OPEN EDUCATIONAL RESOURCES FOR ONLINE LANGUAGE TEACHER TRAINING: CONCEPTUAL FRAMEWORK AND PRACTICAL IMPLEMENTATION

Francesca Nicora, Oriana Bologna, Laura McLoughlin

Italian Studies, School of Languages, Literatures and Cultures,
University of Galway, Ireland

ABSTRACT

This paper discusses a conceptual framework for the design of Open Educational Resources (OERs) for online language teacher training including an example of practical implementation. The authors identify in the principles of micro- and macro- learning, cognitive load theory and Threshold Concepts (TCs), the key elements that lead to the creation of effective OERs designed for the Lilac Project which aims to support language teachers in managing online learning environments. Data from questionnaires and focus groups were utilised to establish a set of TCs connected to online language teaching. These were then cross-referenced with existing TCs, and utilised to create micro learning content that does not negatively impact the cognitive load, but, at the same time, is positioned within a larger macro structure that allows for the development of deeper knowledge and competences. The structure of Lilac OERs will be presented as a practical example of how the potential of technologies to support learning can be embedded in online contexts.

KEYWORDS

Open Educational Resources, Language Teachers' Online Education, Threshold Concepts, Learning and Cognitive Theories & Micro learning.

1. INTRODUCTION

Online teaching and learning have been a feature of education for nearly four decades now, ever since the University of Toronto offered its first online course in 1984. It wasn't however until the arrival of the World Wide Web in the mid Nineties that online offerings really took off in both academic and professional contexts.

Platforms, tools, apps and technology in general to facilitate delivery of online content have multiplied over the years and training exists for course designers, creators, e-tutors and e-moderators. Yet, the specific professionality involved in online teaching is not widely acknowledged as recent events have shown: the emergency situation caused by the COVID-19 pandemic forced governments to move most teaching online and recurrent lockdowns often meant on/off reliance on online classes. Anecdotal evidence however suggests that by and large this has not worked well in all schools, as face-to-face courses were hastily adapted to the online modality without the meticulous planning and the specialist training needed for creation and delivery of successful distance education. Many research studies carried out across the world reported that teachers were forced to teach online even without undergoing specific training. As a result of this, teachers have been constantly feeling under pressure and have been struggling to manage online contexts effectively as well as creating a pleasing and engaging learning environment [1,2]. At the same time, students have been experiencing psychiatric disorders and

adverse mental health effects, such as feeling of isolation, depression, anxiety and stress over home schooling [3, 4, 5]. In order to lead a more sustainable and efficient employment life and build a healthier teachers-students, students-teachers as well as teachers-parents relationship, many contributions have highlighted the importance of purposeful strategy building which aims to address current issues such as the conflict between personal and working life balance which is presumptuously making room in the historical era we are currently living in [6, 7]. However, online and distance education continues to be perceived as a controversial topic.

In order to shed light on the benefits and advantages of online learning, the UNESCO Forum has recently coined the concept of Open Educational Resource (OER) which refers to the openness and provision of reusable digitalised resources for educational purposes which are released under an open license and completely free of charge. This has led to the development of an enormous number of public resources which can potentially be extremely relevant to both teachers and learners in managing online learning environments. Nevertheless, finding appropriate OERs to be used for a specific purpose still remains a challenging task. In fact, although OERs have proved to be paramount and useful learning assets - especially in emergency situations like the COVID-19 pandemic- there seems still to be a lack of adequate OERs for online language education.

The Lilac Project was not borne out of the extraordinary circumstances of 2020: it started towards the end of 2019, following extensive needs analysis of learners and teachers involved in or considering online courses. We feel however that it has become particularly topical in the light of these developments. Lilac is specifically concerned with the peculiarities of teaching and learning languages online and the skills and competences that both teachers and learners need in order to make the most of their experience. In particular, Lilac OERs are conceived as web-based training modules for independent study for both groups of stakeholders to help them reflect on, acquire or enhance the necessary skills and appropriate online behaviour. Lilac modules (freely accessible online https://www.lilac-project.com/) support personalised learning paths, with users free to either select individual activities or follow an entire module sequentially. Learning personalisation is in turn facilitated by a mixture of micro learning elements, which contribute to the updating or enhancement of a given skill, and macro learning content, aimed at deepening knowledge and providing new competences and skills on the basis of a number of identifiable threshold concepts. The uniqueness of this project lies in devising and providing pioneering Open Educational Resources (OERs), not yet available in the field of online language education, and within a conceptual framework based on the principles of macro- and micro- learning, cognitive load theory and Threshold Concepts. One feature that makes the two training modules original is also the bilingual version of the interactive OERs which were first created in English, then translated into Gaelic. The two Lilac modules have been recently launched as an open course entitled "LILAC: Online Language Learning and Teaching" promoted by the National Forum for the Enhancement of Teaching and Learning in Higher Education and whose aim is to provide teachers and learners with a digital badge for professional development supporting their lifelong learning and career mobility (https://opencourses.ie/opencourse/lilac-online-language-learning-and-teaching/). Furthermore, Lilac OERs have represented the conceptual and didactic framework for a new teaching module, "Learning and Teaching Languages Online", which was designed and tailored for undergraduate students of the Bachelor of Arts in Global Languages and ran online for the first time in Fall 2020 at the National University of Ireland, Galway[8].

In the paragraphs that follow we discuss the theoretical framework underpinning the design, the structure and implementation of Lilac OERs with a focus on language teacher training module.

2. CONCEPTUAL FRAMEWORK

Open Educational Resources (OERs) are gaining support and recognition especially in higher education. Numerous universities are now developing and providing their own. The term first appeared in 2002 at a conference hosted by UNESCO during which the participants defined OERs as: "The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" [9]. Currently, the most widely-used definition of OERs explains that they are "digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research" [10]. An OER is commonly said to consist of 1. learning content - such as full courses, courseware, content modules, learning objects, etc.; 2. tools, including software to enable users to develop, re-use and deliver learning content; 3. implementation resources, which comprise intellectual property licenses to promote open publishing of materials. Arguments in favour of promoting research in the field of online learning and the development of OERs include the importance of sharing knowledge in line with academic traditions, the reuse of resources, the reduction of costs, the potential of attracting new students by providing more flexible materials and the need to look towards new and profitable business models [11,12]. However, whilst OERs show great potential for future educational practice, they are still in their infancy [13]. There are still critical and not entirely resolved issues surrounding access, quality assurance and even cost that hinder the usage of OERs [12]. At the same time, the complex relationship between design and pedagogical impact of an OER requires further investigation, as it can affect motivation and, ultimately, the achievement of learners' goals. Presentation, interactivity, collaborative value, time required for completion of the task are all key issues that need to be addressed. Koohang & Harman [14] argued that

> the educational value of an open digital content can contribute to its sustainability. The value of OERs can be measured by how well they are designed and presented. Instructional design (linked to learning theories) and presentation (associated with user interface) are vital to sustainability of OERs.

Whilst online learning may have since moved on from a purely instructional design approach, Koohang and Harman's statement still ring true today. This paper analyses the pedagogical principles, learning and cognitive theories that underpin the design of an OER at both microlearning and macrolearning level, and discusses how the potential of technology can be exploited to enhance and bring positive and substantial changes to teaching and learning. On the basis of our experience with the Lilac Project, we argue that OERs can be designed in accordance with the principles of microlearning and ubiquitous and adult learning theories (§2.1), can be aligned with cognitive theories and module design practice (§2.2) and incorporate threshold concepts (§2.3). The study therefore aims to position the complex and multi-faceted OER design process within a solid theoretical and conceptual framework. The structure of Lilac OERs will then be presented as a practical example of how the potential of technologies to support learning can be embedded in online contexts (§5).

2.1. Microlearning, Ubiquitous and Adult Learning Contexts

The terms micro and macrolearning are often used in relation to online environments and OERs, even though they also exist in other contexts. Microlearning refers to small chunks of content, requiring limited time commitment and is based on the idea that short forms of learning, including fine-grained, inter-connected and loosely-coupled learning activities with microcontent [15, 16], can enable learners to access online resources quickly and construct knowledge in specific moments and conditions of the every-day life. The term "macrolearning", instead, refers

to larger formats of e-learning in terms of time and scope. In general, this concept refers to entire multimedia learning modules or sizeable learning materials, such as text-based scripts or power point slides, and the process of learning demands that several hours be spent on didactic materials. The content is usually created by subject matter experts with authoring tools and includes a wide range of topics presented through combined learning objects. Both micro and macrolearning be conceptualised in many ways referring to different aspects, which in turn include different areas, as shown in Table 1 [17].

Table 1. Microlearning and Macrolearning (adapted from Hug, 2005:3)

	Linguistics	*Language Learning*	*Learning Contents*	*Course Structure*	*Competency Classification*	*Sociology*
Micro level	Single letters	Vocables, phrases, sentences	Learning objects, micro content	Learning objects	Competencies of learners and teachers	Individualized learning
Macro level	Texts, conversation, linguistic communication	Socio-cultural specifics, complex semantics	Topics, subjects	Courses, curricular structures	Designing a curriculum	Learning of generations, learning of societies

Recently, an interesting study which examines the design of microlearning showed that adult learners have contrasting opinions about the content areas perceived to be relevant for macrolearning, conceived as longer timeframe, and microlearning [18]. Adult learners who need to keep acquiring new information in order to keep up with fast societal changes, rely on microlearning as an effective approach for obtaining that information, whereas macrolearning was seen as more appropriate for deepening knowledge. In a nutshell, adults perceived that domain-specific information can be delivered via macrolearning, while microlearning can be more significant for domain-neutral areas. The authors suggest that institutions that intend to develop microlearning should consider the dual structure of content delivery, so that learners who want to keep up with topical content can study microcontents while those who prefer to deepen their knowledge on more stabilised areas can attend e-learning courses. However, it should be noted that whether microlearning content delivers merely information rather than knowledge is a matter of debate and further research is needed on the best ways to help learners to progress from the information consumption stage to the knowledge building stage [18].

The Lilac project is a web-based training programme accessible from different devices, with OERs in the form of both larger modules and individual activities designed to assist online language teachers/learners in their transition from face-to-face to online learning environments. Lilac OERs therefore constitute a miscellaneous product made up of diverse forms of e-learning: the online modules provide a richer macro-media format built around microcontent consisting of self-contained small chunks of information and short interactive learning activities.

Microlearning offers a way of organising learning in small steps and with small units of content. Whilst not designed to deliver complex concepts and foster deep knowledge, it does the advantage of making learning seem less intimidating, faster and adaptable to one's schedule. As the most typical form of anytime-anywhere learning, it can be adapted to support individual learning needs and is commonly defined as ubiquitous informal learning. At the time of writing, the percentage of students who learn outside formal classroom settings is increasing and it is interesting to note that it has now been known for some time that informal learning spaces contribute to boost learners' motivation [19], especially when learners perceive the learning goals

as achievable. Microlearning is therefore aimed at mobile modern users who need to update their knowledge, skills or competences and identifies appropriate technologies and learning environments to satisfy that need. Ubiquitous technologies and in particular mobile learning environments are well positioned to support microlearning. For this reason, the Lilac project makes its online modules accessible to a variety of devices and helps users to transfer knowledge across different surroundings, as microlearning requires.

In modern societies characterised by new modes of technology-assisted learning, adults tend to connect their educational experiences with their life tasks, and microlearning allows them to do just that: the accessibility and flexibility of microcontent facilitates autonomous learning whenever is required. The Adult Learning Theory focuses on the role of the adult learners and how their own characteristics influence the process of learning in an informal context. [20] identified four principles that characterise adult learners: 1. they are self-directed and wish to be responsible for their own actions; 2. they have an extensive personal and professional experience, and this is an essential component in the development of their identity; 3. they are ready to learn and show a very high intrinsic motivation; 4. They have a specific goal and expect achievable outcomes. In addition, adults need to be part of the development, implementation and evaluation of the learning process [21] and need to see the value of their education and the information provided [22]. In a nutshell, adult learners look to education to fill a gap in their lives and microlearning, as an effective strategy, allows them to meet their immediate needs. However, despite the growing interests in microlearning, research that can inform the design of microlearning content still seems to be rather scarce, especially in the context of informal learning for adult learners [18].

2.2. Microlearning, Cognitive Theories and Module Design

Course designers need to create e-learning materials that meet the specific needs of adult learners, attract them and motivate them to learn. Successfully designed curses are those that identify specific and attainable goals, and provide adult learners with opportunities to perform tasks, including self-reflection tasks, that inspire them to attach the new information to personal relevance, goal achievement, and problem-solving [22]. To this purpose, it seems advisable to combine adult learning theory with a cognitive framework, in order to help adult learners to retain and use the information provided.

Microcontent design is based on concepts derived from cognitive science. In particular, the concept of cognitive load and how quickly the working memory may become overloaded is extremely relevant for learning and teaching in online learning environments where the students' attention span is greatly reduced. In these settings, if the limitations of the working memory are overlooked, the learning process is very likely to slow down or even be completely jeopardised, with negative consequences for learners' affective filter. However, when information is channelled via microcontent, cognitive load is decreased considerably, and information may be retained and successfully exploited. Cognitive load theory applied to microlearning therefore leads to the design of courses/tasks and activities where unnecessary information is removed and only core information is presented, so that adult learners can more easily store the newly acquired knowledge and utilise the long-term working memory efficiently [23] This 'lighter' approach is especially appropriate when information is presented for the first time or complex knowledge and skills need to be broken down to aid acquisition [24]. Delivering this content through lengthy lectures or workshops tends to overwhelm the working memory, thus not guaranteeing the learner's retention of knowledge [22]. However, additional information and more in-depth content can still be included in e-learning courses and made available to those who have more time, or different motivation and goals. We suggest that a combination of micro and macrocontent is ideally suited to the design of online courses, especially those courses that

support personalised learning paths. The mixture of the two elements allows designers to reach different learner types and satisfy different needs.

The short chunks of learning do not imply simplified pedagogical strategies. On the contrary, designing effective microlearning scenarios is a complex and challenging task, as it integrates various didactical approaches [25]. Guidelines for the design of microcontent and microlearning activities, therefore, should take into account both technical and pedagogical principles. From a more technical point of view, the microlearning designer should consider:

(a) format: microcontent information needs to be easily scanned at a glance;
(b) focus: microcontent information needs to sum up in a sentence and offer the main message in a text or in a stretch of discourse;
(c) autonomy: microcontents should be self-contained;
(d) structure: microcontents usually present the title, topic, author, date, tag and URL;
(e) addressability: microcontent should include a permalink to quickly access [26]

From a didactic perspective, the pedagogical strategies that facilitate microlearning include self-directed learning, learner-driven learning, knowledge sharing, layered learning, and what we might call cumulative and scalable learning, whereby the combination of several microlearning sessions leads to the acquisition of more complex knowledge.

The Lilac project adheres to the technical guidelines and pedagogical strategies described above. The implementation of the theoretical framework in an academic context however soon revealed the complexity of the challenge. We see microlearning as a series of "light bulb moments" which illuminate the learning path and personalise it by means of relevant, engaging contents and activities that, while belonging to the field of informal learning, are nonetheless structured, pedagogically sound and ready to be imported into more formal macrocontexts. This way, microlearning sessions can represent short but meaningful moments of transition. According to Hug, "when the focus is on learning tasks and processes, products or outcomes, it is important to avoid definitions of microlearning that lack discriminating or differentiating power. If microlearning is simply equated with informal learning, lifelong learning […], we end up in a night in which all cows are black" [27].

The complex, albeit perhaps obvious challenge when designing online modules and developing online OERs for adult learners is the need to marry their requirements, goals and expectations with technical guidelines and the core principles of pertinent learning and cognitive theories. To this purpose, we propose, possibly for the first time in the field on online language learning and teaching, the application of a Threshold Concepts (TCs) framework (§2.3) to the design of informal learning sessions for adult learners.

2.3. Threshold Concepts

There are times, during the learning process when learners seem 'to get stuck', and moving on to the next level of knowledge feels like a mammoth task. This happens when learners reach a point in their disciplinary developmental path where new and complex knowledge is needed in order to continue along that path. They are on the threshold of a new level of understanding, but need to be able to cross it in order to enter that new level. Threshold concepts (TCs) represent key knowledge that, when integrated in the process of learning, has the potential to change a learner's world view and way of thinking irreversibly. So much so that

> [a] threshold concept can be considered akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a

> transformed way of understanding or interpreting or viewing something without which the learner cannot progress [28]

TCs facilitate learners' engagement in the discourse and practice of a given discipline and therefore present specific features: they are

(a) transformative, because they involve a conceptual shift for learners;
(b) irreversible, once acquired, they will not be forgotten;
(c) integrative, because they enable learners to make a connection between new and previous knowledge;
(d) bounded, and their boundaries are defined from a disciplinary point of view [28].

The TC paradigm has the potential to change teachers' knowledge, beliefs and even identity through a new model of knowledge. Since TCs focus on learners' experience during a course, their engagement and depth of learning, they are emerging as a useful tool for identifying key components of student-centred curriculum design [29] and for pinpointing significant learning thresholds for teachers in professional development contexts [30]. For that reason, the study of TCs has become an interesting area of research that can lead to better curricular structure. As [31] points out:

> If we want to develop an understanding of the pedagogy of the subject we teach, we have to start somewhere and making sense of what seems central and often difficult to grasp by most learners, is a good place to begin our inquiry.

Online language teachers who work in secondary or higher education need to be aware not only of the TCs with which their students are struggling but also of their own set of TCs, related to the practice of online teaching. In addition, it would be advisable to flag TCs to learners, including those encountered by teachers in order to facilitate learning and at the same time encourage a critical self-reflection on the most challenging aspects of online teaching/learning languages. In 2017 Northcote and her team [30] analysed the challenges that a novice online teacher may face and identified a set of TCs that can prove extremely useful for designers of professional programmes. The list of TCs is presented on the project website in Table 2.

The researchers focused on TCs related to the teaching/learning of foreign languages in an online setting and then showed how the articulation of these concepts can inform the development of OERs. The LILAC project hinges upon language teachers' and learners' responses on how they perceive online learning contexts, what concepts appear particularly challenging to them and what areas of knowledge seem to be more troublesome than others. We suggest that making all the hurdles explicit within the TCs framework facilitates a direct approach to them and their resolution. These disturbances can be resolved using inquiry-based approaches [32] and critical self-reflection [33].

Table 2. Threshold concepts about online learning at http://tcs4nots.avondale.edu.au/tcs/

Category		Threshold concepts about online teaching
Preparation and course design (including curriculum design, instructional design, planning, teacher and course preparation)	1	An online course must be designed to have specific mechanisms to communicate, monitor and give feedback to groups of students as well as individual students.
	2	Online course design is critical to the success of online teaching and learning.
	3	Online course design needs alignment between learning activities, assessment tasks and feedback mechanisms to ensure student engagement.
	4	Preparation for designing and planning online teaching may take longer than preparation for on-campus teaching.
Online presence (including teaching presence, social presence and cognitive presence)	5	Students can learn without the teacher being present.
	6	Online presence is different from on-campus presence.
	7	Online presence, while elusive, must be pursued.
	8	Students need to be encouraged to be more self-regulated in an online course than in an on-campus course.
	9	Online presence requires interactive elements.
Interaction and relationships (including teacher-learner, learner-learner, and learner-content interaction and relationships)	10	Online learning contexts require a new mode of interaction between facilitators, students and resources.
	11	Online teaching requires facilitating interaction, not only presenting content.
	12	Synchronous communication methods in online learning contexts, while sometimes challenging to facilitate, have many learning benefits.

The project on which this paper is based used a survey questionnaire to gather data from academic staff as well as two rounds of focus-groups with the participation of Lilac team members, language teachers, teaching assistants and students (from secondary and higher education). The objective of both survey and focus groups was to identify a set of TCs related to online language teaching and learning and then embed them in the design of the Lilac modules. TCs identified following data analysis as well as more informal consultations with experts using technologies applied to language learning are presented in the paragraph below (§4). The set of possible TCs connected to online language teaching and learning lay the foundation of the design of the OERs in the context of the Lilac project.

3. METHODOLOGY

3.1. Aim and Participants

In this article we discuss the Lilac Team's replicable approach to OERs based on a solid theoretical conceptualisation that takes into account learning and cognitive theories on one hand and the threshold concepts framework on the other. In order to identify the set of threshold concepts connected with online language teaching and learning, a survey questionnaire was administered to the stakeholders and analysed. Additional data were collected during two rounds of focus-group sessions, in which the Lilac research team discusses issues encountered in online learning contexts with 10 language trainees, teachers and teaching assistants working in secondary and tertiary education and 3 students enrolled in the Professional Master of Education (PME) programme at the National University of Ireland, Galway (NUI, Galway).

3.2. Data Collection

An informative questionnaire made on Google Forms was purposefully designed for both experienced language teachers and trainee teachers who have just embarked on their very first teaching experience, and for language learners who are in transition towards the online learning environment. A total of 38 questionnaires were collected and then scrutinised. As far as the structure of the questionnaire is concerned, in a first background section (Section A) teachers were asked to give information about the foreign language(s) they teach, the educational level (primary, secondary or third) they are teaching in and whether they knew the difference between

blended and online learning. A second section (Section B) focused on estimating how many teachers had already experienced teaching in online and/or blended learning environments; what they thought the advantages and drawbacks of these two teaching contexts were and which language skills among listening, speaking, writing and reading they found or considered most difficult to teach. They also had to indicate which aspects of online teaching most appeal to them but also rate, on a scale from least to most challenging, the following aspects: evaluation, fostering interaction, time management, delivering live online classes, creating a community of learners, devising online activities and/or other aspects they considered problematic. In addition, they were requested to share their opinion on which skills   language learners should develop in order to transition smoothly from face-to-face to online learning. In the third and last section (Section C), teachers were asked to self-assess their digital skills in terms of language teaching. They first had to rate their ability to use different search methods to identify accurate and reliable online information and/or educational resources in relation to the language(s) they teach. Secondly, they were asked to indicate and rate their ability to produce digital learning content through the use of multimedia presentations, audio & video recordings and online learning tools. Finally, they had to indicate which social media they were using or would be willing to use for language teaching and rate their ability to provide and coordinate clear and respectful online interaction. All rating scales varied from a "1-basic" to a "5- excellent" ability. Data was also gathered from language student in a similar manner, through questionnaires and focus group. Student responses are not analysed here, but are occasionally referred to when a comparison with teacher responses is deemed relevant.

4. RESULTS AND DISCUSSION

The responses we received involved mainly experienced teachers (81.8%) with some previous but limited experience in online and blended learning, and mostly working in second (27.3%) and third (72.7%) level education, so dealing with teenagers and mainly young adults. On the other hand, learner responses came mostly from university students (93.3%) with just a small percentage from secondary school students (6.7%).

Answers to the questionnaires showed a general consensus on the advantages of online teaching and learning environments, mainly because of their wider flexibility and accessibility in terms of space, time and audience, but also in relation to creativity and autonomy for both teachers and students. However, results of the teachers' questionnaire are in part consistent with those described in [22] dealing with online teaching issues in general, and highlight numerous concerns about online language teaching. Teachers, both novice and experienced, lamented the lack of training specifically tailored to online language teaching, especially at a time when there is an urgent need to move more and more classes online and explore new ways of building knowledge. In particular, teachers identified the following aspects as the most challenging:

(a) managing online learning contexts efficiently;
(b) managing technology effectively: this includes understanding and resolving limitations imposed by the technological tool to the teacher's creativity (having a nice activity in mind only to find that the technology at hand does not allow for its implementation) as well as acquiring relevant research, organisational and time management skills to avoid spending a disproportionate amount of time preparing online classes and activities.
(c) designing activities and modules that can help students to develop all four language skills, with 47,6% of teachers reporting that they perceive speaking skills as the most difficult to teach online;
(d) creating a real sense of community, understanding group dynamics and connecting with the students (i.e. empathising with students' feelings and perceptions); fostering interaction among

participants both synchronously and asynchronously; preventing isolation, thus ensuring social presence and student engagement;
(e) assessing language learning online, giving feedback and monitoring students' learning process. It seems that teachers struggle to align online learning activities and assessments.

Regarding self-assessment of digital skills, answers by teachers show that they rank themselves high (4 on a 5-point Likert scale) in relation to their ability to use different search methods to identify accurate and reliable online information and/or educational resources. However, when it comes to the ability to produce digital learning content, there are big gaps among respondent: only 4.8% positioned themselves at very basic level, some at intermediate level (19%), a good percentage (42.9%) at very good level and 33.3% at proficiency level. Answers also reveal that most teachers make a very basic use of social media in teaching, with most responses indicating "discussion boards" as their option. The final question referred to the ability to provide and coordinate clear and respectful online interaction: just over a third of respondents (31.8%) positioned themselves between 3 and 4 on a 5-point Likert scale. In line with these results, discussions with the focus group highlighted the same issues encountered by examining the teachers' questionnaire, and concentrated particularly on the lack of adequate online resources that could facilitate online language teaching and learning. Language teachers denounce a paucity of easily readaptable or reusable online materials, something which makes lesson and course planning even more of a time-consuming task. Table 3 summarises the issues identified by language teachers and learners as possible elements of disturbance in online language learning contexts.

Table 3. Language teachers' and learners' issues in an online learning environment.

LANGUAGE TEACHERS	LANGUAGE LEARNERS
Manage online teaching and learning contexts.	Manage online language learning.
Enforce netiquette.	Comply with the netiquette.
Get lost in timing and organisation.	Keep themselves highly motivated, engaged, and organised. Lack of discipline.
Basic ability to produce digital learning content and basic use of social media.	Basic abilities to search and identify accurate and reliable online resources; basic abilities to work online in an autonomous way or in a team.
Design and plan online lessons and courses.	Develop the four language competences, especially concerning speaking skills.
Feel frustrated for time demanding concerning online materials preparation.	Feel frustrated due to the poor connection/sounds that is particularly annoying during synchronous classes.
Manage students' groups dynamics.	Manage groups dynamics between classmates, and classmates and teachers/instructors
Help students to develop the four basic language competences, especially regarding speaking skills.	Less focus on speaking skills, little attention to the phonetic and prosodic aspect of language learning.
Help students to interact with each other and overcome the feeling of isolation.	Feel isolated and not enough supported. Recognise a new role of the learner who has more responsibilities.
Build a sense of a community online.	Build a sense of community and interact with each other's. Lack of social interaction among students.

Assess online: provide an immediate feedback, monitor students' learning progress, prepare rubrics and tests.	Accept new forms of assessments such as self-assessment and peer reviewing.
Reward students online.	Monitor language learning progress.
Manage plagiarism issues.	Electronically marked assessments have little or no tolerance for almost correct answers.

The elements of disturbance listed in Table 3 were then analysed and grouped into five macro areas (moving to e-learning; digital and organisational skills; language component; online communities; assessment), which constitute the five categories on which TCs are based (table 4) as well as the five units of each module and are graphically represented as a virtual tree (§5).

The TCs included in the Lilac modules are generally consistent with those proposed by [22] that refer to online teaching, however some are new and are indicated in bold in Table 4 below. Content was then designed to incorporate and deal with the TCs identified.

Table 4. Threshold concepts about online language teaching and learning.

Threshold Concepts		
	Online Language Teachers	*Online Language Learners*
1. Transition towards e-teaching (including course design, lesson planning, teacher and course preparation) and e-learning (including relationship between the teacher and students, teaching presence, social presence and cognitive presence)	1.1T An online course must be designed to have specific mechanisms to communicate, monitor and give feedback to groups of students as well as individual students. 1.2T Online course design is critical to the success of online teaching and learning. 1.3T Online presence, while elusive, must be pursued. 1.4T Students need to be encouraged to be more regulated in an online course than in an on-campus course. **1.5T Online language teaching requires specific approaches and methods, not only presenting content.**	**1.1L Online language learning is not engaging and not effective.** **1.2L Students cannot learn without the teacher being present.**
2. Technology (including teacher-digital content, learner-digital content interaction) and organisation (including the difference from on campus teaching and learning)	2.1T Preparation for designing and planning online teaching may take longer than preparation for on-campus teaching. **2.2T Using technologies requires a lot of time to be exploited properly.** **2.3T Using technologies restricts creativity in developing digital**	**2.1L Online learning environment requires more rules than on campus learning.** **2.2L Online learning environment require a new role for learners who have more responsibilities.**

		contents	
3.	Language components (including the strategies and method in developing the four basic language competences)	**3.1T Online courses neglect the development of speaking skills.**	**3.1L Online courses neglect the development of speaking skills.**
4.	Online communities (including teacher-learner, learner-learner, and learner-content interaction)	**4.1T Online learning contexts require a new mode of interaction between language teachers, learners and resources.** 4.2T Online teaching requires facilitating interaction, not only presenting content.	**4.1L Online learning contexts require a new mode of interaction between language teachers, learners and resources.** **4.2L Online learning environment fosters a feeling of isolation.** **4.3L Online learning environment neglect interaction among learners.**
5.	Assessment	5.1T Online course design needs alignment between learning activities, assessment tasks and feedback mechanisms to ensure students engagement. **5.2T Online assessment increases plagiarism.**	**5.1L Electronically marked assessment are not reliable.**

The Lilac modules, albeit leaving scope for repurposing most OERs, are specifically designed to assist online language teaching and learning. In line with the parameters of our project and in order to aid the interpretation of the threshold concepts listed in Table 4, the features of threshold concepts were redefined in terms of online language teaching and learning, as follows.

(a) Transformative: they change the way we view online teaching and learning.
(b) Troublesome: The idea of online language teaching can be counter-intuitive to the way we have always taught. Online language teaching and learning may seem too difficult or too complex.
(c) Irreversible: Concepts learned about online language teaching and learning are difficult to unlearn.
(d) Integrative: Threshold concepts about online language teaching and learning are likely to incorporate concepts about other teaching/learning-related issues (e.g., curriculum design, assessment).
(e) Bounded: A threshold concept about online language teaching/learning is related to an academic's scholarly practice of teaching.
(f) Discursive: Evidence of threshold concepts about online language teaching/learning will be demonstrated incidentally in an academic's use of language.
(g) Reconstitutive: The academic's grasp of a concept may go back and forth across stages of being sure and not sure, as they develop, undevelop, construct, and reconstruct the concept for themselves.

(h) Liminality: As the online language teacher crosses the liminal space between not teaching online and teaching online effectively, s/he may experience some level of stuckness. As the online language learner crosses the liminal space between not learning online and learning online effectively, s/he may experience some level of stuckness.

5. THE LILAC TREE AND THE ONLINE LANGUAGE TEACHER

Analysis of respondents' answers, identification of TCs and reference to online learning and cognitive theories determined the design structure of the Lilac modules, which progress from basic, essential skills to more advanced competences. We used the metaphor of the tree to give a graphic representation of the development of skills and competences related to online teaching, as shown in Figure 1. We metaphorically conceived our online teacher as a virtual tree whose roots are represented by the essential digital skills that teachers need to develop and constantly update in order to transition successfully from a classroom-based to an online teaching environment. Teachers' digital skills are directly linked to their organisational skills, and together they make up the nourishment needed to nurture the three branches of our tree, enhancing a teacher's pedagogical, social and assessor role.

As Fig.1 shows, and following the tree structure outlined above, the Lilac Teachers' Module was therefore devised as a five-unit module. Each unit is then divided into a number of lessons with specific objectives, reflections and tips to help teachers overcome difficulties and challenge what they perceive as e-teaching limits. This structure has been graphically designed as an interactive image, our so-called Lilac Tree Map, which can be found in the module introduction and acts as an interactive table of contents. The user can click on the single units and immediately access its content. Below an overview of each unit.

Unit 1: Moving to e-learning addresses TCs from 1.1T. to 1.5T. It aims at laying or reinforcing the foundations for the transition from face-to-face to online teaching environment. It comprises of five lessons, which respectively explore: the characteristics and therefore the differences between the two teaching & learning environments (Lesson 1); theories and methodologies applied to the online educational context (Lesson 2) and the most effective approaches and methods when teaching online (Lesson 3); preparing students for online learning (Lesson 4) and basic netiquette (Lesson 5).

Unit 2: Digital and Organisational Skills addresses TCs from 2.1T to 2.3T. It comprises of three lessons and has been purposefully designed to respond to what has been identified in the teachers' questionnaire as a widespread need for strong and solid organisational and time-management skills. Lesson 1 is a brief introduction to the topic. In Lesson 2 the teachers are given the tools to identify their current level of digitalisation in terms of digital resources and technologies and are walked through the development of their digital competences. Lesson 3 explores more in detail the organisational and managerial skills that teachers should have when teaching online and gives tips on how to organise the working time and space effectively.

Unit 3: Pedagogical role addresses TCs 1.2T, 1.5T, from 2.1T to 2.3T, and 3.1T. It aims at enhancing teachers' pedagogical skills by providing them with tools and tips to plan and implement effective online learning activities that promote the development of the four basic linguistic competences. The unit has therefore been designed to help teachers to overcome the perceived limits of educational platforms and technology. Lesson 1 offers an innovative lesson planning system, the Lilac "ping-pong planning", which provides a structure for teachers' synchronous and asynchronous delivery of both content and feedback and for their interaction with online learners, while Lesson 2 and 3 focus on the four language competences, giving

practical tips to enhance Reading & Writing and Listening & Speaking skills respectively. Lesson 4 provides an overview of the educational tools to be employed online.

Unit 4: Social role addresses TCs 4.1T and 4.2T. It examines the strategies that a teacher should follow to create a strong sense of community among the learners, establish a solid teacher-student relationship and manage the community of learners by fostering students' interaction and engagement both synchronously and asynchronously. It comprises 3 lessons: Lesson 1 explores how teachers can create and also help their students to create and maintain a relaxing and healthy learning environment; Lesson 2 focuses on the creation of online communities and on the tools to be used; finally Lesson 3 focuses on how to support students' learning engagement and interaction with both content and peers.

Unit 5: Assessor role addresses TCs 1.1T, 1.5T, 3.1T, 4.1T, 4.2T, 5.1T and 5.2T, comprising again of three lessons, explores the world of online assessment and evaluation. Lesson 1 provides the teachers with ideas and advice on how to create new effective and appropriate online assessments (e-portfolio, peer-assessment), while Lesson 2 gives an overview of strategies and ways to monitor and assess students' learning; Lesson 3 focuses on the creation of feedback aimed at enhancing students' performance.

Each Unit includes an end-of-unit final quiz where teachers can put themselves to the task and assess what they have learnt so far. All the Units and Lessons have also been conceived as totally independent and self-containing. Learners are totally free to take the course in sequential order or jump around the units/lessons according to the topic(s) that interest(s) them more.
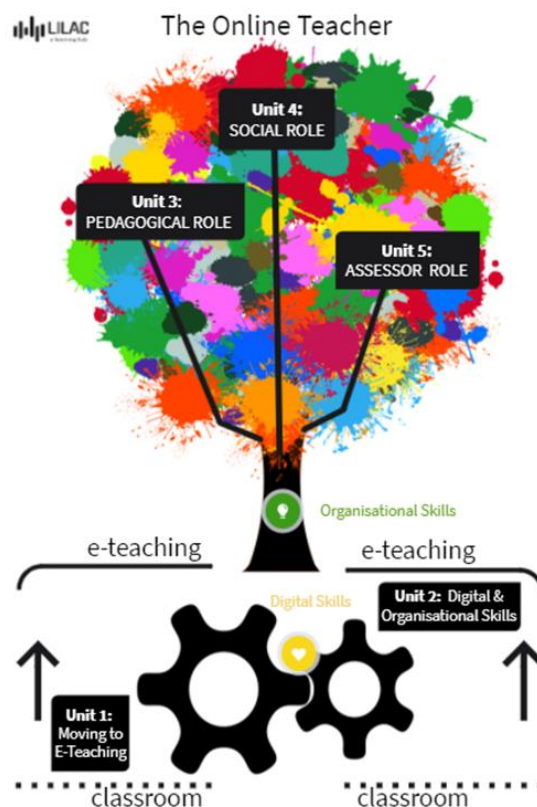

Figure 1. Lilac tree map

6. CONCLUSION

This paper outlined the creation of training modules for online language teachers as part of the Lilac Project OERs, and the conceptual framework underpinning their design. It argued that effective OERs need to take into account the impact of cognitive load on learners' acquisition and retention of knowledge, the principles of micro and macro learning for appropriate distribution of the cognitive load, the identification of Threshold Concepts for the selection and sequencing of content, as well as online and multimedia learning theories, in our case specifically directed to adults.

The Lilac team identified TCs through questionnaires and focus groups and built the OERs around them, organising content in self-contained microlearning units that nevertheless form part of a larger macro structure and are supported by and supplemented with macrolearning content. Acknowledging adults' need for information that is relevant, motivating, purposeful and quickly retrievable, we designed a learning path that can be easily personalised, while at the same time offering the option of sequential progression. The micro level allowed us to introduce learning objects and single skills while at the macro level we dealt with topics and more complex, integrated skills and competences. This combined structure also allowed us to spread the cognitive load so as to avoid load "peaks" within the module.

Whilst Lilac OERs are specifically designed for training online language teachers and learners, we believe that they provide a template for the development of further OERs with different objectives and stakeholders. As reliance on online content grows and its inclusion in both formal and informal learning environments becomes nearly unavoidable, solid conceptual frameworks for their design need to be investigated, updated and implemented so that learners are exposed to significant and motivating learning paths that can encompass both single items of knowledge as well as more complex information, skills and competences. It is hoped that future research will focus also on statistical data on the impact of online OERs on retention, which in turn will further inform design and implementation.

ACKNOWLEDGEMENTS

REFERENCES

[1]   Dempsey, M. & Burke, J. (2021) *Lessons Learned: The experiences of teachers in Ireland during the 2020 pandemic.* Project Report. Maynooth University.

[2]   Erarslan, A. (2021). English language teaching and learning during Covid-19: A global perspective on the first year. *Journal of Educational Technology & Online Learning, 4*(2), 349-367.

[3]   O'Sullivan, K., Clark, S., McGrane, A., Rock, N., Burke, L., Boyle, N., Joksimovic, N., Marshall, K. (2021). A qualitative study of child and adolescent mental health during the COVID-19 pandemic in Ireland. *Int. J. Environ. Res. Public Health*, 18: 1062.

[4]   Caffo, E.; Scandroglio, F.; Asta, L. (2020). Debate: COVID-19 and psychological well-being of children and adolescents in Italy. *Child Adolesc. Mental Health*, 25: 167-168.

[5]   Kilinçel, S; Kilinçel, O; Muratdagi, G., Aydin, A., Usta, M.B. (2020) Factors affecting the anxiety levels of adolescents in home-schooling during COVID-19 pandemic in Turkey. *Asia Pac. Psychiatry*, e12406.

[6]   Karakose, T., Yirci, R., Papadakis, S. (2021). Exploring the interrelationship between COVID-19 phobia, family conflict, family-work conflict, and life satisfaction among school administrators for advancing sustainable management. *Sustainability, 13*(15), 8654.

[7]   Trzebiński, J.; Cabański, M.; Czarnecka, J.Z. (2020) Reaction to the COVID-19 Pandemic: The Influence of Meaning in Life, Life Satisfaction, and Assumptions on World Orderliness and Positivity. *J. Loss Trauma*, 25, 544–557.

[8]   Nicora, F., McLoughlin, L., Bologna, O. (2022) Higher Education and new trends in the digitalized labour market: broaden language students' horizons. In Elena Domínguez Romero, Jelena Bobkina, Carmen Herrero, Svetlana Stefanova Radoulska, Isabelle Vanderschelden (eds.), *Visual literacy and digital communication: the role of media in new educational practices*. Editorial Comares, Granada, Spain. 79-100.

[9]   Hylen, J. (2006) Open Educational Resources: opportunities and challenges. OECD-CERI.

[10]   D'Antoni, S. (2009). Open educational resources: Reviewing initiatives and issues. *Open Learning: The Journal of Open and Distance Learning, 24*(1), 3-10. doi: 10.1080/02680510802625443. CrossRef Google Scholar

[11]   Wiley D., Bliss T.J. & McEwen M. (2014) Open Educational Resources: A Review of the Literature. In: Spector J., Merrill M., Elen J., Bishop M. (eds) Handbook of Research on Educational Communications and Technology. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-3185-5_63

[12]   Downes, S. (2007). Models for sustainable Open Educational Resources. *Interdisciplinary Journal of Knowledge and Learning Objects*, 3, 29-44.

[13]   Beetham, H. & Sharpe R. (2019) *Rethinking pedagogy for a digital age: principles and practices of design.* London. Routledge.

[14]   Koohang, A. & Harman, K. (2007) Advancing sustainability of Open Educational Resources in Issues. *Informing Science and Information Technology*, 4, 535-544.

[15]   Lindner, A. (2006) Use these tools, your mind will follow. *Learning in Immersive Micromedia & Microknowledge Environments, Research Paper for ALT-C 2006: the Next Generation.*

[16]   Schimdt, A. (2007) Microlearning and the knowledge maturing process: towards conceptual foundations for work-integrated microlearning support. In Martin Linder and Peter A. Bruck (eds.): Micromedia and Corporate Learning. Proceedings of the 3rd International Microlearning 2007, Innsbruck, Austria, June 2007, Innsbruck University Press, 99-105.

[17]   Hug, Theo (2005) Micro learning and narration. Exploring possibilities of utilization of narrations and storytelling for the designing of "micro units" and didactical micro-learning arrangements. *Online proceedings of the International Conference "Media in Transition 4: The Work of Stories"* at the M.I.T. in Cambridge (MA), USA, May 6-8, 2005, available at: http://web.mit.edu/commforum/mit4/papers/hug.pdf, 2005.

[18]   So, H-L., Lee, H. & Roh, S-Z. (2020) Examining the Design for Microlearning for Korean Adult Learners. *Computer-Based Learning in Context, 2*(1), 40-53.

[19]   Stronck, D. R. (1983) The comparative effects of different museum tours on children's attitudes and learning. *Journal of Research in Science Teaching*, 20, 283-290.

[20]   Knowles, M. S. (1984) *Andragogy in action.* San Francisco CA: Josey-Bass Publisher.

[21]   Creswell, J. W. (2015) Chapter 4: Specifying a purpose and research questions or hypothesis. *Educational Research Planning, Conducting and Evaluating Quantitative and Qualitative Research.* Upper Saddle, NY. Prentice Hall/Pearson Education, 109-138.

[22]   Major, A. & Calandrino, T. (2018) Beyond chunking: micro-learning secrets for effective online design. *FDLA Journal: 15*(2), 27-30.

[23]   Sweller, J. (2014) Working memory, long-term memory, and instructional design. *Journal of Applied Research in Memory and Cognition, 5*(4), 360-367.

[24]   Fox, A. (2006) Microlearning for effective performance management. *Talent Development, 70*(4), 116-117.

[25]   Kerres, M. (2007) Microlearning as a challenge for instructional design. In T. Hug (Ed) Didactics of Microlearning, Concepts, Discourses and Example, Münster: Waxmann, 98-109.

[26] Buchem, I. and Hamelmann, H. (2010) Microlearning: a strategy for ongoing professional development. E-Learning Papers: 21. http://elearningeuropa.info/files/media/media23707

[27] Hug, T. (2009) Outline of a microlearning agenda. *eLearning papers*: 16 www.elearningpress.ue

[28] Meyer, J. H. F., & Land, R. (2003). Threshold concepts and troublesome knowledge: Linkages to ways of thinking and practising within the disciplines Enhancing Teaching-Learning Environments. *Undergraduate Courses Project, Occasional Paper 4* (pp. 1-12). Edinburgh: University of Edinburgh.

[29] Land, R., Meyer, J. H. F., Cousin, G. & Davies, P. (2005). Conclusion: Implications of threshold concepts for course design and evaluation. In J. H. F. Meyer, & R. Land (Eds.), *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge*. London and New York: Routledge. 195-206.

[30] Northcote, M., Gosselin, K., Kilgour, P., McLoughlin, C. & Boddey, C. (2017) Using threshold concepts about online teaching to support novice online teachers: designing professional development guidelines to individually assist academic staff ("me") and collectively guide the institution ("us"). In H., Partridge, K. David, & J Thomas (eds), Me, Us, It! Proceedings ASCILITE2017: 34th International Conference on Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education (pp.328-336).

[31] Cousin, G. (2006) *An introduction to threshold concepts*. Planet.

[32] Kreber, C. & Kanuka, H. (2013) The scholarship of teaching and learning and the online classroom. *Canadian Journal of University Continuing Education, 32*(2), 109-131.

[33] Baran, E., Correi, A., & Thompson, A. (2011) Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers. *Distance Education*, *32*(3), 421-439.

AUTHORS

Francesca Nicora is a research assistant and teaching assistant at the University of Galway, Ireland. Francesca holds a BA in Foreign Languages and Literatures and a MA in Theoretical and Applied Linguistics, awarded by Università degli Studi di Pisa (Italy). She completed a MA in E-Learning and E-Teaching Italian as a Foreign Language at the Università per Stranieri di Siena (Italy) and a PgCERT in Teaching and Learning in Higher Education from the Centre for Excellence in Learning and Teaching (CELT) at the University of Galway. She has recently completed her Structured-PhD degree in Italian Studies from the University of Galway. The PhD project, entitled "*Prosodic training in foreign language: a study with Hiberno-English learners of Italian*", has been chosen as the winner of the Irish Association for Applied Linguistics postgraduate Award in 2019. Her research interests include foreign language prosody acquisition, corpus linguistics, audiovisual translation, e-learning and e-teaching, and open educational resources.

Oriana Bologna is currently a teaching assistant and an e-tutor in Italian at the University of Galway and she has been working on the LILAC project as a research assistant. Oriana holds a BA in Theories and Techniques of Interlingual Mediation and a MA in Translation and Interpreting both awarded by Università degli Studi di Genova (Italy). She completed a Postgraduate course (Master di II Livello) in E-Learning and Teaching Italian as a Foreign Language awarded by Università per Stranieri di Siena (Italy). She has also been training as an Italian teaching assistant at Universidad de Granada (Spain). She is also an official CILS (International Certification of Italian as a Foreign Language) examiner. Her research interests include E-learning and E-teaching, Learning Technologies, Instructional Design, Visual Design and Universal Design for Learning.

Laura Incalcaterra McLoughlin, PhD, Professor, School of Languages, Literatures & Cultures, University of Galway, Ireland. Joint Director of Centre for Applied Linguistics and Multilingualism. Co-director of the MA in Advanced Language Skills. Director of the Diploma in Italian Online. She teaches Italian language,translation and audiovisual translation. She has published widely on language teaching methodology, language and e-learning/new technologies and subtitling in language teaching and translators' training.

She has received considerable national and international funding for language-related projects. Recent projects include The Lilac Project (https://lilac-project.com, National Forum for the Enhancement of Teaching & Leatning), Move-ME (http://movemeproject.eu, Erasmus+ Programme, European Union), DigiLanguages (http://www.digilanguages.ie/ National Forum for the Enhancement of Teaching & Learning) and ClipFlair project (www.clipflair.net).