélanger (2011) the key concept of experiential learning is the reflective practice:

• Based on experience and prior (tacit and explicit) knowledge

• Focused on problem definition (discovering and revisiting) and problem solving

• Making judgment on action to be taken

• Action oriented, deliberate action

Kolb in early 70s developed a model based on consecutive steps to better understand how individuals learn from their experience. He defined learning as "the process whereby knowledge is created through the transformation of experience", with knowledge resulting from "the combination of grasping and transforming experience" (Kolb, 1984, p. 41) (see Figure 1.42).

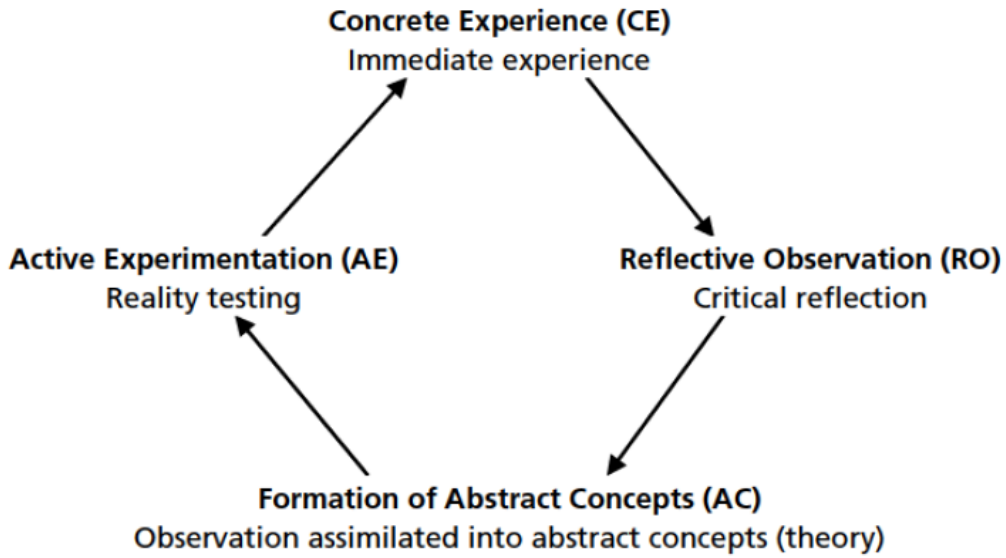

Figure 1.42 Experiential Learning Cycle (ELC). Source: Kolb (1984, p.141) cited in Bélanger (2011)

The key concepts of Kolb's Experiential Learning Theory (ELN) are:

- Learner-centered
- Key role of experience in learning life course
- Learning is, initially, an inductive process
- Experience is turned into learning through reflection
- Spiral learning
- Experience-based learning system
- Autonomy-adaptation

Experiential learning techniques are the simulations, which are considered a successful method because it encourages experiential, active, and reflective learning. They provide students with an environment where they can reflect on their choices, "review what was learned… and contemplate what could have been done in other ways" (Rutherford- Hemming, 2012).

Transformative learning

"*Transformative learning is learning that transforms problematic frames of reference (...) to make them more inclusive, discriminating, open, reflective, and emotionally able to change. Such frames of reference (...) are more likely to generate beliefs and opinions that will prove more time or justified to guide action.*" (Mezirow,2003, p. 59).

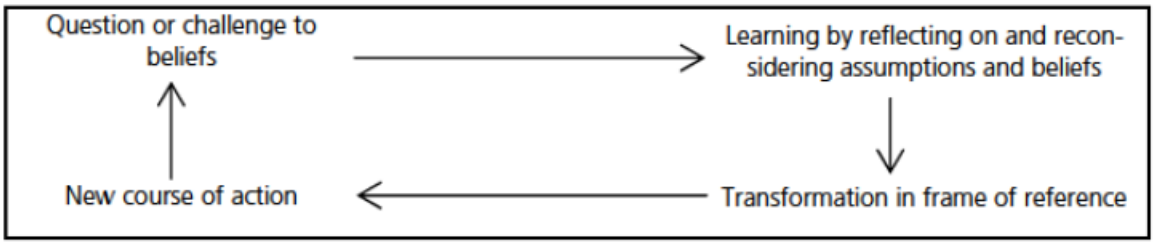

Figure 1.43 Mezirow's transformative learning process as an ongoing cyclical development. Source: Bélanger (2011, p. 44)

According to Bélanger (2011) the key concepts of transformative learning are:
• Social change: adaptive or transformative?
• Interpretation of experience and of knowledge
• Scheme of reference, meaning, perspective {lens through which one sees his or her reality, the world)
• Emancipation: freedom from previous beliefs and interpretation that distort reality
• Critical reflection of assumptions through which one revises usual ways of seeing oneself and one's relationship, habits of mind or points of view
• Decentration, distanciation, perspective taking
• Banking education (Freire)
• Consciousness raising and change through discourse and dialogue
• Felt {expressed) needs and causes of felt needs
• The mobilizing words (Freire)
• Catalyst role of educator

Comparison of learning theories

Arghode, Brieger and McLean (2017) provided a comparison between the learning theories. Apart from the theories discussed earlier they also included the andragogy theory which "emphasizes on individual motivation and proactivity more than imposing concepts and

learning" (Arghode et al., 2017, p. 598). Figure 1.44 provides a comparison of various theories' parameters.

Construct	Andragogy	Behaviorism	Cognitivism	Constructivism	Humanism
Learning perspective	Learning can be achieved with or without help	Learning involves stimulus and response	Learning involves processing of information	Learning involves knowledge construction	Learning is a personal endeavor toward fulfillment
Focus of learning	Allowing learners to learn	Proper conditioning is needed to achieve learning	Cognitive domain	Generating sense from experience	Feelings, perspectives, affective domain
Aim of learning	Develop adults	Ensure learned behavior is remembered	Make learning engaging, motivating	Facilitate construction of knowledge	Support self-actualization, self-awareness, independence
Role of instructors	Support	Create right conditions by designing the environment	Present information in an organized manner	Facilitate and agree upon meanings with learners	Facilitate
Relevant learning principles and theories	Self-directed learning, cognitive development, transformational learning	Situated learning, conditioning, memory, stimulus and response	Learning the learning process, social role acquisition, age-connected learning, memory and intelligence	Transformational learning, reflective practice, communities of practice, situated learning	Self-directed learning, cognitive development, transformational learning, andragogy

Source: Merriam *et al.* (2007)

Figure 1.44 Comparison of theories' parameters. Source: Arghode, Brieger and McLean (2017, p. 597)

Adult learning principles

Sotiropoulou (2019) based on Kokkos, (2005), Noye & Piveteau (1999), Rogers (1999), TIME (2016) and Dollisso & Martin (1999) suggested seven (10) Principles of Adult Learning which are presented in detail in Table 1.1.

Table 1.1 Principles of Adult Learning

N	Principle	Description
1	Adults bring life experiences and knowledge to the learning environment.	● Experience is considered a resource of learning. ● The experience and expertise of adults should be recognized. ● Training should build on them and encourage the learners to actively participate in the creation of new experiences and share their experience and knowledge. ● Learning activities should be created in a way that reinforces the use of past experience and knowledge.
2	Adults tend to prefer self-directed, autonomous learning	● Adult learners need control over the learning process. That gives and requires more responsibility and initiative of them. It also allows them to select, manage and evaluate their learning. ● Learners should be involved in setting goals and making decisions. ● The trainer should act as facilitator, coach and supporter, by finding ways to involve participants and investigating of what participants want to learn. ● Opportunities should be provided to learners to direct their own learning. ● Action-planning tools and templates to learners should be provided in order to help learners to develop and focus their self-directed efforts and facilitate learning.
3	Adults have preferences	● Acceptance that not all learners respond to a given teaching method or technique.

	for the way in which they learn	● Providing a customized learning approach according to learners need and developing the appropriate learning strategy. ● Use of a wide variety of methods corresponding to all learners' preferences in training delivery. ● Make trainers aware of their own learning preferences.
4	Adults learn best through collaboration and reciprocity. An environment where people learn with others while sharing what they already know	● Low-risk environment for learning should be provided, capitalizing the different levels of knowledge and skills within the learning groups. ● The learners' self-esteem should be strengthened through team-based learning on mutual trust and respect.
5	Adults are motivated to learn by a wide variety of factors	● Adults are motivated by a variety of factors such as personal aspirations, expectations, internal desire, or interest, escape from a situation. ● Adults need internal motivation for learning rather than external. ● Learning should respond to their needs, interests and real-life problems, in other words, be meaningful and relevant. ● Relevance is the key factor to motivation so it is important to inquire into the reasons why participants are interested in learning. ● The learners should be invited to identify the link between learning and satisfaction of their personal needs. ● A connection should be made between the learning content and the long-term objectives of each learner, in work and life.
6	Adult learners are goal oriented, relevancy oriented and practical	● Learners should be asked to identify what they would like to learn. ● Clear learning objectives should be established and it should be explained how they relate to training activities. ● Learners should be engaged in identifying the challenges they face and the value of addressing these challenges. ● Training must show relevance to the job or other interests. ● Learning has to be applicable to adult work duties or other responsibilities and focus on practical skills, tools, methods. ● Opportunities should be given to trainees to apply the knowledge to practical skills and use methods to solve problems.
7	Adult learners need to be respected and learn in an appropriate learning environment	● Respect, trust and acceptance are vital for successful adult training. ● Learners need to feel safe in order to participate freely, take initiatives, experiment, and express themselves. ● Mistakes have to be viewed and used as improvement aids and not as failures. ● Creativity and an agreeable atmosphere are important, but they have to be balanced with cognitive achievements, stability, and clarity of purpose.

		● The wealth of knowledge and experiences the participants bring to training should be acknowledged. ● Learners should be treated as equals. ● The participants should be allowed to voice their opinions freely.
8	Adults prefer active learning	● The more actively engaged the learner is, the more learning takes place. ● Different training methodology and techniques have greater rate of retention.
9	Adults want guidance	● Adults want information that will help them to improve their situation. ● Adults do not want to be told what to do, but they want to choose options based on their needs.
10	Adults have different learning styles	● Every individual has his/her own learning style depending on the preferred perception channel - visual, auditory, or kinesthetic. ● Techniques appropriate for all types of learners should be used and combined in such a way that different perception channels are employed. ● There are also different personal learning styles referring to order, analysis level, abstraction and type of information presented and processed, that may be influenced either by the individual's personality and cognitive characteristics or by the educational system, cultural factors, and professional specialization. ● The learning styles preferred by each group of trainees should be found, in order for the learning experience to be modified accordingly.

Application in online training: core beliefs, weaknesses, and implications

Arghode, Brieger and McLean (2017) provided a comparison between the learning theories core beliefs, weaknesses and implications for adult online learning as shown in Figure 1.45.

Theory/model	Core beliefs	Critique	Implications for online instruction
Andragogy	Adults are self-directed learners and learn through experience Adults want immediate application Adults learn best when they choose content and method of learning	Assumes all adults learn identically Focus on intrinsic motivation Ignores variations among adult learners Focus more on process, less on content An ideology not theory Not empirically based Incomplete; leaves many questions unanswered Pedagogy and andragogy not discrete Overlooks serendipity and play in adult lives Prior conditioning of adults may not align well with andragogy tenets	Create online discussion forums to encourage self-directed learning Design online instruction to provide unique learning opportunities Allow flexibility for learners to learn at their own pace Blogs, online activities, videos can help online educators design activities to encourage self-directed learning
Behaviorism	Learning is achieved through external stimuli and the subsequent response Focuses on learner compliance exhibited by desirable behavior Emphasizes knowledge acquisition more than construction Principle of contiguity: how closely spaced are stimulus, response and knowledge of results	Relies heavily on stimulus and response Do not account for individual differences in learning Observable behavior is emphasized more than individual characteristics	Immediate feedback can be provided for improved learning Assessment activities should be in-built into online instruction The content can be designed to promote learning through improved practice
Cognitivism	Focuses on organized, structured and logical presentations All learners can be engaged regardless of their motivation	Focuses only on cognitive aspects Neglects the affective domain in learning Places more emphasis on the instructors to engage learners	The presentation of material should be interesting to grab learners' attention and videos should be of appropriate length to maintain learners' attention Online activities should be structured logically and systematically to grab learners' attention
Constructivism	Emphasis on learner involvement Learners create their own meaning Conceptual understanding may differ among learners Places importance on experiences and	Relies on learners' abilities to construct meaning Focus more on experiential learning, some learners may not be inclined to learn through experiences	Online activities can be designed to promote creative thinking encouraging learners to create meaning. Although some guidance is needed to utilize constructivism principles, online educators may focus on problem-solving,

	promoting learning through experiential learning		creative writing and meaning-making
Humanism	Human beings control their own destiny People are inherently good and are free to act Behavior is a consequence of human choice People have unlimited potential for growth	Focuses more on affective than cognitive domain Believes learners are self-motivated Focus on behavior	Online learning content should be made relevant to learners' interests, feelings and attitudes. In online environment, it may be difficult to decipher learners' interests, as feedback and interaction are asynchronous

Figure 1.45 Comparison of theories' core beliefs, shortcomings, and implications for online instruction. Source: Arghode, Brieger and McLean (2017, p. 600-601)

What are the Distance learning theories and principles and how they are applied in asynchronous and synchronous e-Learning?

Learning Theories

As distance education has entered our lives, the basic learning theories are adapted to the needs of online and blended learning and describe how information is absorbed, processed, and retained during online learning are constantly being explored.

In the following we will mention the ways how to apply pedagogical learning theories to online education:

Behaviorism

Behavior-based educational material design modifies the student behavior through steps developing reinforcement, feedback, and knowledge recognition. The educational content should include well-organized steps that the student should follow to obtain knowledge. The online content is structured in small sections and the formation of teaching objectives aim at changing the student's behavior. Here are some ways to apply behavioral principles based on online education: As people learn by observation, distance learning courses (such as MOOC) contain rich audiovisual material such reading text, watching video, audio, presentations, quizzes as well as gamification. The above audiovisual material facilitates the learning experience by integrating play into learning and is a good example of behavior theory. The modules are structured and include the teaching of concepts through a series of steps with expected results. At the end of the module the trainees are asked to move on to the next module or to demonstrate their knowledge if they answer correctly and get a positive reinforcement through feedback in a quiz (or forum) while redirecting the student to further study or corrective comments if there are wrong answers. Certificates can provide reinforcement and recognition and encourage students for further learning. (Maldonado et al, 2019).

Constructivism

Constructivism is an active process in which students actively construct knowledge as they try to understand their experiences. This process is constructed based on prior knowledge, mental structures, and existing beliefs. Learning is simply the internal adjustment of mental

patterns to incorporate new experiences. The problem-solving skills that are developed during the activities are unique to everyone. Learning takes place through discovery, experience, and modeling. The student actively participates using the learning material and has control over the learning. Also, the student follows his own pace of learning and to act he must be really motivated. Actions in the constructivist model improve the ability to solve the problems of those involved and work well within a team. At the same time, the educator plays the role of the mentor and his students, encouraging them to develop their own ideas and perceptions. The design of online material based on behavior is student-centered (Falcione et al, 2019). Learning activities are techniques that the student is actively involved in. Several online activities are offered through learning management systems to enhance active student participation. For example, asking a question or creating discussions (wiki, blog, forum) that involve prior knowledge, performing experiments, simulation exercises and solving real-world problems (gamification, you tube videos, storytelling apps). The teacher has the role of mentor, to encourage the student to participate and interact with the other students (Social presence). Such learning environments include teamwork, discussion forums, journal subscriptions, social networks (Kricke & Neubert, 2018).

Cognitivism

Cognitivism theory recognizes the existence of internal mental states such as beliefs, ideas, knowledge, motivation, etc. The basic functions concern the reception of information, processing, and construction. The design of training materials that serve the cognitivism principles help students to understand, process and integrate new knowledge. The learning should be self-directed and to improve critical thinking through discovery and analysis. Many activities related on technologies make the learning more effective in this direction. Learners remember images, slides, charts and other elements more effectively compared to the text-based information. The appropriate presentation and organization of information of the online content are related to the development of different kinds of learning skills, or ways of learning. Some examples of online activities include interactive power points, texts, sound, pictures, lecture, watching videos or demonstrations, and readings. Finally, as concerns the appropriate activities of the student, quizzes, matching exercises, self-assessments, case studies and problem-solving questions, scenario-based questions, and games are some of the best instructional tools. (Staddon, 2021).

Learning Theories for Online Education

As we have seen, several eLearning activities and applications based on basic learning theories have been developed and have implications in distance education (Anderson, 2011). In recent years, however, there has been a need for an organized learning and teaching framework in distance education (Mayes, 2013). The following are some of the existing eLearning approaches (Picciano, 2017).

Community of Inquiry (CoI)

The Community of Inquiry (CoI) is a theoretical framework that is based on a social constructivist model for the design of online learning and blended environments. This framework supports critical thinking, social and teaching presence as well as cognitive presence facilitating educational procedure in online education. (Anderson, 2017).

The Community of Inquiry (CoI) is an interactive model that has become popular in online and combined courses. Some popular practices in this context are using discussion boards, blogs, wikis, and videoconferencing.

Connectivism

Connectivism is a theoretical framework for understanding learning in a digital age. It emphasizes how internet technologies such as web browsers, search engines, wikis, online discussion forums, and social networks contributed to new avenues of learning. (Wikipedia, 2021).

Connectivism is since managing information based on new technologies and distinguishing between important and insignificant information is vital to learning. Knowledge and information flow and change due to huge data communication networks. George Siemens (2004), one of the first pioneers of MOOC, argues that learning and knowledge is a product of different perspectives, ideas and information accelerated by different technologies. Internet technology has shifted learning from internal, individualistic activities to group, community, and even crowd activities. Knowledge in a database must be linked to the right people in the right context to be classified as learning.

Online Collaborative Learning (OCL)

Collaborative learning refers to a didactic approach where students are encouraged or required to work together to solve problems or accomplish learning tasks. This learning theory is in line with the philosophy of social constructivism, where active participation in collective processes focuses on the social aspects-practices of the joint development of concepts and meanings and not on the practices of individuals in social environments. Collaborative learning, based on ICT, is considered one of the most promising methods, which offers increased opportunities to improve teaching and learning outcomes. The use of Web 2.0 for educational purposes is considered to change the context of collaborative learning, providing multiple opportunities for content and resource sharing, self-directed learning, collaborative learning, ubiquitous and lifelong learning. Some examples of collaborative learning are the following activities: Problem-based learning, jigsaw activities, think-pair-share, and peer review are just a few common examples. All the above strategies are adapted to distance education and various online collaboration tools that allow individuals to do things together online like messaging, file sharing, and assessment such as Zoom, Google Docs (Trietiak, 2021)

Blending with Pedagogical Purpose Model

Bosch (2016) reviewed and proposed a model that integrates pedagogy and technology for appropriate educational design. The model as shown in the figure is flexible and suggests different activities and approaches in different ways to make learning effective and to cover a wide range of learners. The model proposes a combination of distance activities or combined courses. The model consists of six components as shown in the Figure 1.46 and are:

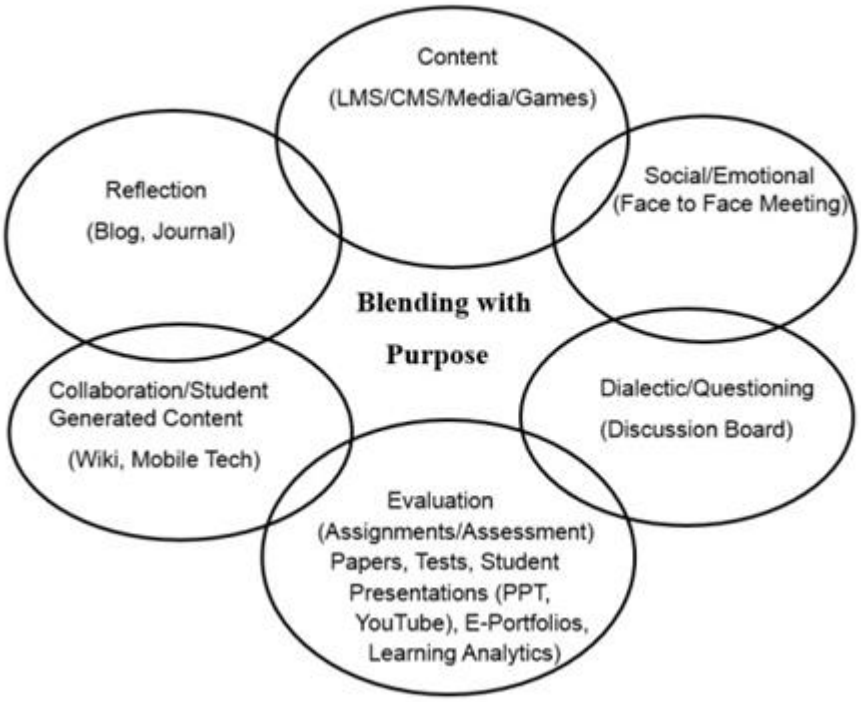

Figure 1.46 Blending with Pedagogical Purpose Model (Picciano, 2017)

a. Content comes in a variety of formats and course management (CMS / LMS) systems such as Blackboard, Canvas or Moodle and provides many visualization options including image, audio, video, and other multimedia. Games have also evolved and now play a bigger role in educational content (Picciano, 2017)

b. The second component of the model is social presence. Educational planning supports learners socially and emotionally as the learning process is a social activity. Trainees at all levels of education need support from trainers and this is a practice that is achieved through face-to-face meeting. Recommended as an activity in blended learning. (Kilis et al, 2019)

c. The third component of the model is based on the Socratic Method and allows educators to use discussion to build knowledge. The questions serve to develop critical thinking to evaluate knowledge and give their own perspective. This strategy is achieved in online education with forums such as VoiceThread or with an online discussion board. (Picciano, 2017)

d. Reflection is a key pedagogical strategy. It is based on the learner's ability to think, learn to reflect, expand his knowledge, and share it. Various technology tools allow this technique such as: Blogging and Use of Multimedia and Open Educational Resources (OER). (Chang, 2019).

e. Collaborative learning has been widely used in recent years and is considered a technique that helps the ability to solve problems between the groups. Email, mobile technology, and other forms of electronic communication are some of the technologies that enable collaborative learning. Wikis also allow students to create content that can be shared with others. (Falcione et al, 2019)

f. Evaluation of learning is considered one of the most important elements of the model. Learning management systems as well as applications and individual electronic platforms

offer a variety of assessment tools used for self-assessment as well as for trainee assessment. Assignments, e-portfolios, quizzes, tests, presentations are some of the valuable tools that can be used for evaluation. The teacher can have an e-portfolio for the student to evaluate the students during the educational process. At the same time the teacher evaluates his educational planning to see what worked properly and what did not. Weekly classroom discussions on discussion boards or blogs provide the instructor are some of the examples used and analytics are considered as the mechanisms for extracting this data set to improve learning and teaching (Angelo State University, 2021).

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Identification of the requirements for teaching management

Introduction

IO1 aims at the development of training content for the Higher Education Staff (HES) up-skilling in the use of ICT and online training in ME. It includes the mapping of the theoretical foundation and needs for the identification of learning outcomes, design of training content outline and development of training activities framework. As part of the task 'IO1.A1 Mapping the theoretical foundation and needs', GX, TV and UPatras investigated the requirements for teaching management, which are reported in this document, based on desk research. The three partners involved in this task particularly examined: the pedagogical approaches used in management education (TV), the teaching styles and strategies used in management education, and classroom management (GX) and the content focus in management education (UPatras). In the sections that follow we elaborate in each of the three sections.

Pedagogical approaches used in management education

Different types of pedagogical approaches have been proposed in the literature for their appropriateness to be used in management education. Those include, among others, the constructivist approach, the reflective approach (Betts, 2004), the collaborative approach, as well as problem-based learning, the design thinking methodology (Grębosz-Krawczyk & Otto, 2018) and the flipped classroom approach. Before digging into the specific approaches, it seems crucial to offer a brief introduction on the role played by the pedagogical approaches in the management education.

Why is it important talking about pedagogical approaches in management education?

Managers may be seen as key players in the strategic management process. New Information Technology and the high speed of technological change require managers with different skills. These skills have to be created by the whole education process using several teaching techniques. In fact, the educational process plays a key role in the new professional formation. Educational programs should be designed to prepare management students for a role as managers. Traditionally, higher education was designed to make students learn the body of knowledge available in the management field included into the theoretical framework developed in this area. Nowadays, higher education in management field has to be much more practically oriented and should consider the main features of a competitive economy. Management students should be stimulated to apply creative thinking during their development processes. Theory, practice, and reflection must continuously be linked to provide an actionable learning experience (Carneiro, 2004).

Universities need to intensify their efforts in creating an intellectual environment where students can learn to think and develop skills. One of higher education's goals is to transform management students into agents of change, whose effectiveness would be based on the quality of their scholarship and firmness of their decisions as managers.

In order to achieve this goal, increasing new approaches and methodologies have been undertaken within the universities. In the following sections we describe in detail the most common pedagogical approaches to learning.

The constructive approach

Constructivist teaching is based on the belief that learning occurs as learners are actively involved in a process of meaning and knowledge construction as opposed to passively receiving information. Learners are the makers of meaning and knowledge. Constructivist teaching fosters critical thinking and creates motivated and independent learners. The constructive approach is widely used in technical sciences, mathematics, operations analysis, and clinical medicine (Piaget, 1977; Kelly 1991). The doctrine of management accounting contains several important examples of managerial constructions, such as Return on Investment (ROI) measurement in profit center accounting. However, almost all these constructs were developed in firms or consulting offices. We argue that the constructive approach is used too little in management accounting research.

Constructions refer, in general terms, to entities that produce solutions to explicit problems. By developing a construction, something is created that differs profoundly from anything that existed before: constructions tend to create new realities. An important aspect of constructions is that their usability can be demonstrated through the implementation of the solution. The constructions that are important for our case are called managerial constructions, which refer to entities that solve problems that arise in the management of business organizations. The constructive approach is a research procedure to produce constructions. In management accounting this research approach is intended to produce managerial constructions.

The constructive approach can be characterized by dividing the research process into stages, the order of which may obviously vary from case to case:

1. Finding a practically relevant problem that also has research potential.
2. Obtaining a general and complete understanding of the topic.
3. Innovate, i.e., build a solution idea.
4. Demonstrate that the solution works.
5. Show the theoretical connections and research contribution of the solution concept.
6. Examine the scope of applicability of the solution.

The reflective approach

Reflective learning involves students thinking about what they have read, done, or learned, relating the lesson at hand to their own lives and making meaning out of the material. Reflective approach is an increasing feature of higher education and of continuous professional development (Dewey 1933; Kolb, 1984). It is taught in many different ways, usually through the medium of a written journal and it is usually assessed via specific learning outcomes Reflective practice is becoming a professional requirement. Why?

One reason deals with the governmental lifelong learning agenda, encouraging both wider participation and different participation in higher education. Skills are high on the list, and universities are becoming places of applied learning. Students on courses from Informatics to Hospitality Management to Psychology are being asked to address personal and professional skills, and to reflect on their ways of learning as well as the learning itself (Usher et al., 1997).

Secondly, in a work context, the loss of collectivity and collective understanding of work seems to be significant in encouraging personal reflection. The individualization of employment contracts, the rhetoric of 'empowerment' of individuals, and the drive for 'commitment' and 'innovation' lead to renewed pressure to individually motivate employees to promote

organizational advantage, for themselves and for the organization (Covey, 1992; Rousseau, 1995; Watson & Harris, 1999).

A third and last reason deals with the question of the 'professionalization' of management. Therefore, reflective practice can be about the demonstration of competence, which allows managers to hold their heads up in the world of other professionals.

On the professional side, reflection on what is done is designed to lead to questions about how the reflective practitioner can do things more effectively and efficiently. Whether this is for themselves, their organization or some fuzzy notion of the two is often not made clear. Innovative approaches to reflective practice in management education often seem to be embracing the notion of reflective practice as conforming to a kind of theological dogma, a notion of obedient development of a commonly accepted managerial competence that becomes allied and aligned with organizational practice and goals.

The collaborative approach

Collaborative Learning (CL) has become a well-established learning approach appropriate in ME. It emphasises the cooperative efforts of students, rather than transmission of knowledge. However, despite significant research which identifies the value of this approach, it is treated with ambivalence by many business educators. Collaborative learning has been established in many different ways for many years in a number of different fields of education. Therefore, it is necessary to give a brief overview of some terms. According to Whipple (1986) a collaborative education is meant as a pedagogical style which emphasizes co- operative efforts among students, faculty, and administrators. In fact, he argues that it stresses common inquiry as the basic learning process. Bruffee (1981) stated that collaborative learning personalized knowledge by socializing it, providing students with a social context of learning peers with whom they are engaged on conceptual issues. Sheridan et al. (1989) noted that the focus shifts from the transmission of knowledge to the generation of it. Furthermore, Applefield, Huber, and Moallem (2000) introduce the importance of collaborative social interaction and social context also with regards to dialectic constructivism. In fact, social constructivism represents the most general extant perspective of constructivism with its emphasis on social exchanges for learners' cognitive growth and role of culture and history in their learning. Briefly, it is interesting to note that social constructivism, strongly influenced by Vygotsky's (1978) work, suggests that knowledge is first constructed in a social context and is then internalized and used by individuals (Bruning, 1999; Eggan & Kauchak, 2004). Social constructivists believe that the process of sharing individual perspectives-called collaborative elaboration (Meter & Stevens, 2000)-results in learners constructing understanding together and this construction cannot be possible alone within individuals (Greeno, 1996).

However, common features which have been identified in the literature are learning being centered on student-based activities rather than being teacher focused, an emphasis on students assisting each other to find answers to areas of common inquiry rather than seeking answers from teachers learning being based on the solving of problems by data gathering, analysis and discussion by student groups.
Collaborative learning is recognized as an effective teaching methodology, in fact through collaborative learning, students learn to take advantage of each of team member's expertise and to experience first-hand the problems of coordinating a team effort. Studies have shown

that collaborative learning leads to a higher degree of satisfaction with the learning process, to a greater motivation to learn, and to better performance (Flynn, 1992).

Problem-based learning

Problem-based learning is a pedagogical approach that is gaining importance in higher education, using real problems or situations as a context for learning. Problem-based learning is an approach encompassing interdisciplinary learning. Problem-based learning (PBL) is a pedagogy specifically created for the integration of content knowledge and skill development (Figure 1.47). The PBL process develops critical thinking and problem-solving skills, problem synthesis skills, imagination and creativity, information search and evaluation skills, ability to deal with ambiguity and uncertainty, oral and written communication skills, and collaboration skills (Ungaretti et al., 2015). There is evidence that PBL supports the need to engage students, a key element in improving learning outcomes and student satisfaction (Dean & Jolly, 2012; Hallinger & Lu, 2011).

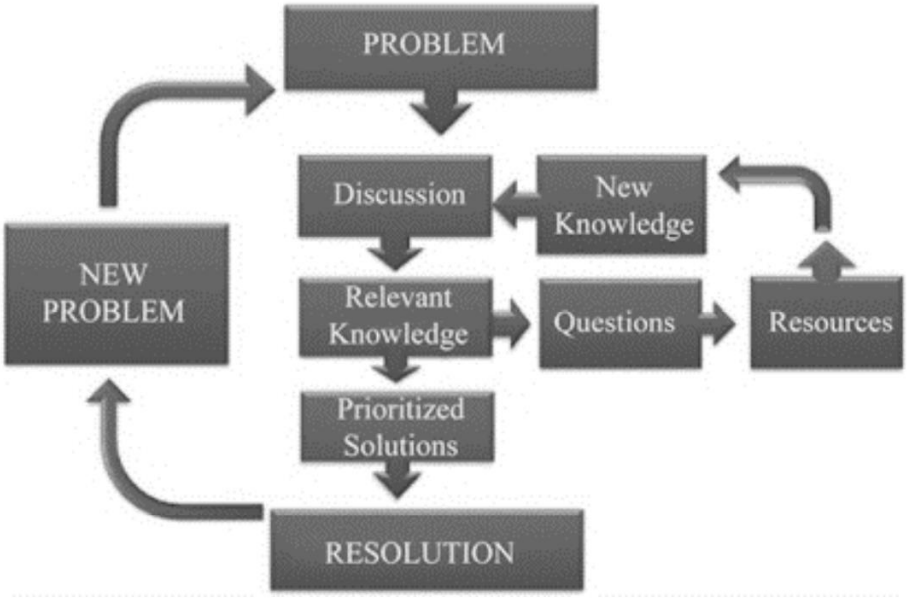

Figure. 1.47. The problem-based learning process (Ungaretti, et al., 2015).

In a problem-based learning model, students engage complex, challenging problems and collaboratively work toward their resolution. Teams identify what they already know what they need to know, and how and where to access new information that may lead to resolution of the problem (Lodz University of Technology, 2015b). The International Faculty of Engineering (IFE) of the Lodz University of Technology has compulsorily introduced the PBL method into the curriculum in the academic year 2008/2009. The new method of education covered the second-year students of all programs offered by IFE, including specializations “Business and Technology” and “Gestion et Technologie”. In the case of these specialisations, implemented projects usually concern management issues. Students often receive a real problem for a specific company to solve. Lecturers cooperate with many companies which allows them to create projects based on real problems, both in the field of strategic and operational management, as well as management in individual areas (such as logistics, human resources or finance). Three basic phases of the project can be distinguished: (i) Associating a problem situation; (ii) Creating ideas for a solution; (iii) Checking the solution combined with systematizing the acquired messages. The project includes: Familiarizing the group with the

subject; Problem identification; Gathering information: secondary research, discussions, study visits; Choice of the action plan; Defining the specific objectives of the project; Midterm presentation; Implementation of the project according to the plan chosen by the students; Formulation of recommendations; Preparation of the final report; Final presentation. A characteristic feature of the problem-based learning is the development of learning process in a group. The group is accompanied by a tutor who supports and motivates students. The task of the tutor is not to propose ready solutions, but to observe and assist students while solving problems and implementing the project. The lecturers do not have continuous control over the students, but only exert impulses, support, and give advice. The plan of activities is controlled by students. Therefore, the organization and shaping of the teaching process is a task for students. This learning method involves changing roles. The student assumes an active role in the group. Among the tutor's tasks, we can distinguish: observation of group work, assistance in case of organizational, communication or theoretical problems.

PBL is a teaching and learning method in which students learn about a subject through the experience of solving an open-ended problem. During the process of Innovative Pedagogical Approaches in Management Sciences PBL education, students learn to analyze, search, discuss, evaluate a topic or question, compare, choose, and finally search for and propose solutions. These competencies are crucial in case of effective teaching in the field of business for development of managerial skills.

Methodology of Design Thinking (DT)

In recent years focus has been growing on the innovative and profit generating value of design thinking in businesses. Several big successful international firms like General Electric, Procter & Gamble, Sony, and Philips use a design thinking perspective as a problem-solving apparatus across the company. While the importance of design in business has been well established, the contributions of design were best known and valued in innovation management including new product and new service development (Utterback et al., 2006). More recently, design thinking has moved from product and process design to becoming a key element in company strategy (Camillus, 2008; Fleetwood, 2005; Verganti, 2008). That is why, learning based on the design thinking is so important for future managers. Design thinking has been identified as making valuable contributions to business and management, and the numbers of higher education programs that teach design thinking to business students, managers and executives are growing (Nielsen & Stovang, 2015; Matthews & Wrigley, 2017). However, despite its growing importance, the implementation of design thinking into business education in several countries is slow and partial, although business education today is in a crisis as traditional pedagogic tools fall short of raising individuals who can meet the challenges of the 21st century (Çeviker-Çınar et al., 2017). Management education has added design thinking and design methods into current programs through building alliances with design schools. The challenge for business schools is to incorporate such notions and methods into more integrated formulation and delivery (Matthews & Wrigley, 2017).

Design thinking is a creative process that enables academics to meet students' needs and to raise innovative individuals, it emerges as a contemporary pedagogic tool. It is a method to develop and promote creativity and innovation in problem solving through the use of prototyping (Piotrowska, 2015). According to Brown (2008), design thinking includes: empathy, integrative thinking, optimism, and collaboration to transform the way a company develops products, processes, and strategy. Design Thinking Method has been used in

problem-based projects conducted at the International Faculty of Engineering for several years.

Flipped Classroom Approach

The flipped Classroom Approach in Higher education, due to the high standards it holds, becomes pressured to improve student learning and effectiveness (O'Flaherty & Phillips, 2015). One way that this can be achieved is by adding innovative ways to enhance student learning. The flipped classroom approach is an innovative technique that has positively been reported in management education literature (O'Flaherty & Phillips, 2015). The flipped classroom approach has several descriptions, but a commonality among definitions is that the flipped classroom takes teacher led instruction and replaces it with students taking ownership of their learning (O'Flaherty & Phillips, 2015). Students prepare out of class by watching videos or completing homework on an assigned topic. The class time is used for interactive learning among students. The educator in the flipped classroom approach facilitates learning and is able to guide students and provide individual help if needed. The flipped classroom approach puts the responsibility on the student, which in turn requires the student not only to own their education but become a master of the material (O'Flaherty & Phillips, 2015). The effectiveness of the flipped classroom approach is evident in the literature. The approach can be used in multiple settings and in different educational areas. Research on the flipped classroom approach is prevalent in management education. The success of the flipped classroom approach benefits management education. Characteristics of a good manager include being a problem-solver, a good listener, knowledgeable, and organized (Leonard, White, & Graves, 2009). The concept and theories prevalent in management education teach students how to be a successful manager through critical thinking and active learning. The flipped classroom approach technique mirrors the same concept (Kim et al, 2014). Many studies have been conducted on the effectiveness of the flipped classroom approach. O'Flaherty & Phillips (2015) found the approach contributes to the effectiveness of student learning. Others found the approach replaced the traditional lectures with active student-learning that provided well-balanced critical thinking, and improved information retention (Sajid et al, 2016). Emphasis on the use of the flipped classroom and role-play with particular management concepts such as conflict resolution, teamwork, and communication skills should be further explored.

The Flipped Classroom in Management Education Management skills are difficult to learn without practical application. This is one reason why management educators should consider the flipped classroom approach. There are several central concepts in management education that benefit from using innovative techniques in order to enhance students' ability to translate skills to real-world settings.

Use of simulation and gaming in education

According to Mahboubian (2010), in the context of management education simulation tools are used to help people understand the dynamics behind *"the choices that people make when running a business" (Ezz et. al, 2020)*.

One of the management areas in which the use of simulation is widespread is supply chain management. For example, Alarcon and Ashely (1999) present a simulation game to test various lean production strategies and their impact on project's cost and scheduling. Anderson and Morrice (2000) describe an implementation and development of a java-based, multiplayer, multigroup, and distributed simulation game based on the classical beer game. Further, in Anderson and Morrice (2000) a simulation game is proposed that is designed to teach service-

oriented supply chain management principles and to test whether managers can use them effectively.

A modified beer game is presented in Sparling (2002). Beer game is one of the most popular games in supply chain education that has introduced the problem. In Sparling (2002), the game is taken to the next level by helping students or managers to plan effectively ahead, to overcome these problems and manage an efficient supply chain *(Ezz et. al, 2020)*. According to Tao et al. (2009), there is a close relationship between educational simulation games and learning in the existing literature. Randel et al. (1992) discovered that educational simulation games can increase the motivation to learn. Terrell and Rendulic (1996) specifically indicated that games increase the students' internal motivation as well as their learning performances. Interestingly, Prensky (2003) pointed out that, from the perspective of successful learning, motivation is an indispensable condition and games just happen to provide such a condition. In their experiment, Schwabe and G th (2005) applied games in their learning activities, which not only increase the motivation of the students but also increase the opportunity for them to interact with each other. Mahboubian (2010) states that some simulations provide a safe environment in which to make mistakes and allow learning to take place without pulling expensive equipment offline.

Teaching styles and strategies in Management Education

Teaching styles

A complete theoretical understanding of teaching and learning styles is essential for management educators to delivering teaching of high quality, although they may be experts in their own field (Provitera & Esendal, 2008). Grasha (1994) in his work identified five teaching styles in management education: teaching as expert, formal authority, personal model, facilitator, and delegator. The five teaching styles are described in more detail below:

Expert: Possesses knowledge and expertise that students need. Expert teaching style strives to maintain status as an expert among students by displaying detailed knowledge. The instructor-as-expert attempts to challenge students to enhance their competence. The expert concentrates on transmitting information and requires that students be prepared to learn and use that information. The expert's information, knowledge, and skills are the combined advantage of this teaching style. The disadvantage is that, if overused, the display of knowledge may intimidate less experienced students. Also, the display of knowledge and skills may not always reveal their underpinnings.

Formal Authority: Possesses status among students because of knowledge, and role as a faculty member. The authority model is mostly teacher-centered and frequently entails lengthy lecture sessions or one-way presentations, during which students are expected to take notes or absorb information. The instructor establishes learning goals and expectations and rules of conduct, providing students with a learning structure. Students concentrate on correct, acceptable, and standard methods. The advantage is that the focus is on clear expectations and acceptable methods, while the disadvantage is that a strong investment in this style can lead to rigid, standardized, and less flexible ways of managing students and their concerns, while there is little or no interaction with the instructor.

Personal Model: Believes in teaching by personal example. This instructor establishes a prototype for thinking and behavior, then oversees, guides, and directs by showing how to do

things. A Personal Model instructor also encourages students to observe, then emulate his/hers approach. The advantage is an emphasis on direct observation and emulation of a role model. The disadvantage is that some instructors may believe that their approach is the best way, leading some students to feel inadequate if they cannot live up to the expectations and standards of the method they see.

Facilitator: Facilitators promote self-learning and support the students in developing their critical thinking skills and retaining knowledge that leads to self-actualization. This model emphasizes the personal nature of teacher-student interactions. The instructor guides and directs students by asking questions, exploring options, and suggesting alternatives. S/he encourages students to develop criteria to make informed choices and decisions. The instructor concentrates on the overall classroom goal of developing the capacity for independent action, initiative, and responsibility, while providing students with as much support and encouragement as possible. The advantage is the personal flexibility provided by an instructor's focus on students' needs and goals. This allows the student to explore options and alternative courses of action. The disadvantage is that this style can be time-consuming and challenges the instructor to interact with students and prompt them toward discovery rather than lecturing facts and testing knowledge through memorization.

Delegator: The instructor develops students' capacity to function in an autonomous fashion and is best suited for curricula that require lab activities, or subjects that warrant peer feedback, like debate and creative writing. The instructor encourages students to work on projects independently or as part of autonomous teams. S/he is available upon request as a resource person. This approach can be characterized as guided discovery and inquiry-based learning, in which the instructor takes an observer role that inspires students by working in tandem toward common goals. It has the advantage of helping students perceive themselves as independent learners, but it may cause instructors to misread student's readiness for independent work. Some students may become anxious when given autonomy.

In addition to the five teaching styles identified by Grasha (1994), another teaching style that has been proposed by scholars is the **hybrid or blended** one (Romanelli, Bird, & Ryan, 2009). According to Romanelli et al., courses employing hybrid teaching styles can reach as many different students as possible. This approach follows an integrated approach to teaching that blends the instructor's personality and interests with students' needs and curriculum-appropriate methods. It enables the instructor to tailor his/her styles to student needs and appropriate subject matter. Yet, there is a risk of having the instructor trying to be too many things to all students which might dilute learning.

Teaching strategies

The use of a variety of teaching strategies has been suggested by scholars, in efforts to reach and engage all students while enabling them to stretch their repertoire of learning styles at their own pace.

De Vita (2001) asserted that business professors and management educators must move toward a multi-style teaching approach (e.g., multimodality of information) if all students are to reach their potential in a multicultural classroom. For instance, in order to reach 'visual' learners, who learn better through visual images, educators may proceed with an extensive use of figures, tables, pictures, maps, video clips, etc., whenever appropriate.

Further to that, de Vita (2001) suggests that 'sensing' learners, who favor information that comes through their senses, like facts, should be exposed to concrete examples from the real world of business accompanied with more abstract notions or theoretical frameworks.

To satisfy the needs of 'active' learners, who like to learn through experience, educators should provide them with more opportunities for more learn-by-doing exercises which can also enhance students' problem-solving skills (e.g., in respect to financial management issues, such as hedging techniques). Also, group-projects and presentations as an assessed learning outcome are suggested for management education contexts. Along these lines, the case method and experiential learning have been proposed as useful teaching strategies towards offering valuable instruction in management education with real-world applications (Kolb, Boyatzis, & Mainemelis, 2014; Anoloui, 1995; Buch & Bartley, 2002).

To cater for the needs of 'reflective' learners, educators can introduce 'pauses' for reflection and evaluation during their teaching, to allow time for thinking, checking understanding and formulating questions as well as answers. Moreover, a variety of techniques can be used suiting both inductive learners (who prefer to learn starting from specific cases to then infer general principles) and deductive learners (who prefer to learn via the general to specific processes). For instance, educators may offer explanations that contain both (inductive and deductive) reasoning processes in their teaching.

Classroom management

Classroom management is an integral part of effective teaching and has gained attention in education, especially education psychology (Emmer & Stough, 2001). It a term used by teachers/ instructors to describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior by students (Amesi, Akpomi, & Amadi, 2014). Different definitions have been attributed classroom management vary, but usually those include actions taken by the teacher to establish order, engage students, or elicit their cooperation (Emmer & Stough, 2001).

Classroom management plays a vital role in instruction, including instruction in management and business education, for effective student learning. Effective classroom management involves clear communication of behavior and academic expectations as well as a cooperative learning environment, and is closely linked to issues of motivation, discipline, and respect (Amesi, 2010). Effective classroom management also aids preventing behavior problems through improved planning, organizing, and managing of classroom activities, and it encompasses better presentation of instructional material and better teacher-student interaction, aiming at maximizing students' involvement and cooperation in learning. To this end, it is important that teachers are be well equipped and knowledgeable on classroom management and ensure that techniques such as counselling approach, rote discipline, addressing the needs of students both in terms of what they teach and how they teach, facial expressions and gestures, and devoting time to each individual learner are employed in the classroom (Amesi, et al., 2014).

According to Bear, Cavalier and Manning (2005) it is essential for teachers to create a positive classroom community with mutual respect between them and their students. Fair rules and consequences should be established, and students should be given frequent and consistent feedback regarding their behavior. One way to establish this kind of classroom environment is through the development and use of a classroom contract. Classroom management, coupled with time management, does not only targets order in the classroom, but also it aims to optimize students' learning (Akpomi & Amesi, 2013).

Content focus in management education

Management in education in higher education can be seen as a combination of social and economic sciences and at the same time a comprehensive approach to all aspects of managing the information resources (Lewis et al., 1995) and processes associated with solving problems and decision-making (Carneiro, 2004). Teaching methods may include scenarios development, specific environments and simulated conditions, all significant tools for training competence and management skills (Carneiro, 2004). According to Carneiro (2004) the main objectives of the education in the field of management are:

- To develop essential skills for decision making and problem solving.
- To provide a set of integrated concepts in the field of management sciences which enables a student to possess the competencies of a free individual capable of independent judgment and a personal participation into the decision-making process.
- To provide a set of managerial attitudes, skills, knowledge, and understanding necessary to enable the student to become a highly compromised and competitive manager.

The core thematic areas in teaching management in the higher education institutions are the above:

- Basic Concepts
- Definition, Historical Development
- Environment of the Company
- Decision Making
- Management functions
- Leadership
- Motivation
- Communications
- Change Management
- Conflicts
- New Trends

The model shown in Figure 1.48 suggested by Carneiro (2004) offers an understanding of the integration process in what concerns theory, practice, and the role of management educators.

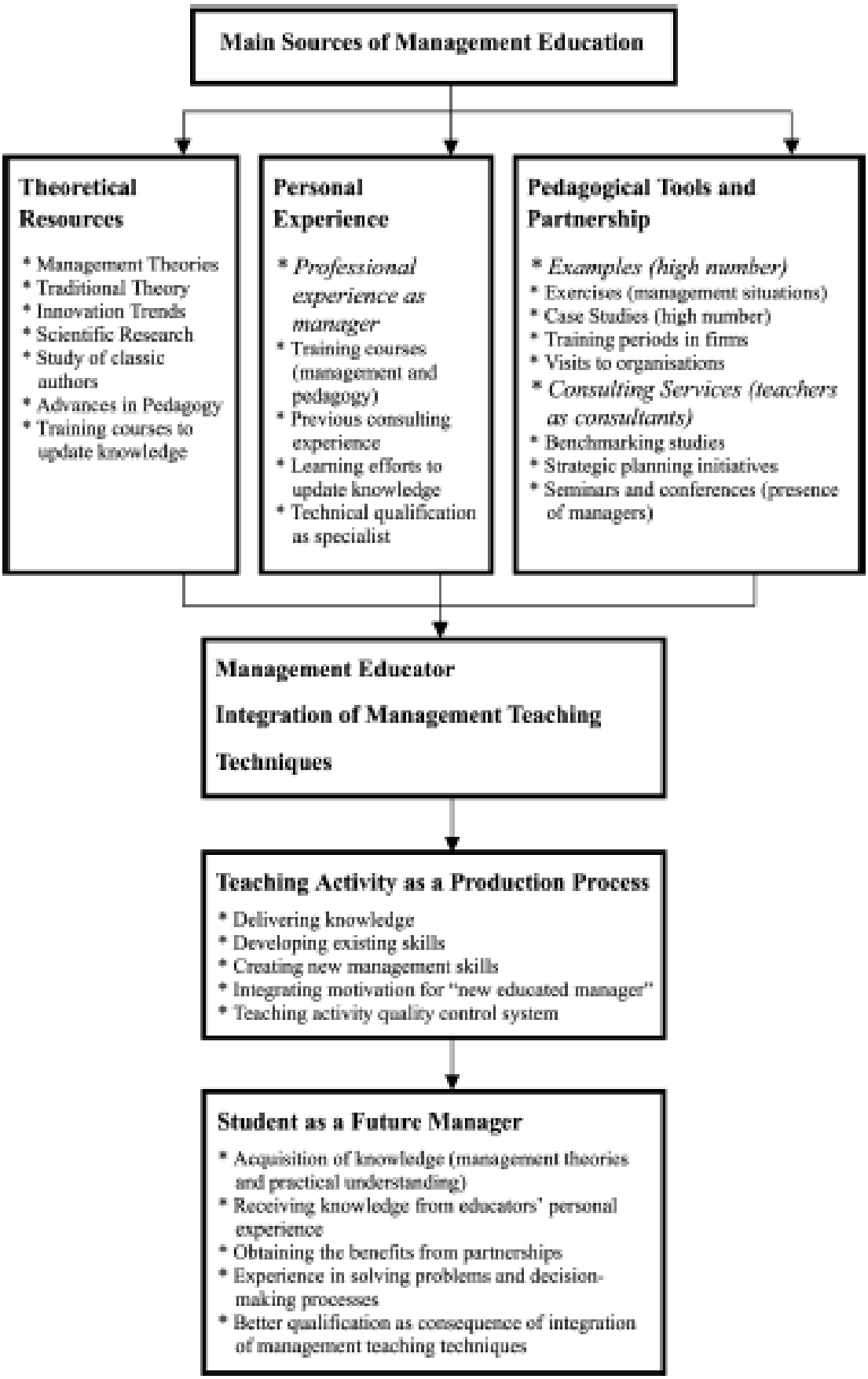

Figure. 1.48. Management education model adapted from Carneiro (2004)

Conclusion

In this report we document three pedagogical approaches that are appropriate to be used in management education, different teaching styles and teaching strategies, classroom management techniques and core content topics for teaching management in Higher Education.

Problem-based learning (PBL) and the Design Thinking Methodology (DTM) have been proposed by scholars as pedagogical approaches which are appropriate for teaching in management education, both encompassing interdisciplinary learning and promoting the development of students' soft skills, such as, critical thinking and problem-solving imagination and creativity and competences, such as, decision making. Particular examples of university curricula in which PBL (e.g., at the International Faculty of Engineering (IFE) of the Lodz University of Technology) and DTM (e.g., at the Lodz University of Technology) are encouraged, have been reported. A third approach is the Flipped Classroom approach, which has been claimed to have an effect on student learning, including in management education (O'Flaherty & Phillips, 2015).

In relation to teaching styles, we report five different profiles/ styles, as suggested by Grasha (1994): teaching as expert, formal authority, personal model, facilitator, and delegator; while another teaching style that has been proposed by scholars is the hybrid or blended style (Romanelli, Bird, & Ryan, 2009). Each style brings certain advantages and disadvantages, which are briefly discussed. Furthermore, we report on a variety of teaching strategies which have been identified in the literature. It is concluded that the teaching strategies to be adopted by an instructor, should match, and address the learning styles and needs of the students. It has been suggested by scholars, that business professors and management educators must move toward a multi-style teaching approach (e.g., multimodality of information) if all students are to reach their potential, especially in a multicultural classroom (De Vita, 2001). Moreover, classroom management plays a vital role in instruction, including instruction in management and business education, for effective student learning. Suggestions and recommendations from the literature are reported on how teachers and instructors in management and business education can achieve effective classroom management.

Finally, this report concludes with the mapping of content focus in management education. The main objectives of university curricula and programs in the respective fields are listed, followed by a list of the core thematic areas used in teaching management in the higher education institutions.

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IO1.A2 Identification of the training needs and learning outcomes

Need Analysis and General Learning Outcomes

Based on the mapping of the theoretical foundation and needs provided in the previous steps (IO1.A1) the general learning outcomes of OLMEdu in terms of knowledge, skills and competences are the following presented in Table 2.1. They are grouped in seven thematic areas based on the identified needs.

The OLMEdu training project aims to up-skill higher education staff in the use of ICT and online training in management education.

For this reason, OLMEdu will adopt the EQF level 6 (higher education). Therefore, the description of the general learning outcomes (knowledge skills and competences) was developed by reference to the descriptors of EQF level 6.

Table 2.1 Need gaps and general learning outcomes per thematic area

	Thematic areas	**Needs Gap**	**General Learning outcomes**
1	Planning and delivery of online training, employing design thinking approaches	● Difficulty in designing online interactive courses that actively engage students ● It is difficult for teachers to ensure that the interest of all students, especially those from disadvantaged backgrounds and younger students, remain undiminished and that they participate in online lessons. ● Difficulty in adapting subjects to online teaching. ● Problematic nature of practical exercises in an online environment. ● The digital delivery of courses, which allows the continuation of studies through online learning opportunities for students caused problems for teaching management online ● Needed knowledge of HES and experts regarding design thinking in digital material development.	**Knowledge** ● Know how to plan and deliver online teaching ● Know what design thinking is and how they make use of design thinking approaches in designing online training courses ● Be familiar with the state-of-the-art learning design theory to deliver online courses **Skills** ● Use design thinking approaches in designing online training courses **Competences** ● Be competent to adapt their teaching subjects to online teaching ● Be competent to design online learning experiences that reflect the needs of their students ● Advocate design thinking approaches in designing online training courses ● Develop flexibility and creativity is designing online courses

			● Be competent in combining asynchronous and synchronous e-learning in order to offer effective online courses Understand the implications of using digital technologies in higher education
2	E-learning, distance and active learning pedagogies and collaborative learning in online environments in ME	● Lack of knowledge on e-learning and distance learning ● Lack of knowledge about pedagogical approaches applied in online education ● Lack of knowledge on active learning pedagogies and collaborative learning in online environments ● Lack of knowledge for applying management education (ME) in online environments ● Lack of HES qualifications in online learning methods and use of ICT-based teaching ● Poor use of pedagogical approaches when using the digital education tools ● Poor HES abilities and skills to turn this modern, convenient, flexible, and ubiquitous mode of teaching to an interesting learning experience for their students	**Knowledge** ● Be familiar with distance learning theories, pedagogies and principles ● Be familiar with online learning theories and pedagogies ● Be familiar with active learning pedagogies and collaborative learning so as to facilitate online teaching in ME **Skills** ● Be able to apply active learning pedagogies and collaborative learning in online environments ● Be able to incorporate adult learning theories and principles when they apply online training in the field of management for higher education students **Competences** ● Be competent to adapt management education pedagogical approaches and teaching styles in online teaching ● Be competent to incorporate practice and reflection in online learning environments in ME ● Be competent to apply teaching techniques that support complex decision making and interaction in online environments

			● Be competent to apply pedagogical approaches that facilitates flexible and convenient online teaching that contribute to attractive learning experiences for students
3	E-learning platforms, learning management systems, new technologies and smart mobile applications for educational purposes	● Lack of knowledge on E-learning platforms and learning management systems ● Lack of knowledge related to the use of smart mobile applications for teaching ● Lack of familiarization with online teaching environments ● Uncertainty and difficulties for delivering knowledge online and adapting face-to-face processes virtually ● Lack of ICT skills and e-learning platforms management tools and services ● Lack of capability of HES to use platforms which use the English language ● Didactic problems, connected with the lack of familiarity with the e-learning platforms, less access to didactic resources (librarians, etc.) ● Needed knowledge of HES and experts regarding the use of open source digital tools and E-learning platforms and learning management systems.	**Knowledge** ● Know how to use e-learning platforms and learning management systems ● Be familiar with new trends in educational technologies that have positive impact in management education ● Be familiar with the use of mobile applications for educational purposes ● Be familiar with the challenges, trends, new technological advances in providing online training in management field **Skills** ● Use the most up-to-date technologies in online education ● Use open-source digital tools and e-learning platforms to provide online teaching in the management field ● Use mobile applications for educational purposes **Competences** ● Advocate the use of open-source digital tools, and e-learning platforms in management education ● Advocate the use of mobile applications for educational purposes

			● Use effectively e-learning platforms and other distance learning tools so as to engage students to actively participate in HE community
4	Web conferencing tools and online classroom management	● Lack of knowledge about the use of web conferencing tools ● Lack of skill on how to manage an online classroom ● Lack of skills to use online meeting technologies and collaboration platforms ● Lack of adequate communication, poor interaction and unsatisfactory cooperation and socialization in the academic context ● Risk students or points in education quality, confirming the value of real interactions and the need, for universities, to remain a place of sociality and growth for students ● Increased load for communicating now compared to the past ● Lack of Nonverbal communication ● Sense of separation from the audience/lack of interaction ● It is difficult for teachers to ensure that the interest of all students, especially those from disadvantaged backgrounds and younger students, remain undiminished and that they participate in online lessons. ● Difficulties of interacting with students	**Knowledge** ● Be familiar with the use of web conferencing tools ● Know about the principles of online classroom management **Skills** ● Use of web conferencing tools to support online training **Competences** ● Be competent to effectively use web conferences tool and manage an online classroom ● Be competent to boost the communication, interaction and cooperation in online learning environments ● Be able to support their students in building knowledge collaboratively in online environments ● Be competent to engage their students and motivate them to actively participate in web conferences ●
5	Digital content creation and data protection issues	● Lack of experience in creating digital teaching content ● Lack of available educational material ● Concerns about privacy, copyright and data protection	**Knowledge** ● Be familiar with the procedures and principles of online content creation

		● Needed knowledge of HES and experts regarding digital content creation: How to integrate audio, subtitles, notes, videos etc.	● Recognize data protection issues, GDPR and copyrights **Skills** ● Be able to create digital content ● Be able to handle data protection issues and apply GDPR ● Be able to handle copyright issues ● Be able to integrate audio, subtitles, notes, videos etc. in online content ● Be able to apply the rules related to copyright issues **Competences** ● Be competent to design interactive digital content so as to raise the interest of their students ● Be competent to design digital content that affect students' engagement, and other soft skills (critical thinking, reflection, problem solving etc.) and metacognitive skills ● Comply with data protection issues and GDPR
6	Online feedback, assessment, and monitoring	● Challenging implementation of online examinations ● Difficulty for the instructors to monitor students' behavior and check their contribution and progress, which may create a sense of isolation resulting in depression or other negative feelings ● Needed knowledge of HES and experts regarding the online feedback, assessment, monitoring and polling	**Knowledge** ● Be familiar with the processes of providing online feedback ● Be familiar with the variety of online assessment tools ● Know how to prepare online assessments for their students ● Learn the monitoring and polling processes

			● Know how to manage the online assessment processes **Skills** ● Use the appropriate tools to provide feedback to their students online ● Select and apply assessment procedures in online classroom ● Be able to monitor the learning process and check their students' progress ● Be able to implement polling **Competences** ● Be competent to provide online feedback to their students ● Be competent in implementing the adequate monitoring strategies so as to diminish the isolation of their students ● Be competent to design valid, reliable, sufficient, authentic, online assessment that motivates students to learn
7	Augmented and virtual reality technologies, online games, simulations etc. in ME	● Challenges in the provision of actionable learning experiences ● Lack of experience in the use of simulations, games and 3D virtual learning environments ● Technology is a key component for the success of management education processes. ● Digital skills, flexibility and creativity of teachers and trainers for the utilization of creative interactive solutions with online resources need to be employed.	**Knowledge** ● Know how to use augmented and virtual reality technologies, scenarios, games, simulations etc. in ME ● Be familiar with the use of creative interactive solutions with online resources for ME ● Be familiar with the creation of digital simulations and games

		• Lack of capability to digitalize simulations and games • Needed knowledge of HES and experts regarding augmented and virtual reality technologies, scenarios, games, simulations etc. in ME	**Skills** • Use augmented and virtual reality technologies, scenarios, games, simulations etc. in ME • Develop digital simulations and games **Competences** • Become more flexible in using augmented and virtual reality technologies, scenarios, games, simulations etc. in ME • Advocate the use of creative interactive solutions with online resources for ME • Be able to create pedagogical scenarios for integrating online simulations in the teaching practice • Be competent to design scenarios for online simulations that supports practice and reflection and facilitates actionable learning experiences

IO1.A3 Design of the training content outline

Modules and Learning Units Development

The OLMEdu training project aims to up-skill higher education staff in the use of ICT and online training in management education.

For this reason, OLMEdu will adopt the EQF level 6 (higher education). Therefore the description of the detailed learning outcomes (knowledge skills and competences) were developed by reference to the descriptors of EQF level 6.

The general learning outcomes identified are developed in more detail and fed the development of the structure and content (learning units) of the modules of OLMEdu as well as the selection of the appropriate training methods and techniques for their delivery.

Module 1: Distance learning and pedagogies in online management education

Objectives

Provide to the learners, the knowledge, and skills for understanding and applying learning theories, pedagogies, and principles appropriate for distance/online learning in management education, with emphasis on active and collaborative learning as well as reflective practices.

Learning outcomes

Knowledge
After the successful completion of this unit learners will: – Be familiar with learning theories, pedagogies, and principles, as applied in distance/online learning contexts. – Be aware of active learning pedagogies and practices applied in teaching management online – Be familiar with collaborative learning so as to facilitate online teaching of management – Discover adult learning theories and practices and their application in management education
Skills
After the successful completion of this unit learners will be able to: – Be able to apply active learning pedagogies and collaborative learning practices in distance learning and online learning environments. – Be able to apply teaching techniques that support complex decision making and interaction in online environments in management education
Competences
After the successful completion of this unit learners will – Be able to incorporate learning theories and principles applied in online training in the field of management for higher education students. – Be competent to adapt management education pedagogical approaches and teaching styles in online teaching. – Be competent to incorporate practice and reflection while teaching management in online learning environments – Be competent to apply pedagogical approaches in management education that facilitates flexible and convenient online teaching that contribute to attractive learning experiences for students.

- Be able to practice adult education techniques in teaching management in online environments
- Be able to adapt different teaching methodologies and activities in an online training course (role playing; Real like cases; gamification etc.)

Content (Learning Units)

- Learning theories, pedagogies, and principles appropriate for distance/online learning.
- Active learning pedagogies for online teaching in management education
- Collaborative learning for online teaching in management education.
- Adult learning theories and principles and their applications in online teaching in ME

Duration

- 16 hours (4 hours each Unit)

Module 2: Design Thinking Approaches

Objectives

Provide to the learner's knowledge and skills about design thinking concepts and principles. After the completion of the module learners will be able to practice methods, processes, and tools of design thinking so as to design and deliver effective online courses that promote students' positive attitudes and ensures real world situations' modeling.

Learning outcomes

Knowledge

After the successful completion of this unit learners will:

- Be familiar with the design thinking approach and its application in higher education
- Relate the design thinking approach with the learning theories applied in management education and online teaching
- Be familiar with the methods, stages, techniques and tools of design thinking applied in education design (content, material) and delivery (teaching strategy)
- Recognize the impact and effectiveness of design thinking in design and delivery of online teaching
- Learn how design thinking is used to conceive innovative online courses
- Understand the concepts of design thinking approaches in digital material development

Skills

After the successful completion of this unit learners will be able to:

- Design innovative online courses (content, material), using design-thinking approach
- Deliver online training using design thinking as a teaching strategy to achieve specific learning goals
- Apply the design thinking approach so as to model real world situations in online learning environments

Competences

After the successful completion of this unit learners will

- Be competent in developing online training using design thinking approach

- Be competent in practicing the methods, processes, and tools of Design Thinking in online training delivery
- Be competent in using design thinking approach for supporting team based and practice oriented processes in online educational environments

Content (Learning Units)

- State-of-the-art learning design theory for designing online courses
- Introduction to the design thinking approaches
- Design thinking in digital learning courses content and material development

Duration

- 16 hours

Module 3: Design and delivery of online training

Objectives

Provide to the learners knowledge and skills for designing and delivering effective online courses by combining asynchronous and synchronous e-learning and by using interactive techniques and practical experiences for engaging their students.

Learning outcomes

Knowledge

After the successful completion of this unit learners will:

- Be familiar with digital and instructional approaches to facilitate remote learning
- Be familiar with the key elements of e-courses design
- Be acquainted with the pedagogical and didactic characteristics and principles of asynchronous and synchronous modes of online training
- Describe advantages and limitations of asynchronous and synchronous e-Learning
- Recognize the importance of interaction for actively engage students in e-courses
- Identify the characteristics of online interactive courses that facilitate the actively engaging of students
- Discover how they can plan and deliver effective online teaching
- Learn how they can design practical experiences for their students delivered in online environment

Skills

After the successful completion of this unit learners will be able to:

- Perform the sequence of developing and delivering online courses
- Design interactive online courses enriched by activities that facilitate their students' engagement
- Be able to combine asynchronous and synchronous e-learning

Competences

After the successful completion of this unit learners will

- Be competent to plan and design online training courses choosing the appropriate online training approaches
- Be competent to adapt their teaching subjects to online teaching environments
- Be competent to design online learning experiences that reflect the needs of their students

- Develop flexibility and creativity is designing online courses
- Be competent in combining and balancing asynchronous and synchronous e-learning in order to offer effective online courses
- Be able to evaluate the implications of using digital technologies in higher education
- Be able to deal with risks of asynchronous and synchronous e-learning

Content (Learning Units)

- Design and delivery of online courses
- Characteristics, principles and use of asynchronous and synchronous e-learning
- Design of students assignments and activities in online environment
- Design online interactive courses for actively engaged students

Duration

- 16 hours

Module 4: Distance Learning Educational technologies, digital tools, and mobile applications

Objectives

This module is practically oriented. It aims to deliver the learners knowledge and skills on the available Open-Source Distance Learning Technologies, Digital Tools and Mobile Applications and how they can be used for educational purposes in higher education. The objective is to educate the learners and provide them with the foundations, guidelines and practical instructions on how to exploit them in practice for providing online teaching in ME.

Learning outcomes

Knowledge

After the successful completion of this unit learners will:

- List and critically discuss the available e-learning platforms and learning management systems (LMS).
- Explain how digital tools can be used in combination with e-learning platforms and LMS.
- Utilize e-learning platforms and LMS for providing online teaching in ME.
- Learn how to integrate digital tools with the e-learning platforms and LMS to deliver effective online teaching.
- Explain the importance of mobile applications in online course delivery.
- Learn how to use mobile applications for effective online teaching.
- Describe advantages and limitations of using learning platforms, LMS, tools and mobile applications.
- Discuss critically the challenges and trends of technology in providing online teaching in ME.
- Identify and evaluate when and how to use Distance Learning Technologies, Digital tools and Mobile Applications in ME.
- Outline the importance of using Information and Communication Technologies (ICTs) in asynchronous and synchronous e-learning in ME.

Skills

After the successful completion of this unit learners will be able to:

- Use the most up-to-date technologies in online education.

– Use open-source digital tools and e-learning platforms to provide online training in the management field. – Use mobile applications for educational purposes in ME.
Competences
After the successful completion of this unit learners will be competent to: – Use ICTs for the delivery of online courses. – Identify and use the appropriate ICT tools for different courses. – Use in practice and effectively e-learning platforms and other distance learning tools. – Examine and realize the implications of using ICTs and tools for online course delivery. – Develop with confidence state of the art online courses for management education.

Content (Learning Units)

● Distance Learning Platforms and Tools. ● Mobile Applications for Educational Purposes. ● Challenges and Trends in using ICTs and Tools in Management Education. ● Using ICTs and Tools in Management Education.

Duration

● 16 hours

Module 5: Web conferencing tools and online classroom management

Objectives

In module 5 learners will be able to define, access and select web conference tools to provide targeted support in the educational process, to use digital technologies to foster and enhance learner collaboration and communication skills.

Learning outcomes

Knowledge
After the successful completion of this unit learners will: – Be familiar with the use of web conferencing tools – Be aware of the principles of online classroom management – Identify the functions of the web conferencing tools that facilitate the online teaching
Skills
After the successful completion of this unit learners will be able to: – Use of web conferencing tools to support online training – Be able to combine the functions of web conferencing tools to improve the online teaching – Be able to use the appropriate web conferencing tools for different learning purposes
Competences
After the successful completion of this unit learners will – Be competent to use effectively web conferences tool and manage an online classroom – Be competent to boost the communication, interaction and cooperation in online learning environments

- Be able to support their students in building knowledge collaboratively in online environments
- Be competent to engage their students and motivate them to actively participate in web conferences

Content (Learning Units)

- Web conferences tools in Education (Definition, Role 's in Education, Different Web Conferences tools, Best Practices)
- Managing an e-learning course (Common features/applications of Web Conferences tools, Role of features of Web Conferences tools in education, Best Practices)
- Effective e-learning classroom with Web Conferencing (Fundamentals of Effective Online Presentations, Engaging your Audience, Best Practices)
- Improve Communication and Collaboration Skills in Web Conferencing, Best Practices

Duration

- 12 hours (3 hours per Unit)

Module 6: Digital content creation and data protection issues

Objectives

In the Module 6, learners will be able to define, select and create digital content for different educational purposes. Also, learners will know how GDPR, copyright and licenses apply to digital content, and how to reference sources and attribute licenses

Learning outcomes

Knowledge

After the successful completion of this unit learners will:

- Be familiar with the procedures and principles of online content creation
- Define different types of digital content and identify their use for different educational purposes
- Be aware of how digital services use a "Privacy policy" and GDPR requirements to inform how personal data is used
- Recognize data protection issues, GDPR and copyright

Skills

After the successful completion of this unit learners will be able to:

- Create interactive presentations
- Handle data protection issues and apply GDPR
- Handle copyright issues

Competences

After the successful completion of this unit learners will

- Be competent to design interactive digital content so as to raise the interest of their students
- Be competent to design digital content that affect student's engagement, and other soft skills (critical thinking, reflection, problem solving etc) and metacognitive skills
- Be competent to integrate an online presentation (audio, sound, assessment tools, etc)
- Comply with data protection issues and GDPR

– Follow the rules about copyright

Content (Learning Units)

● Digital Content for online teaching (Definition, Types,) ● Creating Digital Content for an effective online teaching (Different digital tools for teaching/assessment/communicating tools, interactive presentations, Best Practices) ● Protecting personal data and privacy ● Copyright, GDPR and licenses

Duration

● 12 hours (3 hours per Unit)

Module 7: Online feedback, assessment and monitoring

Objectives

Provide to the learners the knowledge and skills for effectively organizing and implementing online examinations in HE as part of summative assessment purposes, but also for effectively providing online feedback and monitoring students' behavior and learning progress, as part of formative assessment purposes.

Learning outcomes

Knowledge
After the successful completion of this unit learners will: – Become knowledgeable of different assessment methods (e.g., summative, formative, authentic assessment) that can be applied in online learning environments. – Become knowledgeable of different assessment activities that can be applied in online learning environments, accounting also for their reliability and validity. – Become familiar with the variety of online assessment tools. – Be aware of how to prepare online assessments for their students. – Be familiar with monitoring and polling processes.
Skills
After the successful completion of this unit learners will be able to: – Select and apply assessment methods in an online classroom. – Use the appropriate tools to implementing different assessment activities online (e.g., providing written feedback to their students). – Monitor the learning process and check their students' progress. – Implement polling activities.
Competences
After the successful completion of this unit learners will – Be competent to design and set up online assessment activities, accounting for their validity and reliability. – Be competent to use the appropriate tools to implementing different assessment activities online (e.g., providing written feedback to their students). – Be competent in implementing the adequate monitoring strategies so as to diminish the isolation of their students. – Be competent to implement polling activities.

– Be competent to select the appropriate assessment methods for online assessment.

Content (Learning Units)

- Assessment methods
- Assessment activities
- Online assessment tools and processes
- Monitoring and polling processes
- Good practices of assessment procedures in online environments

Duration

- 20 hours (4 hours per unit)

Module 8: Digital Reality in Management Education

Objectives

This module provides to the learners the knowledge and skills on cutting edge technologies that blur the boundaries between the physical and virtual world. The aim of the course is to introduce to the learners the main concepts of digital reality and the leading-edge technologies: 360° videos, Virtual, Augmented and Mixed Reality, guidelines and hands-on experience on how to exploit them in practice for providing online teaching in ME.

Learning outcomes

Knowledge

After the successful completion of this unit learners will:

- Comprehend and describe the concepts of immersive and non-immersive experiences.
- Identify and critically assess digital reality technologies level of immersive experience.
- List and discuss digital reality technologies: 360° videos, Virtual, Augmented and Mixed Reality.
- Recognize and explain how each technology can be used in online learning.
- Discuss critically good practices of digital reality used for educational purposes.
- Identify and evaluate when and how to use digital reality technologies and tools in ME.
- Learn how to design and develop scenarios for online simulations using digital reality for developing management, problem solving and soft skills in ME.
- Digitize the simulation scenarios using a digital reality tool.

Skills

After the successful completion of this unit learners will be able to:

- Use digital reality technologies in ME
- Apply digital reality in practice for designing scenarios in ME
- Digitize simulations of ME scenarios using a digital reality tool.

Competences

After the successful completion of this unit learners will be competent to:

- Evaluate when and how to use digital reality technologies in ME
- Identify and use the appropriate digital reality tools for different courses.
- Effectively use digital simulations in ME.

- Design scenarios for online simulations that support practice and reflection and facilitates actionable learning experiences.
- Design scenarios for online simulations for developing analytic and complex decision-making skills.
- Digitize management education scenarios using a digital reality tool.

Content (Learning Units)

- Digital Reality Concepts and Technologies.
- Good Practices of Digital Reality used for Educational Purposes.
- Challenges and Trends in using Digital Reality in Management Education.
- Using Digital Reality Technologies and Tools in Management Education.

Duration

- 16 hours

IO1.A4 Training and Assessment Methodology

Training methodology

Introduction

Scope

The scope of this report is to describe the training methods to be employed in the training approach of OLMEdu project. This document builds the theoretical foundation of the OLMEdu training and delivery for educational staff in Higher Education (HES) institutions and for training organizations involved in the management field. The OLMEdu training methodology follows the asynchronous mode of learning, adopting learner-centered, engaging and interactive types of content. The approach will be based on active, experiential and transformational learning. This will include technology-driven project work, games, scenarios, simulations and other process-oriented learning techniques in an on-line learning environment.
The report includes:

(a) The theoretical background of the recommended training methodology in OLMEdu,
(b) The recommended training methodology in OLMEdu, and
(c) The basic principles for the development of the training material and toolkits.

Audience of this document

The audience of the training methodology are: (a) the OLMEdu partners who shall undertake the implementation of the project's training, (b) the HEIs which implement up skilling activities for their training personnel involved in management education, (c) the HES in management education (ME) field, and (c) other training organizations involved in management education.

Content elements of the training

Target group of the training

The target groups of the training methodology are educational staff in higher education and in other training organizations that offer management education.

Structure of the training

The modular form of the curriculum allows the flexible implementation of the courses on the basis of the participants' needs. The learners will be able to choose their modules to study according to their needs and the study of the material can take place at their own pace.
Up-skilling needs can be met through a diversity of routes, depending on the participants' characteristics, needs and preferences. For example, only one module or specific unit from each module can be selected by the learner according to the competences, skills and knowledge he/she wants to acquire.

The curriculum is designed to be delivered following the asynchronous mode of learning, adopting learner-centered, engaging and interactive content types. The approach will be based on active, experiential and transformational learning, including technology-driven project work, games, scenarios, simulations and other process-oriented learning techniques in an on-line learning environment. The recommended structure and duration of each module is presented in Table 4.1.

Table 4.1 Structure and duration of modules

Modules	**Duration**

Module 1. Distance learning and pedagogies in online management education – Learning theories, pedagogies, and principles appropriate for distance/online learning. – Active learning pedagogies for online teaching in management education – Collaborative learning for online teaching in management education. – Adult learning theories and principles and their applications in online teaching in ME	**16 hours**
Module 2. Design thinking approaches – State-of-the-art learning design theory for designing online courses – Introduction to the design thinking approaches – Design thinking in digital learning courses content and material development	**16 hours**
Module 3. Design and delivery of online training – Design and delivery of online courses – Characteristics, principles and use of asynchronous and synchronous e-learning – Design of students assignments and activities in online environment – Design online interactive courses for actively engaged students	**16 hours**
Module 4. Distance Learning Educational technologies, digital tools and mobile applications ● Distance Learning Platforms and Tools. ● Mobile Applications for Educational Purposes. ● Challenges and Trends in using ICTs and Tools in Management Education. ● Using ICTs and Tools in Management Education.	**16 hours**
Module 5. Web conferencing tools and online classroom management – Web conferences tools in Education (Definition, Role ‘s in Education, Different Web Conferences tools, Best Practices) – Managing an e-learning course (Common features/applications of Web Conferences tools, Role of features of Web Conferences tools in education, Best Practices) – Effective e-learning classroom with Web Conferencing (Fundamentals of Effective Online Presentations, Engaging your Audience, Best Practices) – Improve Communication and Collaboration Skills in Web Conferencing, Best Practices	**12 hours**
Module 6. Digital content creation and data protection issues – Digital Content for online teaching (Definition, Types,) – Creating Digital Content for an effective online teaching (Different digital tools for teaching/assessment/communicating tools, interactive presentations, Best Practices) – Protecting personal data and privacy – Copyright, GDPR and licenses	**12 hours**

Module 7. Online feedback, assessment, and monitoring – Assessment methods – Assessment activities – Online assessment tools and processes – Monitoring and polling processes – Good practices of assessment procedures in online environments	**20 hours**
Module 8. Digital Reality in ME ● Digital Reality Concepts and Technologies. ● Good Practices of Digital Reality used for Educational Purposes. ● Challenges and Trends in using Digital Reality in Management Education. ● Using Digital Reality Technologies and Tools in Management Education.	**16 hours**
Total duration of asynchronous e-learning	**124 hours**

Theoretical background of the recommended training methodology in OLMEDU

The theoretical background of the recommended training methodology in the frame of OLMEdu project is leaning on the following pillars:

- Constructivism
- Experiential learning
- Transformative learning
- Independent/autonomous learning
- Active learning
- Pedagogical approaches in management education
- Online training theories
- Adult education principles
- Online training principles

Constructivism

The OLMEdu training approach adopts the constructivist learning theory. In the constructivist approach, the learners are in the centre of the learning process and active creators and constructors of their own knowledge (TIME, 2016). By employing active learning trainees have significant autonomy and control over the learning process. The main implications of constructivism adopted in OLMEdu courses [TIME, 2016; Cedefop, 2010) are:

- The learners construct their own reality based on previous experience and beliefs.
- Their pre-existing knowledge is very important, which through training is explored, addressed and new knowledge is built on it
- The learners reflect on their assumptions, expectations and previous experiences and develop critical thinking by analyzing and evaluating new knowledge in safe environments. By this way, they are able to understand their profession in a new way.
- They are responsible for their own learning, by participating actively in the training process and exploring.
- They develop metacognitive skills, and are able to analyze, monitor and evaluate the learning process. They need to know how to learn and develop their own effective learning strategies.
- They construct their own reality and interpret information in different ways.
- The assessment is performance oriented and does not claim absolute objectivity. It is mainly based on portfolios, projects, case studies, self-evaluation etc.

Elements from the socio-constructivism learning theory are also employed in OLMEdu training. The social constructivism suggests that knowledge is built when people engage socially in conversation and action on shared projects or problems (Bélanger, 2011). The key concepts that Bélanger (2011) have shown are:

- Central role of the learner (person acting) in his/her context
- Cognitive conflict, contradiction, and resolution of dilemma
- Reflective practice and abstraction
- Self-organisation and internal restructuring
- Proximal development zone (PDZ)
- Learning as an interactive process between subjective construction and external structure

Additional concepts of the socio-constructivist approach:

- Situated learning
- Social mediation, dialogue, interaction
- Dialectics between the subject AND the socio-cultural structure, between the acting person AND the constituted order
- Community of practices
- Peripheral legitimate participation
- Holistic approaches: the cognitive, conative and psycho-motor resources mobilised by the person in her action context
- Interactive process between subject and his context

The basic principles and pedagogical implications according to this theory are shown in Table 4.2.

Table 4.2 Basic principles and pedagogical implications according to social constructivism

Epistemological orientation:	Learning is explained by internal processes, but the emphasis is on social mediation; learning is contextualised
Analytical units:	Cognitive processes, social interaction processes, and acknowledgeable results Learner's regulations, representations, strategies and procedures
Forces that drive learning:	Social cognitive conflict, problem situations and the notion of proximal development zone
Learning situation, structure:	Open situations permitting discovery and exploration Scaffolding (teacher or peer interventions)
Mistake status:	Learner's mistakes are a source of learning, because they generate cognitive conflict Social confrontations, interactive regulations as source of social cognitive conflict
Learning sequence:	Spiral sequence: from complex to simple to complex again The sequence takes place in a relevant context

Adapted from Allal (1998) and Astolfi (1997) cited in Bélanger (2011)

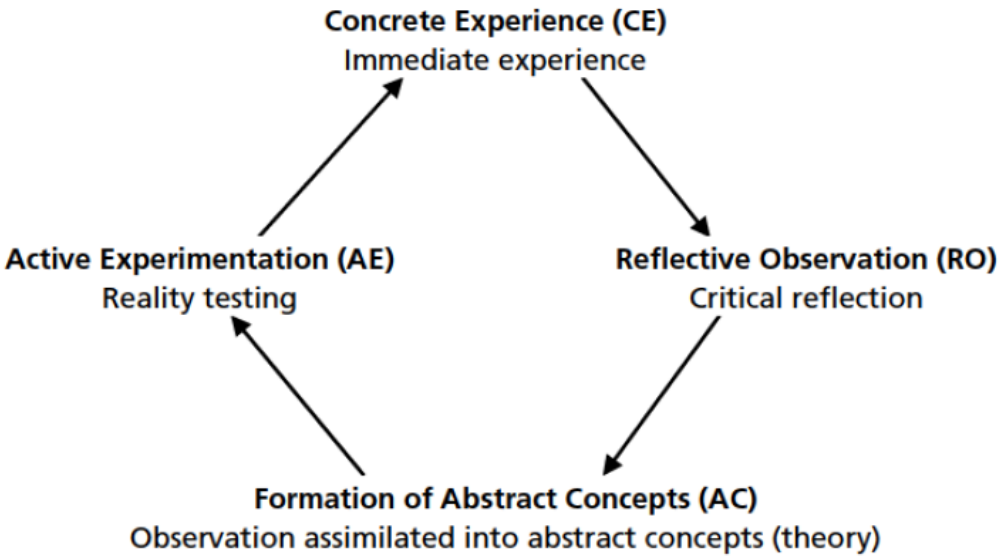
Experiential learning

The OLMEdu training methodology is also based on experiential learning approach. According to Bélanger (2011) the key concept of experiential learning is the reflective practice:

- Based on experience and prior (tacit and explicit) knowledge
- Focused on problem definition (discovering and revisiting) and problem solving
- Making judgment on action to be taken

- Action oriented, deliberate action

Kolb in early 70s developed a model, made up of consecutive steps, to better understand how individuals learn from their experience. He defined learning as "the process whereby knowledge is created through the transformation of experience", with knowledge resulting from "the combination of grasping and transforming experience" (Kolb, 1984, p. 41) (see Figure 4.1).



Source: Kolb (1984, p.141) cited in Bélanger (2011)

Figure 4.1 Experiential Learning Cycle (ELC)

The key concepts of Kolb's Experiential Learning Theory (ELN) are:

- Learner-centered training approach
- The key role of experience in learning life course
- Learning is, initially, an inductive process
- Experience is turned into learning through reflection
- Spiral learning
- Experience-based learning system
- Autonomy-adaptation

Transformative learning

The OLMEdu is also based on the transformative learning approach. "*Transformative learning is learning that transforms problematic frames of reference (...) to make them more inclusive, discriminating, open, reflective, and emotionally able to change. Such frames of reference (...) are more likely to generate beliefs and opinions that will prove more time or justified to guide action.*" (Mezirow,2003, p. 59).

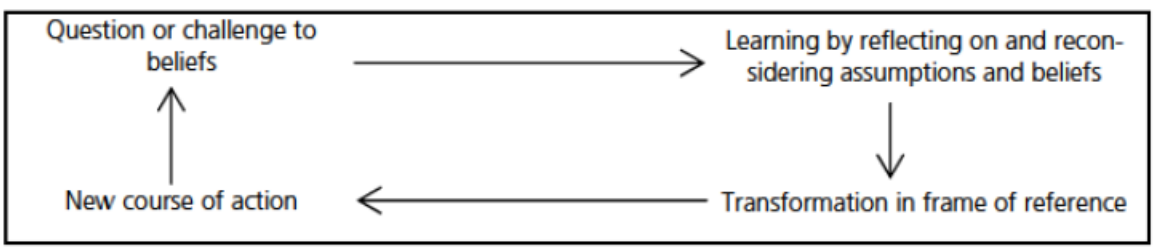


Figure 4.2 Mezirow's transformative learning process as an ongoing cyclical development
Source: Bélanger (2011, p.44)

Drawing from Bélanger (2011), the key concepts of transformative learning which are applied in OLMEdu are:

- Social change: adaptive or transformative
- Interpretation of experience and of knowledge
- Scheme of reference, meaning, perspective (lens through which one sees his or her reality, the world)
- Emancipation: freedom from previous beliefs and interpretation that distort reality
- Critical reflection of assumptions through which one revises usual ways of seeing oneself and one's relationship, habits of mind or points of view
- Decentration, distanciation, perspective taking
- Banking education (Freire) (traditional education system, metaphor of students as containers into which educators must put knowledge)
- Felt {expressed) needs and causes of felt needs
- The mobilizing words (Freire) (mobilization of multiple resources by the learner and the interactivity between the learner and the environment)
- Catalyst role of educator

Independent / autonomous learning

Independent / autonomous learning can be defined as the learning process in which the learner is able to direct, control and organise learning without the assistance of a teacher/ instructor. This requires strong self-motivation and self-orientation on behalf of the learner. The learner needs to possess adequate critical thinking skills, insofar as to have the capacity to (SESBA, 2018):

- Identify other people's positions, arguments and conclusions
- Evaluate alternative points of view
- Weigh up opposing arguments and evidence fairly
- Identify false or unfair assumptions
- Recognize techniques used to make certain positions more appealing than others, such as false logic and persuasive devices
- Reflect on issues in a structured and coherent manner
- Draw conclusions about whether arguments are valid and justifiable, based on good evidence and sensible assumptions
- Present a point of view in a structure, clear, well-reasoned way that convinces others.

Active Learning

Active Learning is an educational process where learners become vigorously and actively engaged in assimilating the material being explored, rather than passively absorbing what taught (LIT, 2021). Active learning promotes the comprehensive and integrated development of cognitive, affective (emotional) and psychomotor domains and it enables deeply embedded learning, skill development and values appraisal (LIT, 2021).
Active Learning can take place not only in face to face, but also in blended and/or online learning environments (LIT, 2021). The learning environment and learning climate is one of interaction, collaboration and stimulation. Its effectiveness depends upon creation and co-creation of a learning community. Learners are encouraged to take responsibility for their own engagement, by responding positively to the learning stimulus and; through their participation are actively engaged in contributing to the learning.

Active Learning can range from traditional instructional models to more constructivist and co-constructivist approaches (inclusive of face to face, blended and online learning). Active learning for learners' engagement embraces new possibilities afforded by technology enhanced learning and the flipped classroom.

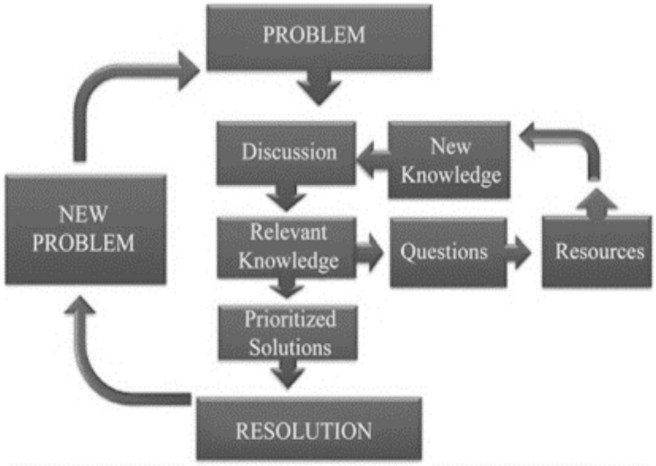
According to the report of LIT (2021) active Learning embraces a variety of pedagogical interactions: Learner to Content; Learner to Learner; Learner to Facilitator/Teacher; Learner to Industry/ professional practice settings. Active Learning methodologies can occur along a continuum from: individual-based activities, to pair and group-based episodes of collaborative engagement. It also includes a pedagogical continuum, ranging from episodic encounters (pair and share/minute papers) to more extend and sustained active learning strategies including Problem Based Learning (PBL) extended case-study method and enquiry-based learning.

Pedagogical approaches in management education

Since OLMEdu aims to the up-skilling of HES in the use of ICT technologies and online training in management education the following pedagogical approaches (Table 4.3) in management education are taking into consideration.

Table 4.3 Management education pedagogies

The reflective approach	It involves learners thinking about what they have read, done, or learned, relating the lesson at hand to their own lives and making meaning out of the material. Reflective approach is an increasing feature of HE and of continuous professional development (Dewey 1933; Kolb, 1984). It is taught in many different ways, and it is usually assessed via specific learning outcomes.
The collaborative approach (CL)	CL emphasizes cooperative efforts rather than transmission of knowledge, it personalizes knowledge by socializing it (Bruffee, 1984), providing learners with a social context of learning peers with whom they are engaged on conceptual issues. The focus shifts from the transmission of knowledge to the generation of it (Sheridan et al., 1989). CL is connected with social constructivism (Applefield, Huber, and Moallem, 2000). Learning is being centered on student-based activities rather than being trainer focused and gives emphasis on students assisting each other to find answers to areas of common inquiry rather than seeking answers from trainers. Learning is based on problems solving using data gathering, analysis and discussion by learners' groups. CL is recognized as an effective teaching methodology; learners learn to take advantage of each of team member's expertise and to experience first-hand the problems of coordinating a team effort. It led to a higher degree of satisfaction with the learning process, to a greater motivation to learn, and to better performance (Flynn, 1992).
Problem-based learning (PBL)	Problem-based learning is a pedagogical approach that is gaining importance using real problems or situations as a context for learning. It is an approach encompassing interdisciplinary learning and pedagogy specifically created for the integration of content knowledge and skill development (Figure 4.3). PBL develops critical thinking and problem-solving skills, problem synthesis skills, imagination and creativity,

	information search and evaluation skills, ability to deal with ambiguity and uncertainty, oral and written communication skills, and collaboration skills (Ungaretti et al., 2015). It supports the need to engage learners, a key element in improving learning outcomes and learner satisfaction (Dean & Jolly, 2012).  ***Figure 4.3*** The problem-based learning process (Ungaretti, et al., 2015). In a PBL model, learners engage complex, challenging problems and collaboratively work toward their resolution. Teams identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem (Lodz University of Technology, 2015). PBL is a teaching and learning method in which learners learn about a subject through the experience of solving an open-ended problem. During the process learners learn to analyze, search, discuss, evaluate a topic or question, compare, choose, and finally search for and propose solutions.
Methodology of Design Thinking (DT)	Design thinking has moved from product and process design to becoming a key element in company strategy (Camillus, 2008) and for this reason learning based on the design thinking is so important for future managers. DT is a creative process that enables trainers to meet learners' needs and to raise innovative individuals, it emerges as a contemporary pedagogic tool. It is a method to develop and promote creativity and innovation in problem solving through the use of prototyping (Piotrowska, 2015). It includes (Brown, 2008): empathy, integrative thinking, optimism, and collaboration to transform the way a company develops products, processes, and strategy.
Flipped Classroom Approach	The flipped classroom takes trainer led instruction and replaces it with learners taking ownership of their learning (O'Flaherty & Phillips, 2015). Learners prepare out of class by watching videos or completing homework on an assigned topic. The class time is used for interactive learning among learners. The educator in the flipped classroom approach facilitates learning and is able to guide learners and provide individual help if needed. The flipped classroom approach puts the responsibility on the learners, and requires not only owning their education but becoming masters of the material (O'Flaherty & Phillips, 2015). The success of the flipped classroom approach benefits ME. Characteristics of a good manager

	include being a problem-solver, a good listener, knowledgeable, and organized (Leonard, White, & Graves, 2009). The concept and theories prevalent in ME teach learners how to be a successful manager through critical thinking and active learning. The flipped classroom approach technique mirrors the same concept (Kim et al, 2014). The flipped classroom approach contribute to the effectiveness of student learning (O'Flaherty & Phillips, 2015) provide well-balanced critical thinking and improved information retention (Sajid et al, 2016); concepts such as conflict resolution, teamwork, and communication skills are further explored.
Use of simulation and gaming in education	Simulations are dynamic technological tools created through delivery platforms to provide a scenario-based environment. Students work collaboratively to solve real-world situations and problems, thus ameliorating authentic and collaborative learning (LSE, 2017). Educational games generally refer to the use of the entertaining power of games to serve educational aims, striking the right balance between the learning and entertainment components for the acquisition of knowledge (LSE, 2017). In the context of management education (Mahboubian, 2010), simulation tools are used to help people understand the dynamics behind *"the choices that people make when running a business" (Ezz et. al, 2020)*. There is a close relationship between educational simulation games and learning (Tao et al., 2009). Educational simulation games can increase the motivation to learn (Randel et al., 1992). Games increase the students' internal motivation learning performances (Terrell and Rendulic, 1996) as well as their interaction with each other. Some simulations provide a safe environment in which to make mistakes and allow learning to take place without pulling expensive equipment offline (Mahboubian, 2010).

Online training theories

OLMEdu also takes into account the most recent e-learning approaches. Several e-learning activities and applications based on basic learning theories have been developed and have implications in distance education (Anderson, 2011). The following are some of the most contemporary e-learning approaches (Picciano, 2017):

Community of Inquiry (CoI): The Community of Inquiry (CoI) is a theoretical framework that is based on a social constructivist model for the design of online learning and blended environments. This framework supports critical thinking, social and teaching presence as well as cognitive presence facilitating educational procedure in online education (Anderson, 2017). The Community of Inquiry (CoI) is an interactive model that has become popular for online and combined courses. Some popular practices in this context are using discussion boards, blogs, wikis, and videoconferencing.

Connectivism: it is a theoretical framework for understanding learning in a digital age. It emphasizes how internet technologies such as web browsers, search engines, wikis, online discussion forums, and social networks contributed to new avenues of learning (Wikipedia, 2021). Connectivism is about managing information based on new technologies and distinguishing between important and insignificant pieces of information. Knowledge and

information flow and change due to huge data communication networks. George Siemens (2004), one of the first pioneers of MOOC, argues that learning and knowledge is a product of different perspectives, ideas and information accelerated by different technologies. Internet technology has shifted learning from internal, individualistic activities to group, community, and even crowd activities. Knowledge in a database must be linked to the right people in the right context to be classified as learning.

Online Collaborative Learning (OCL): it refers to a didactic approach where learners are encouraged or required to work together to solve problems or accomplish learning tasks. This learning theory is in line with the philosophy of social constructivism, where active participation in collective processes focuses on the social aspects-practices of the joint development of concepts and meanings and not on the practices of individuals in social environments. Collaborative learning, based on ICT, is considered one of the most promising methods, which offers increased opportunities to improve teaching and learning outcomes. The use of Web 2.0 for educational purposes is considered to change the context of collaborative learning, providing multiple opportunities for content and resource sharing, self-directed learning, collaborative learning, ubiquitous and lifelong learning. Some examples of collaborative learning are the following activities: Problem-based learning, jigsaw activities, think-pair-share, and peer review are just a few common examples. All the above strategies are adapted to distance education and various online collaboration tools that allow individuals to do things together online like messaging, file sharing, and assessment such as Zoom, Google Docs (Trietiak, 2021)

Blending with Pedagogical Purpose Model: Bosch (2016) reviewed and proposed a model that integrates pedagogy and technology for appropriate educational design. The model as shown in the figure is flexible and suggests different activities and approaches in different ways to make learning effective and to cover a wide range of learners. The model proposes a combination of distance activities or combined courses. The model consists of six components as shown in the Figure 4.4 and are:

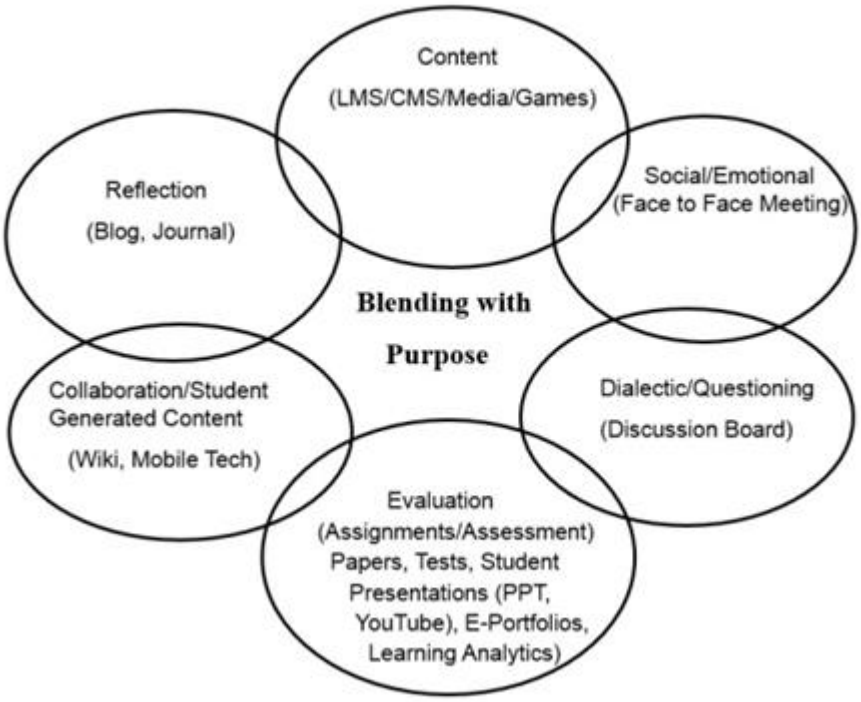


Figure 4.4 Blending with Pedagogical Purpose Model (Picciano, 2017)

a) Content comes in a variety of formats and course management (CMS / LMS) systems such as Blackboard, Canvas or Moodle and provides many visualization options including image, audio, video, and other multimedia. Games have also evolved and now play a bigger role in educational content (Picciano, 2017).
b) The second component of the model is social presence. Educational planning supports learners socially and emotionally as the learning process is a social activity. Trainees at all levels of education need support from trainers and this is a practice that is achieved through face to face meeting. Recommended as an activity in blended learning (Kilis et al., 2019).
c) The third component of the model is based on the Socratic Method and allows educators to use discussion to build knowledge. The questions serve to develop critical thinking to evaluate knowledge and give their own perspective. This strategy is achieved in online education with forums such as VoiceThread or with an online discussion board (Picciano, 2017).
d) Reflection is a key pedagogical strategy. It is based on the learner's ability to think, learn to reflect, expand his knowledge, and share it. Various technology tools allow this technique such as: Blogging and Use of Multimedia and Open Educational Resources (OER) (Chang, 2019).
e) Collaborative learning has been widely used in recent years and is considered a technique that helps the ability to solve problems between the groups. Email, mobile technology, and other forms of electronic communication are some of the technologies that enable collaborative learning. Wikis also allow students to create content that can be shared with others (Falcione et al., 2019).
f) Evaluation of learning is considered one of the most important elements of the model. Learning management systems as well as applications and individual electronic platforms

offer a variety of assessment tools used for self-assessment as well as for trainee assessment. Assignments, e-portfolios, quizzes, tests, presentations are some of the valuable tools that can be used for evaluation. The teacher can have an e-portfolio for the student to evaluate the students during the educational process. At the same time the teacher evaluates his educational planning to see what worked properly and what did not. Weekly classroom discussions on discussion boards or blogs provide the instructor are some of the examples used and analytics are considered as the mechanisms for extracting this data set to improve learning and teaching (Angelo State University, 2021).

Adult education principles

In the development of the training methodology of OLMEdu the following adult education principles are applied (SENDING, 2019):

Table 4.4 Principles of Adult Learning

Principle	**Application in OLMEdu**
Adult learners bring life experiences and knowledge to the learning environment.	● Learners' (HES) experience is considered a resource of learning, their experience and expertise is recognized. ● Training is built on them and encourages them to actively participate in the creation of new experiences and share them ● Learning activities are created in a way that reinforces the use of their past experience and knowledge.
Adults tend to prefer self-directed, autonomous learning	● Learners have control over the learning process and are able to select, manage and evaluate their learning. ● Are involved in setting goals and making decisions. ● They direct their own learning. ● Action-planning tools and templates are provided in order to help them to develop and focus their self-directed efforts and facilitate learning.
Adults have preferences for the way in which they learn	● Not all learners respond to a given teaching method or technique. ● A customized learning approach according to learners need is provided so as to develop the appropriate learning strategy for them. ● A wide variety of methods corresponding to all learners' preferences in training delivery is used.
Adults learn best through collaboration and reciprocity. An environment where people learn with others while sharing what they already know	● Low-risk environment for learning is provided, capitalizing the different levels of knowledge and skills ● Learners self-esteem is strengthened through team-based learning on mutual trust and respect and the development of a community of practice
Adults are motivated to learn by a wide variety of factors	● Learning responds to learners needs, interests and real-life problems, is meaningful and relevant. ● Relevance is the key factor to their motivation so it is important to inquire into the reasons why they are interested in learning. ● They are invited to identify the link between learning and satisfaction of their personal needs. ● A connection is made between the learning content and their long term objectives in work and life.
	● They are asked to identify what they would like to learn.

Adults learners are goal oriented, relevancy oriented and practical	● Clear learning objectives are established and are explained how they relate to training activities. ● Learners are engaged in identifying the challenges they face and the value of addressing these challenges. ● Training show relevance to their job or other interests. ● Learning is applicable to their work duties or other responsibilities and focus on practical skills, tools, methods. ● Opportunities are given to learners to apply the knowledge to practical skills and use methods to solve problems.
Adult learners need to be respected and learn in an appropriate learning environment	● Respect, trust and acceptance are promoted ● Learners feel safe in order to participate freely, take initiatives, experiment, and express themselves. ● Mistakes are viewed and used as improvement aids and not as failures. ● Creativity is balanced with cognitive achievements, stability, and clarity of purpose. ● The wealth of knowledge and experiences the participants bring to training is acknowledged. ● Learners are treated as equals and are allowed to voice their opinions freely.
Adult prefer active learning	● Learners are actively engaged in training activities
Adults want guidance	● Learners are informed about the learning process which helps them to improve their situation. ● They are not being told what to do, they choose options based on their needs.
Adults have different learning styles	● The training methodology takes into consideration that every individual has his/her own learning style depending on the preferred perception channel - visual, auditory, or kinesthetic. ● Techniques and activities appropriate for all types of learners are used and combined in such a way that different perception channels are employed. ● The learning styles preferred are found, in order for the learning experience to be modified accordingly.

Online training principles

Online training such as e-learning has been developed to provide cost-effective and new learning experiences and covers all activities of education such as instructing, teaching and learning through various electronic means (Koohang and Harman, 2005).

OLMEdu incorporates the following pedagogical principles that have been identified as important for the successful e-learning provision (Anderson and McCormick, 2005):

- Match to the curriculum: clear objectives are set; relevance to content is covered, as well as appropriateness of learners' activities.
- Inclusion: inclusive practices are seen in terms of different types and range of achievement, physical disabilities, different social and ethnic groups and gender.
- Learner engagement: learners are engaged and motivated, activities employed have a worthwhile educational aim, not just to occupy the learners, but be enjoyable without producing adverse emotional reactions, improving the learning atmosphere.

- Effective learning: personalized learning is promoted as well as learner autonomy; metacognitive thinking and collaboration in encouraged, providing authentic learning exhibiting multiple perspectives on the topic of training.
- Formative and summative assessment is provided for the purposes of improving learners' performance.
- Coherence, consistency and transparency: objectives, content, activities, and assessment match to each other. They are clear to the user and they know what to expect.
- Ease of use: learning resources are open and accessible, intuitive and not requiring guidance on use, providing appropriate guidance to learners

In addition, Chickering and Gamson (1991) have introduced the following five best practices for distance education:

- Establish and maintain Regular Effective Contact: instructors must keep in contact with learners on a systematic and timely basis for ensuring quality of instruction and verifying performance and participation status
- Create opportunities for learner-centered learning: instead of being the sole source of content knowledge, the role of the instructor is as a facilitator. Learners should be encouraged to interact not only with the content and instructor but also with each other for understanding, researching and coming to own conclusions on the course material.
- Create opportunities that have practical real world applications: Activities should be authentic, based on tasks that students would have to perform in various setting outside the classroom. Learners should have chances to enhance their knowledge about the world through critical thinking and reasoning skills.
- Provide support for each learners' learning process and autonomy: instructors should engage all types of learners by providing content and assessments that respect and accommodate the different needs, learning styles and strategies of each learner. In addition, instructors should provide support for students in time management and academic skill development.
- Ensure all course content is readily and easily accessible to all learners: Instructors should ensure that their courses meet all the necessary accessibility requirements. They should also create course content and assessments that are user-friendly in terms of technology and provide alternate means of access to the course material should there be problems with the Learning Management System.

Recommended training methodology in OLMEDU

The training methodology recommended for the delivery of OLMEdu, in accordance with the theoretical background presented before is the following:

- **Self-paced online training.** It is highly flexible, which makes the participation of HES in the training easy. This is critical, as HES are professionals who are likely to have strict work obligations, so flexibility is key for them. Furthermore, self-paced online training can also improve learning retention, as the learners often retain content better when they have time to absorb concepts between courses.
- **Asynchronous online training** to promote learner autonomy. Asynchronous e-learning activities are time-independent, so each learner is able to participate in the online training according to his/her time availability and scheduling. Online learning can take place at any time.

- **Learner-centered content**. It presents many benefits as provides self-reflection opportunities. The learners want to know how information relates to and benefits them directly, enables personalization and responds to individuals' needs. So, the online Open Educational Resources should be relevant and specific to learner's needs and responsibilities in their professional life.
- **Personalization** to promote effective learning. Self-study courses will be customizable to reflect learner's interests and needs. Additionally learners are able to build their own customized learning path. They are allowed to choose what they want to learn, thus they feel valued.
- **Social interaction** and **online collaboration**. The e-learning content is complemented by the facilitation of social interaction and collaboration.

Under the frame of the above methodology the following training methods are going to be followed (FAO learning academy, 2021) grounded in explosive, application and collaboration methods:

Table 4.5 Training method in asynchronous e-learning employed in OLMEdu

Explosive methods, which emphasize in the absorption of the new information	− Simple learning content, such as PDF documents and PowerPoint presentations, with no interactivity. − Interactive e-lessons using text, images, audio, animations. − Recorded audio or video lessons, i.e. lessons developed by an expert or instructor, which are recorded for learners to watch at any time. The lessons can be recorded in both video and audio formats (podcasts).
Application methods, which emphasize in the active processes where learners perform tasks to build the new knowledge	<u>Demonstration practice methods</u> − Interactive e-lessons using a combination of animations and operational simulations (based on a sequence of operations) that allow learners to interact with the system and receive feedback on their actions <u>Job aids</u> − Checklists, technical glossaries, manuals available as documents or as online tools − Online help or more sophisticated interactive online systems. <u>Scenario-based exercises, experiential simulations and learning games</u> − Interactive e-learning lessons where feedback is provided to learners through comments on the appropriateness of their choices, after which they proceed to the next situation. − Experiential simulations based on branched scenarios. The feedback to each learner's choice is provided through a follow-up situation that produces some more choices − Tutored activities with challenges to solve, either individually or in groups using forums and wikis. The tutor can provide feedback during and at the end of the work. <u>Role play</u>

	− Experiential simulations based on branched scenarios. The feedback to each learner's choice is provided through a follow-up situation that produces some more choices. Experiential simulations can also make use of virtual reality. − Role play conducted as a group activity by learners using role is assigned to each learner. Learners interact with each other to achieve individual objectives and/or a common goal. <u>Guided research and project work</u> − Discussion forums, e-mails for communicating between learner and instructor or tutor. − Wikis, blogs and shared documents for presenting results.
Collaborative methods which emphasize the social dimension of learning and engage learners in sharing knowledge and performing tasks in a collaborative way.	<u>Online guided discussions</u> − Discussion forums, e-mails. <u>Collaborative work</u> − Discussion forums, e-mails, wikis, blogs and shared documents. − Visual collaboration workspace platforms <u>Peer tutoring</u> − Discussion forums, e-mails, wikis, blogs.

Furthermore the conditions below are followed to foster a conducive interactive learning (SESBA, 2018) for HES within OLMEdu.

Table 4.6 Conditions to be followed in OLMEdu

Training platform provider – Learner interaction − Provide clear and adequate guidance − Use action research regularly to evaluate the success/failure of the course and meet students concerns − Use of variety of communication techniques to provide greater empathy and personal approach − Plan for increased time for learners' interactions − Forward responses to frequently asked questions to all learners to avoid duplication − Provide learners with continuous, frequent support and feedback − Monitoring of each learner progress − Clearly delineate course requirements − Create opportunities to coach and facilitate learners' construction of knowledge and skills
Technology Support − Ensure a low level of technological difficulties in accessing online material and communication − Provide adequate, friendly, easy and continuous technical support
Learning environment − Use structured activities to provide effective framework for online training − Create social interaction through the community of practice − Use audio for reading online

- Present course content in a manner that hierarchically structures the sequence of information
- Organize web site and online community to enable learners to interact with the content, other learners
- Create welcoming, safe, nurturing online environment
- Present problem-solving situations in realistic contexts
- Create opportunities for learners to communicate with each other to share understanding of course content
- Provide opportunities to collaboratively construct knowledge based on multiple perspectives, discussion, and reflection
- Provide opportunities for learners to articulate and revise their thinking to ensure accuracy of knowledge construction
- Ensure equitable environment exists for differences in learning styles, reduction of barriers to participation and communication
- Insure an equitable learning environment exists for all
- Allow time for reflection
- Provide opportunities for students to control online learning and structure it for themselves
- Provide discussion forums encouraging open dialogue

Basic principles for the development of the training material and toolkits

Learning material development principles

OLMEdu learning material will take the form of instructions for the delivery of online courses, toolkit, structured activities, short guidelines, videos, presentations, informational material, examples and best practices of the use of ICT in ME. It will also consist of short toolkits accompanied with guidelines for the use of tools and technologies, examples and good practices of the use of ICT-based tools in teaching management. The modules will be interrelated and at the same time will stand independently allowing HES to choose the thematic areas that are of most interest and relevant to their needs.

Their development follows the following principles of distance learning material development and e-content development (Commonwealth of Learning, 2005):

- The employment of embedded devices such as: learning objectives, test of prior knowledge, activities, feedback to activities, examples, self-tests, summaries and lists of key points, study tips, hypertext links, animation links
- The employment of practices stressed by constructivist approaches such as: authentic, real-world tasks, learner choice of task or situation, case studies, complexity of the real world presented in the tasks, collaborative learning tasks, opportunities to learn from observing others, the learning package being open-ended in terms of what is to be learnt, and self-evaluation rather than formal assessment
- Division of material in modules and learning units
- Readability and clear language
- Following of a tightly structure
- Inclusion of a study guide on how the learners can use the materials and how to study by oneself
- Inclusion of diagrams, pictures and illustrative devices
- Provision of a generous layout the liberal use of ‘white space’ including learners a space to write in
- Provision of space for learners answers

- Inclusion of study tips (e.g., on note-taking)
- Provision of feedback on answers
- Address the learner as ‘you’ and have a an audience the individual learner
- Meet all the needs of the learner

Simulation toolkit development principles

The toolbox will present the appropriate tools, one open-source and/or one developed in the context of the project, for making online simulations in ME as well as instructions for their use and examples. As aforesaid, it will be composed of tools identified from the research and analysis and the design and development of an additional tool. It will enables for HES in ME to use exciting and interactive technologies for experienced-based learning, which requires the cultivation of analytical and problem-solving skills in order to apply them in different management education scenarios. It will provide learning resources, in the forms of user guides and demo videos.

The development of the toolbox, as learning material will be based on the following principles:

- Creation of a document template for the definition of scenarios and the extraction of the HES learning requirements and the technical requirements.
- Desk research of open-source simulation tools that fall under the following categories: (i) 3D virtual worlds, (ii) storytelling, (iii) games and augmented and virtual reality.
- Identification of a suitable tool that satisfies the HES requirements in designing and digitising scenarios in ME, while at the same time it does not introduce for the learner high tool usage complexity.
- Design and development of an additional toolbox based on the HES learning requirements and the technical requirements, which falls within the same set of categories presented above.
- Definition of the necessary instructional material, e.g., user manual, videos, for designing and digitising management education scenarios.

VLE & online community of practice development principles

The OLMEdu digital platform will utilize a push/pull model for supporting learners/tutors and the community of practice of the project at the same time. This will be achieved by educational knowledge being pushed to learners and information/feedback being pulled (and at the same time disseminated) to/from project stakeholders.
These goals will be served by a Virtual Learning Management System (VLE). The VLE will be used for training and will act as a cooperation and support portal for the stakeholder community of the project. The VLE will consist of the 3 different sections:

- Academic Space: designed for trainers. It will offer resources and teacher's guides for the facilitation of the training processes.

- Virtual OER Library: designed for the learners, an OER space, freely accessible with material relevant within the project’s scientific foci. It will act as a cooperation and support portal during the delivery of the training. The library will be compatible with the Web Content Accessibility Guidelines (WCAG), Version 2.0, Level AA.
- Community of Practice (CoP) online service will support the community of practice (CoP) of the project. This online service will co-exist with the other services, all of them will be accessible through the project portal as complementary tools. The CoP service will be open after registration and will mainly support community building and crowdsourcing. Its services for registered users will include virtual community development, by supporting the synchronous and asynchronous collaboration of

stakeholder teams among themselves and with external experts, the exchange of comments, knowledge and experience, and the promotion of the project outcomes to the CoP and advanced indexing and search facilities based on tagging of resources.

The development of the toolbox, as learning material will be based on the following principles.

The VLE will be designed based on a modern, simple but yet engaging user interface promoting ease of access. Moodle LMS will be tailored according to the needs of OLMEDU project, providing self-paced and asynchronous online training, by implementing learner-centered content of different user-groups and embedding curricula learning patterns, lessons and the translations of the materials in the piloting country languages. Except the self-monitoring progress tools that will be integrated in order for learners to manage their own learning through self-assesment, online collaboration, interaction between users is going to give the opportunity to form communities of practice (CoP) and make peer-assessment and teamwork feasible. The platform is going to be multilingual and support the training in EN, GR, and IT as per the localization of the countries that are going to be involved in the piloting phase.

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Assessment methodology

Theoretical background of the recommended assessment methodology

Assessment is an integral aspect of any teaching and learning system (Benson, 2003). It drives learning outcomes and is essential for the design and structure of a learning environment (Comeaux, 2005). Especially adult education as a part of lifelong learning requires the use of modern teaching and assessment methods. In the OLMEdu project, we have selected assessment methods that are applied to the theory of constructivism and all the other theories that we have acknowledged in the training methodology. In the section that follows, we provide a brief introduction to the theoretical background of the appropriate methods for OLMEdu, and then we present the assessment activities that can be applied in our training material, in alignment with the training methodology.

Formative, summative, and diagnostic assessment

Assessment can be either summative or formative, depending on its objectives. On the one hand, summative assessment is when the learners' status with respect to educational variables of interest is determined (Popham, 2002). Summative assessment informs the learners of the standard that they have achieved, can provide insights into whether the course is effectively reaching its aims, certify to third parties (e.g., employers) the level of knowledge that each learner has reached, and make decisions about learners' eligibility for further courses (Freeman, 2005). Thus, summative assessment typically takes place at the end of a teaching or training sequence, in the form of exams/tests/quizzes, tutor-marked assignments, computer-marked assignments, course work etc.

On the other hand, assessment becomes formative when the information is used to adapt teaching and learning to meet student needs. Formative assessment can be defined as 'the process used by teachers and students to recognize and respond to student learning in order to enhance that learning, during the learning' (Bell & Cowie, 2001, p. 1). In this respect, formative assessment involves the collection on evidence about learners' current state of

learning and results to the provision of continuous feedback for both the learner and the educator. Formative assessment has come to receive much recognition as a powerful means of enhancing learners' learning (Black & Wiliam, 2009). Different formative assessment methods have been introduced in the literature, such as, interactions-on-the-fly, educator written feedback, peer assessment, self-assessment, portfolio assessment, open badges[1], in-text questions, quizzes etc.

Finally, diagnostic assessment provides an indicator of a learner's aptitude and preparedness for a unit or program of study and identifies possible learning problems (Bejar, 1984).

Continuous and final assessment

Another distinction that exists in the literature is that of the continuous or final assessment. Continuous assessment is a form of assessment that assesses learners' ongoing progress with respect to the attainment of outcomes/objectives in a module, while a final assessment is the last activity learners must complete in a module. A final assessment is similar in nature to a summative assessment, which includes end-of-unit tests, standardized testing, and cumulative work such as completing a given assignment, or creating a portfolio over the duration of a course. Continuous and final assessment, often being confused with formative and summative assessment respectively, just signifies when the assessment takes place, and not necessarily the purpose of it.

Assessment of learning and assessment for learning

Further, there is a distinction between "assessment of learning (assessment for the purposes of grading and reporting with its own established procedures) and assessment for learning (assessment whose purpose is to enable students, through effective feedback, to fully understand their own learning and the goals they are aiming for) (Elwood & Klenowski, 2002, p. 243). The concept of "assessment for learning" places the learner and learning in the center for the assessment as an instructional practice (Vonderwell, Liang, & Alderman, 2007). The OLMEdu training methodology **embraces a learner-center approach, thus much emphasis will be given to assessment for learning, in which learners share the ownership and responsibility for assessing their own performance and learning outcomes**. Learner-centred assessment can encourage meaningful dialogue, increase collaboration, peer and self-evaluation, and sense of community for a shared purpose (Morgan & o'Reilly, 2001).

Authentic assessment

When the development of complex-higher order skills in conceptualization, problem solving and competences is central to the instruction's aims, a subsequent shifting to assessment purpose must be applied. This change in emphasis has led to the development of what the educators call 'authentic assessment'. Authentic assessment is any type of assessment that is aligned with the curriculum and requires learners to demonstrate skills and competencies that realistically represent problems and situations likely to be encountered in daily life (Collins, 2013). In other words, "assessment is authentic when we directly examine student performance on worthy intellectual tasks" (Wiggins, 1990, p. 2). Learners are required to produce ideas, to integrate knowledge and to complete tasks that have real-world applications. Such approaches require the person making the assessment (facilitator, trainer) to use human judgement in the application of criterion-referenced standards (Archbald, 1991).

Validity and reliability of assessment

[1] Open badges, digital badges, and educational badges are used as synonyms.

Validity, and reliability, are essential to consider while when designing any assessment activity. Validity refers to the extent to which a given assessment method assesses what it is meant to assess. It is important to strive for validity as far as is possible. One way to do this, is to ensure that the assessment method matches the active verb in the learning outcome. Reliability refers to the extent to which an assessment method or instrument measures consistently the performance of a learner; in other words, if a person is assessed on more than one occasion, the outcome should be the same. To achieve high reliability of assessments, it is advisable that instructional designers should include more than one assessment activities in the instructional sequence, to spread the assessments out over time and to use more than one assessment methods (Freeman, 2005).

Appropriate assessment methods and techniques for the OLMEDU training methodology

Assessment methods in OLMEdu

The OLMEDU assessment methodology is accounting on the recommended training methodology, which in accordance with the theoretical background should entail: self-paced training, asynchronous online training, learner-centered content, elements of personalization, social interactions and online collaborations. There is a need to identify effective assessment methods appropriate to the online training to be offered, understanding how online training changes the selection, monitoring and managing of assessment activities. In this context, and as suggested by Mandinach (2005), it is important to investigate how assessment techniques can be used to make the feedback loop between instruction/training and assessment more meaningful. The OLEMdu assessment methodology **encompasses both summative and formative assessment approaches**, **continuous and final assessment**, **serving both assessment of and for learning**, with particular emphasis in **authentic assessment activities**, as **applied in online learning** environments. Less emphasis can be given to diagnostic assessment, while validity and reliability of all assessment methods should be secured to the best possible.

Assessment activities can take place at the beginning of a module (diagnostic) in order to assess the pre-knowledge of the participants, in alignment with the principles of constructivism (see TIME, 2016; Cedefop, 2010), a learning theory in which our training methodology is grounded, but also for diagnosing learning needs and setting goals (Grotlüschen & Bonna, 2008). Especially for adult learners, when they first enter a new program, a diagnostic assessment may be performed, to identify their strengths and any potential barriers to learning (such as a disability), and to direct them to the most appropriate module to study according to their needs and expectations.

In order to evaluate if the learners/ trainees understood the contents and are able to apply the newly acquired knowledge, it is recommended to include **assessment activities at least at the end of each training module**, for summative (final) assessment purposes.

Formative assessment activities should also be applied during the implementation of a module, as a means to foster trainees learning process (assessment for learning), to engage trainees in reflective thinking (in alignment with the reflective approach; see Dewey 1933; Kolb, 1984) but also in order to be able to adapt the learning program accordingly when and if needed. Different types of activities can serve formative assessment purposes (peer-assessment, self-assessment, an assignment etc.), as explicated in the section that follows, some of which can be conducted with the use of the Community of Practice (CoP) online service, that is a collaborative virtual space for learning how to teach (Tsai, 2012).

Given that the OLMEdu training will be delivered in an online format and in a self-paced mode, it is essential to **provide assessment methods and techniques that promote self-monitoring processes**. Online learners need to manage their own learning through self- and peer-assessment, discovery learning, reflection, and communication. Learners should be also given an opportunity to enact active role by planning, monitoring, and then reflecting and evaluating not only the learning tasks but the processes of learning as well (McLoughlin & Luca, 2002).

Specific assessment techniques/ activities for online training, appropriate for asynchronous online training, have been chosen for the OLMEDU project. In the section that follows we provide some examples of possible assessment activities. All partners are advised to specify in the training program at least one suitable assessment activity for the end of the module, serving summative assessment, and at least two suitable formative assessment activities during the implementation of the module.

Assessment techniques/ activities

First, it is important to secure that all assessment activities have been designed to reinforce the achievement of the learning objectives and are in alignment with the learning activities of each module, in order to correctly assess the right level of expected performance and content.

Questionnaire/test or single questions

Testing the attainment of content knowledge through a questionnaire. The test should include questions related to the specific learning objectives of each module, covering the knowledge, skills, and competences to be attained. Online test can be developed and administered pre and post to the training, to evaluate the impact of the training process. It is suggested that the test is completed by the trainees (i.e., HES staff) at the beginning (pre-assessment) and at the end of the training process (post-assessment). This way, the trainer will have some indications on whether the module objectives have been achieved. Tests can be used for summative assessment purposes. In addition, single questions can be embedded in different parts of the training material, for self-reflection or formative assessment purposes, so that learner can check his/her understanding by the point s/he has reached, and then proceed with the units/ sections that follow.

Different types of assessment tests are required for assessing different types of knowledge and different learning objectives (e.g., memorization of facts, understanding of concepts and processes, application of procedures and strategic principles) (Grotlüschen & Bonna, 2008).

The table below provides some tips for developing questions for practice and tests.

Table 4.7 Tips for developing practice and tests (retrieved from Grotlüschen & Bonna, 2008)

Type of content	Tips
Facts	Have learners recall features or specifications. Have learners identify pictures or objects.
Concepts	Have learners discriminate between examples and non-examples. Have learners reformulate the concept.
Procedures	Have learners practice through operational simulation. Have learners perform the procedure.
Principles	Ask questions about the principles underlying a worked example.

	Have learners apply guidelines to solve a job-contextualized problem or case study.
Interpersonal skills	Have learners apply behavioural guidelines to an interpersonal communication problem or case study.
Attitudes	Ask questions to reflect on a given behaviour.

In relation to the nature of the questions/ items to be included, either in the questionnaire/test of single questions in a standalone format, there are different possibilities, depending also on the infrastructure of the e-platform to be used, or in general, the medium to be used for delivering such tests. Indicative types of questions that can be used are given below include:

Open-ended questions

It is advisable that upon completion of the question, the learner receives a feedback text, especially when such questions are being used for formative assessment purposes and/or for reflection.

Example: Question: What are the needs of HES in distance and online learning?

Instruction to partners: Define the question. Provide a feedback text (if you wish this to appear).

Multiple choice question (Single answer)

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: What color is the sun?

Answers:

- Blue
- Yellow (correct)
- Red

Instruction to partners: Define the question. You can add as many answers as you want but define the one that it is correct.

Multiple choice (Multiple answers)

The system provides the right answer to the learner, upon completion of the test.

Example: Question: Select the weekdays

Answers:

- Monday (correct)
- Friday (correct)
- Saturday

Instruction to partners: Define the question. You can add as many answers as you want.

Free choice

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: What color is the sun?

Possible answers:

Yellow

Instruction to partners: Define the question. A text box will appear to the user, and s/he must answer the question. If his/her answer matches one of the possible answers, then the question is correct.

Sorting choice

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: Sort the days.

Answer with the *right* order:

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

Instruction to partners: Define the question. Give the answer with the right order.

Matrix Sorting

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: Match the color with the fruit

Right Answers:

Red	Apple
Yellow	Banana
Orange	Orange

Instruction to partners: Define the question. Create a table with two columns and fill them with pairs. The first cell in the first column must match the first cell in the second column. The system will then shuffle the options when presenting them.

Fill in the blank (Select from the list)

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: Fill in the blanks

Right Answers:

The sun is {yellow}. Today is {[Moday][Tuesday]}.

Instruction to partners: Define the question and write a text for the answer. Use {} for the missing words. If you want a blank to have more than one possible answers, use the next structure: {[answer1][answer2]}. The user will not see the words that are missing. If you want them to appear (i.e., to give them a list of the possible words) write a note.

Likert-scale (Select from the scale)

The system provides the right answer to the learner, upon completion of the test or after answering the single question.

Example: Question: From 1 to 5 how happy was Ben?

Right Answers:

{[1][2][3][4][5]}

Instruction to partners: Define the question and the right answer.

Self-assessment

Let the learners reflect on their perceived improvement regarding their knowledge, skills, and competences (e.g., in form of a logbook during the training about what they have learned; personal written reflections; group discussion; answering given questions etc.).

Self-assessment tests may cover specific sections of a module, e.g., one learning unit and should provide learners with summative feedback on their learning of that section, help learners identify any errors and misunderstandings they may have, and provide learners with advice on additional (remedial) study to deal with those errors.

Also, a good self-assessment test should require the minimum amount of time necessary to give the learners a clear picture of their progress, evaluate as much of the content of the section/unit as possible, have a reasonable length in comparison with the length of the study section, uses questions that are diagnostic in character, and provides feedback on correct answers and likely wrong answers. The development of an effective self-assessment tool in the e-platform, would assist the learners in getting a clear explanation of the correct answer, which could appear after answering a given question (if the answer was correct or incorrect). Certain types of questions (as provided in the previous section) can be used for self-assessment as well.

Overall, self-assessment gives the possibility to learn continuously, thus self-assessment activities also have an educational value in line with supporting for recognizing of the adult educators' competences.

When applying self-assessment, it is important to set clear expectations for learners' performance. As in peer assessment (next section), it is advisable to provide assessment criteria to the learners and instructions on how to apply them in grading their work. A valuable process on its own, self-assessment may be paired with peer assessment. Applying knowledge gained through peer assessment, students' self-assessment can be a potent next step in actively promoting their own learning and achievement.

Involving learners in either self or peer assessment boosts motivation, improves meta-cognition, and promotes self-directed learning.

This activity may be combined with a scenario-based assessment activity. An activity like this can be also combined with an assignment, or with other types of traditional exam questions:

essay form questions, multiple choice questions, completion questions, matching questions, short-answer questions.

Peer-assessment

Peer assessment is defined as any educational arrangement where students judge their peers' performance by providing grades, and/or offering written or oral feedback (Topping, 1998), and can be considered as an innovative approach to formative assessment, in which learners have an active role in assessing their peers' work (Harrison & Harlen, 2006; Cestone, Levine, & Lane, 2008). Potential learning gains of the learners are associated with their actions as peer-assessees (e.g., whether they exploit peer feedback or not) and their attitudes towards peer feedback (Tsivitanidou & Constantinou, 2016). Furthermore, peer assessment has received attention especially in computer supported and online learning environments, since in such environments, the learners can submit their work, review, and assess their peers' work and revise their own work based on the peer feedback, often circumventing restrictions of time or location (Lin, Liu, & Yuan, 2001a, 2001b). It has been supported that peer assessment is an appropriate assessment method also for adult education, which as part of lifelong learning, requires the use of modern teaching and assessment methods (Jurāne-Brēmane, 2019, May). Depending on the infrastructure of the e-platform/ system to be used in the project, peer assessment can be applied in different ways for different learning objects. First, peer-assessment could be anonymous, for safeguarding that the learners overcome any barriers when being critical to friends and peers during the provision of peer feedback. Second, different learning artifacts that can be used for peer assessment are: web-portfolios, single assignments, presentations, reports, etc. Third, peer assessment can be scaffolded, with the provision of assessment criteria to learners, e.g., in the form of rubrics, or could be not scaffolded, and in this case, the learners could be free to provide feedback comments that they wish to their peers. Also, peer assessment may by quantitative or qualitative; in the first case, learners are requested to provide a grade to their peer, while in the latter, they provide feedback comments (either orally or in written format).

Assignment

Depending on the content of the module, it might also be possible to give the learners a task at the end of a module which they have to fulfill; they could create something as a tangible output or result they are able to take/ show someone (e.g., a presentation, an e-portfolio).

Project/product or performance

Project work challenges the learners to think beyond the boundaries of the classroom, helping them develop the skills, behaviors, and confidence necessary for success in the 21st-century. Designing learning environments that help learners to question, analyze, evaluate, and extrapolate their plans, conclusions, and ideas, leading them to higher–order thinking, requires feedback and evaluation that goes beyond a letter or number grade. Authentic assessment documents the learning that occurs during the project-building process and considers the real-world skills of collaboration, problem solving, decision making, and communication. Since project work requires students to apply knowledge and skills throughout the project-building process, you will have many opportunities to assess work quality, understanding, and participation from the moment students begin working. Project/product or performance assessment can also be supported by the Community of Practice (CoP) online service, given that a facilitator and/or an expert is being involved in the process.

Completing complex authentic projects that require collaboration, creativity, problem-solving, and innovation helps prepare the learners for increasingly complex life and work environments.

Wikis

Wikis are online collaborative writing spaces that have multiple authors and contributors. The most well-known wiki is Wikipedia. Wikis can be used for the development of a community of practice and to establish a shared learning space within a blended or online course. Using wikis for assessment gives learners a collective online space where they can share their knowledge and helps them develop graduate attributes and enduring skills in multi-modal literacy. A wiki can be an authentic task in which learners develop a tangible product that can be used after the assessment. Wikis also engage learners within a digital learning environment and allow learners to perform asynchronous online collaboration, with the added capacity to structure, re-structure and interlink content. Wikis provide a forum where collaborative dynamics can be established among the learners and/or the learners and the trainer. Unlike on most blogs and discussion boards, learners can interact and edit their posts and contributions within a single working document. Learners can work in small groups to research a specific topic, to prepare literature reviews and to discuss and prepare oral presentations as a group. In a wiki, this is easier than in a discussion board, where the multiple threads of posts and comments can become confusing. Learners can edit and insert work into each other's contributions and learn from and with each other. The trainer/ instructor can track learners' unique contributions and assess them individually.

If the partners choose the wiki activity, and while setting it up, they are advised to provide a clear rubric and make sure that the learners have a clear idea of the expectations. When assessment time comes, it is advisable to check whether all learners have contributed equally to the work. This may be done by observation of the trainer, or peer feedback and review can be applied for this part of the assessment. Assessment via wikis, can also be supported by the Community of Practice (CoP) online service. The platform to be developed in IO4 offers such online services, which can further support these types of activities.

Instructional principles of constructivist learning can be applied to assessment by wiki.

Assessment through open-source tools

Open-source tools, such as, quizzes, games and high-level game engines, character-based role-playing storytelling tools/games (fixed, interactive, or interactive- choice-driven), 3D virtual learning environments (VLEs), 3D virtual worlds, photo-story tools, augmented reality, and virtual reality tools, can be used as part of the learning sequence, with a given output (e.g., a score, a feedback text) that can be also communicated back to learner's profile in the e-learning platform if required. The latter can be used as an input for assessing learners' attained skills, and competences in certain context. As part of IO3 (Toolbox for developing on-line simulations in management education), a list of such tools, appropriate for the OLMEdu learning objectives and material, will be created by the University of Frederick, as part of their work in IO3.A1 Research and Analysis of Open-Source Simulation Tools. Those tools should be accounted by the partners while preparing the modules, and the different types of outputs that they deliver and can serve assessment purposes as well. Examples include: (i) Second Life (SL) (http://secondlife.com/), one of the most popular open 3D virtual worlds available worldwide, used in Management education (Klein, et al., 2017; Reisoğlu et al, 2017). (ii) Kahoot, (https://kahoot.com/), an online tool for creating quizzes and mini games. These are merely examples, and the full list will be created based on the desk research in IO3.A1 on open-source tools for management education.

Asynchronous discussion tools

These can support the process of assessment for learning and assessment of learning to enhance our target group's learning and training process. In alignment with the Blending with Pedagogical Purpose Model (Bosch, 2016), weekly classroom discussions on discussion boards or blogs provide the instructor are some of the examples used and analytics are considered as the mechanisms for extracting this data set to improve learning (Angelo State University, 2021).

Assessment activities and type of learning objectives

The learning objectives (LOs) are the desired learning outcomes educators set for the learners. The assessment activities are supposed to evaluate whether or not learners have achieved the pre-defined LOs. To avoid the ineffective evaluation process, it is critical for educators to match the assessment activities with the LOs. Also, certain types of assessment activities are deemed more appropriate for evaluating the achievement of certain LOs. In Table 4.8 we suggest the assessment activities that are most appropriate for specific types of LOS, as presented in the training methodology.

Table 4.8 Assessment activities and types of Learning Objectives (LOs)

Type of learning objective	Assessment activity
Knowledge	- Questionnaire or single question(s) - Self-assessment - Peer-assessment - Assignment
Skill	- Peer-assessment - Assignment - Project/product or performance - Wikis - Assessment output through open-source tools - Asynchronous discissions
Competence	- Peer-assessment - Assignment - Project/product or performance - Wikis - Assessment output through open-source tools - Asynchronous discissions

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