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Good Practice Guide

# The Use of Digital Resources in University Programmes

Digital Literacy as a Way  
to Improve Students' Employability.  
Case Studies from the COLISEE Project



**“Linguistic, Intercultural and  
Entrepreneurial Competences Serving  
Businesses in Europe”**

**Janerik Lundquist (Ed.)**



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# Introduction

*Alain Carlo*

## **Reminder of the objectives and of the activities of the COLISEE project**

The objectives of the COLISEE project which was developed by eight European universities (e-Omed, Hellenic Open University, Linköping Universitet, Southampton University, Universidad Nacional de Educacion a Distancia, Universitat de les Illes Balears, Montpellier University, University for Foreigners of Perugia) are to improve the employability of university graduates at Master's level who will carry out a period of study abroad as an integral part of a Joint Master's degree.

The focus is on three key competences:

- Linguistic competences on two European languages ;
- Intercultural awareness of two countries;
- Business knowledge and acquisition of corporate culture in Europe in at least two European countries.

The use of new technology constitutes a guiding thread which can lead to the improvement of university courses and break with outdated traditional practices; the work undertaken particularly concerned the following activities:

- The identification and adaptation of digital infrastructures to students' training needs;
- The identification and development of digital resources in training courses;
- The uptake in the use of digital resources through the organization in each partner university of training sessions for teachers.

The responsibility for each valued activity was entrusted to an individual consortium's university but all partners contributed to the development of these activities. The activities linked to the elaboration of the envisaged Joint Master's Programme (course description, course contents, evaluation etc.) are not included in this booklet since it will only be implemented following the end of the COLISEE project and therefore we cannot assume the impact of the practices which have resulted in the elaboration of this new Master's.

## **Characteristics of good practice in terms of university pedagogy**

Good practices must *accompany change* when it comes to university staff training in order to enable experienced teachers or newly qualified teachers to break with those traditional practices which do not sufficiently take into account new aspects of professional activity, in particular distance learning.

**The portability** of good practice is a second important and defining aspect of good practice: good practice occurs in a specific context and only proves its effectiveness in actual practice. This good practice should be able to function in different learning contexts so that teachers can claim ownership of it. It does not involve providing templates but rather providing leads to be explored in learning situations in higher education. In order to be transferable, this good practice - in the use of information and communication technologies in education - should not require over-excessive technical competences, though there may be need for some training sessions.

These examples of good practices do not aim to replace existing tools in each university but to expand knowledge and to promote experimentation. The reader's main role will be to contextualize his or her training courses, to adapt them to his or her range of students and, to evaluate their impact on the quality of teaching.

**Tools to accompany the development of good practice:** good practice must rely on appropriate or adaptable training tools (for example access to digital resources). Access to teaching resources whose effectiveness has been tested by peers is a condition for developing innovative teaching methods.

**Sustainability:** the implementation of a good practice must not involve prohibitive costs out of most teachers' reach.

**Impact:** good practice can be assessed by the impact and the results expected from a training course.

### **Intended audience**

The booklet is aimed at teachers working on university language courses or on programmes involving corporate culture, particularly newly qualified teachers at the start of their career. It is also aimed at administrative staff who may be involved in the preparation of incoming and outgoing student mobility, or any teacher (and/or computer specialist) specialized in the elaboration of digital infrastructure management and on-line digital resources. This booklet may also be useful to students enrolled on relevant Master's Programmes.

### **Objectives and limitations**

This booklet claims neither to be exhaustive nor to be a model for the professional practices described. It is not designed as a series of fact sheets describing practices to be replicated but rather as leads and training tools that the reader will have to claim for himself or herself in order to teach their students. They will do it in a specific university context, sometimes very different from that in which these practices were initially identified by the authors.

Furthermore, this booklet has the modesty not to pretend to describe

all existing practices with regard to higher education but only intends to develop the three designated competences (linguistic, intercultural and entrepreneurial competences).

The content of this booklet is based on experiences within the COLISEE project (on the identification of existing resources or the production of digital resources or on the training of university teachers which focused on the three key competences mentioned). Furthermore, it was appropriate to take into account the partners' experience prior to the project in so far as the professional practices mastered by the partners would enrich the contents of this booklet. All in all, this booklet whose limits have been described, results from two years' shared experiences by all partners, collective experiences enriched by individual expertise and by training tools developed by each partner in the COLISEE project.

Chapter 1 **The Four Paradigms of Digital Culture** deal with the question of how to truly embed a digital culture in a university setting. The issue of getting more teachers to use ICT in their courses arises not just through the technical problems that are faced, but, primarily because teachers need to be convinced of the added value that digital tools can bring to university education. The chapter also takes into account the divide between students, born within the digital era (the 'connected' generation) and teachers, late comers to the use of digital resources. We have reached a point where it is up to teachers to adapt to their students' culture, and this implies the need for them to question their practices and demonstrate a willingness to retrain.

The author reviews the literature on the subject and finishes by defining four paradigms: From top-down to bottom-up; Connecting dots; Horizontality, and Trust. For each of these, key lessons for teachers are defined. Selected bibliographic references give readers the possibility of delving deeper into the topic of digital culture.

Chapter 2 **Selecting Digital Tools to Create a Good Learning Environment** focuses rather more on digital tools. Case studies of different tools developed by the Hellenic Open University are presented: these include different platforms, virtual classrooms and different resources and video-based virtual worlds. The authors also compare and analyse different platforms (OpenSimulator, Open Wonderland and Open Cobalt). The reader, student or teacher, therefore has at his/her disposal a variety of tools with which they can familiarize themselves and take some ownership so that they can transform their professional practices. The authors add a cross perspective of the activities carried out by other COLISEE working-group partners, and lastly examine a multitude of digital tools which are listed and explained.

### **Chapter 3 Developing of a Catalogue of Digital Resources for Competence/ Skills Training**

Within the frame of the COLISEE project, the authors from UNED have developed a catalogue of digital resources in English which focuses on teaching the three key COLISEE competences: Teaching Linguistic, Intercultural and Entrepreneurial Competences. Considering their very wide experience in the field of distance learning, input from UNED has been essential. More than 260 digital resources were selected, analysed or developed as a result of the exercise. All were tested.

First of all, the authors examine different concepts linked to distance learning. They adopt the general principal of selecting and constructing digital resources based on a training in competences approach.

The methodology used to construct this digital resources catalogue is broadly explained for each of the three key competences and a competence framework was elaborated for each of them. Numerous examples are supplied with their original use contextualized, (video sources, radio-programmes etc). Various resources were developed.

Four courses in the form of MOOCs were built by the team from UNED using this powerful digital resources catalogue and its effectiveness in actual use adds significantly to the concept of good practice within the COLISEE project. Finally, the authors from UNED supply an up to date bibliography on each of the three key competences.

### **Chapter 4 Upskilling teaching staff**

The first parts of this chapter were developed by the authors from COLISEE project partners, the Università per Stranieri di Perugia in collaboration with the Universitat de les Illes Balears. It reports on a preliminary study which evaluated the different types of behaviour and degrees of use by university teachers of pedagogic resources based on the project three key competences. The authors also review the existing bibliography on the subject enabling a crosscutting perspective across the topics covered by each team who have contributed to this good practice guide.

The authors present five case studies, covering extensively the teacher's role in on-line learning, these are: Responsibilities of an on-line teacher; Assessment and evaluation in on-line courses: Taking notes, Digital writing tools and reference management tools. This is followed by a description of the various courses which tested these resources within the two universities concerned.

The concluding section is a contribution from University of Southampton on the development of key competences with support of modern information and communication technology. With three interesting examples from a traditional campus-based university an overview is given of some of the pedagogical practices carried out in the area of language training and academic skills and it will show how many of these practices contribute to the three COLISEE key competences.

# Chapter 1.

## The Four Paradigms of Digital Culture

*Donatella Padua*

*The mutual love between the learner and those who teach is the first and most important step to knowledge.*

**Erasmus of Rotterdam**

The first step for teachers wanting to develop the Digital Literacy skills in their students which will add to their employability is to create a Digital Culture. However, if they are to activate this process, it is important that teachers first demonstrate that they have the right digital culture, key competences and skills themselves. Only then, can they help 'digital native' students to grow in their ability to apply these digital competences and skills, and to learn effectively and responsibly. The notion of digital culture allows teachers to understand the context in which digital tools are applied, the aim of applying them and, the impact on students in terms of building competences and skills.

Since the aim of the COLISEE project is to show how the use of digital resources might improve students' employability, the following discussion will be focused on digital culture within the organisations in which students are likely to start their professional career. Importantly, since the paradigms of digital culture are replicated in any system connected to a digital ecosystem (Luhmann, 2002, Maturana and Varela, 1987), they can be said to occur in much the same way in a company or an organisation as in an *academic class*. It is interesting to note how these paradigms apply not only to the relationships between institutions and people, between a brand and its stakeholders, but also to that between teachers and students. For this reason, at the end of each section within this chapter, we will highlight how each of the specific concepts can be applied to a fruitful teaching methodology which will build digital literacy within a digital culture framework.

The four paradigms of digital culture are described in the chapter and these are; 'From top-down to bottom-up', 'Connecting dots', 'Horizontality' and 'Trust'. They normally refer to processes within customer engagement, but in the teaching context they translate as digitally trained teachers able: to develop a Web 2.0 teaching approach, to 'connect dots', to encourage horizontal, peer-to-peer engagement among students and, to stimulate collective content-building and sharing. As Internet Age society (Appadurai 1997, Castells 2002, Bauman, 2007) is integrating the offline realm with the online virtual sphere and universities support teaching with new digital platforms, teachers need to craft new interdisciplinary frameworks by applying cross-disciplinary methodologies to problem-solving approaches,

playing the role of facilitators and project leaders in order to experience visual and practical models of divergent & convergent thinking. But most of all, teachers must be able to establish *trust* with their students, as trust is the driver of Relationship, Dialogue and Action.

Today we have a revolution in teaching techniques, where blended learning, Wikispaces, exploring, bookmarking and curating literature, digital taking notes, and the application of digital writing tools have become a new literature of human expression with new tools creating new opportunities in the job market.

Based on these premises, the four paradigms of the Internet Age follow.

## **1.1 From Top-Down to Bottom-up**

Eric Schmidt, the CEO of Google has argued: 'The Internet is the first thing that humanity has built that humanity doesn't understand, the largest experiment in anarchy that we ever had'. The 'experiment' to which Schmidt refers, deals substantially with 'information' as a resource, its control and the power relationships based on it. The basic assumption of the Internet is the individual, their relationships and the multiplication at an exponential rate of their interactions in an interconnected web. The Internet is a system; information is accessible to anyone and its source is not governed nor governable. Many examples in the Internet literature confirm this view, from Wikileaks to the revolutions of the Maghreb populations. However, in the institutional realm, this concept of web anarchy tends rather to assume the characteristics of a shift from bureaucracy to democracy.

There are three key assumptions behind this transition:

1. The existence of a relationship between institutions and stakeholders;
2. A shift in the ownership of information; and
3. The opening of the decision-making processes to innovative ideas generated from below.

Although some institutions and organisations have focused their missions on satisfying their stakeholders' needs, information and decision-making powers have still being kept tightly within their clutches (Fontana and Sacco, 2011). Today, within the interaction between institutions and stakeholders, we are witnessing an unprecedented reversal of positions, where those who in the past played exclusively the passive role of receiving entities, are today able to freely produce content impacting on the organisation's reputation. The power that 'people' have today to govern information on the internet, (the quintessence of democratic government), is expressed through a potential for creativity, through a richness of communicational modalities and the possibilities of voicing ideas never essayed before in human history (Padua, 2011, 2012). Public and private sectors are looking at these new possibilities

with mixed feelings and interests, yet not grasping the revolutionary power behind them. It often appears rather that the propensity towards involvement on the web is greatly affected by the institutional or business scope of the activities; that the typical 'old economy sectors' have found it difficult to understand the relevance of their presence on the internet, limiting their actions on the web to sites of the 'shop window' kind. Indeed, the evolution of the internet into a conversational environment has disoriented not only the 'old economy' organisations. While some of them have made a philosophy out of the internet, other still feel distant.

Examples of institutions adopting conversational strategies are 'open governments' or wikicracies, that is, democracies empowered by web collaborative tools (wikis). Via these approaches, institutions have met the need of individuals to express their opinions freely, to become protagonists by exerting a 'control' over the government, and have empowered people with access to data, becoming trustworthy via transparency and benevolence and showing integrity: in a word, they have succeeded in engaging people.

In the realm of communication, this evolution is represented by the shift of focus from media to individuals, by disrupting the traditional monodirectional processes via the creation of a new environment where a dialogue between the brand and its stakeholders and between stakeholders, (i.e. customers) takes place. It is no longer a mono-directional communication, nor a simple relationship, but the creation of a bottom-up 'inter-action', where the raised role of the protagonist is pre-eminent, thanks to the power of the highest freedom of expression, and demands, as a prize, personalized care.

Democracy means understanding and respect for forms of expression, specifically in contexts of social, cultural, economic and linguistic diversity. The relevant shift in media from generic to specific, from mass to the individual, favoured by the process of localization and cloud computing, represents an 'accelerator of diversity' and personalisation. This phenomenon has had, and will keep having, a significant impact on the various forms of Social Networks, Blogosphere, Syndicated News and Videosharing, and plays a role of unusual power within the process of personalized management of the customer. It is a new logic of web-marketing that integrates the democratic principles of trust and transparency within the brand-stakeholders' communication. Brands become global and local at the same time and, use languages and communication modalities that are most relevant to the cultural profile. Indeed, respect of diversity doesn't mean only considering socio-cultural issues. It is also relevant to take into account the instinct of the single individual, of the customer who is the owner of a unique and individual identity, not assimilable in clusters or statistical groups, but rather as a person with unique tastes and inclinations.

This appears to be the essence of digital democracy.

### **1.1.1 Section 1. Key Lessons for Teachers:**

1. Digitally cultured teachers know how it is important to establish a 'relationship' with their students via dialogue.
2. The internet age shift in the 'ownership of information' may be leveraged by teachers helping students to a more critical use of the endless sources of information available on the internet. Information validation, that is the ability to discern scientifically valid sources from neither valuable nor reliable sources, is a key competence to be transferred to students.
3. The opening of learning methodologies to bottom-up content production and innovative ideas generated from below (students), opens the doors to flipped classrooms and open-access, creative learning environments.
4. The culture of millennial students is such that they appreciate being invited to express their own opinions and to become protagonists and they love to be engaged. A teacher-student dialogue approach disrupts traditional mono-directional processes by creating a dynamic, interactive, motivating and personalised learning environment.

## **1.2 Connecting Dots**

During an historical commencement speech at Stanford University, the CEO of Apple Steve Jobs explained to students the relevance of 'connecting dots' as a new paradigm in which to approach the complexity and unpredictability of life and of the world surrounding us. In point of fact, this notion was not original since a prominent economist and sociologist, Vilfredo Pareto, had formulated it about a century in advance via the theoretical concept of the 'Instinct of combination', which equates to the 'the creation of new facts by making nexuses from known elements' (Pareto, 2010). Apparently, Steve Jobs also positions 'connecting dots' as a paradigm of creativity:

*'Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things. And the reason they were able to do that was that they've had more experiences or they have thought more about their experiences than other people'* (Jobs, 1996).

Jobs is really referring to ideas, inventions, discoveries, improvement of elements and relationships, as the story of his life confirms. This intuition is particularly relevant in the digital ecosystem, where the endless number of dots to be connected multiplies at a geometric rate; information, data, contents, media, networks and communities, videos overload virtual space generating petabytes of data. This massive wealth of varied and diverse

elements defies any attempt at comprehension and its fast pace of production make it difficult to be subjected to any deep 'vertical' investigation.

The idea of complexity within the digital ecosystem reinforces the notion of 'connecting dots' and 'instinct of combination', and reveals human inability to provide any rational and linear explanation using the popular approach of Rational Choice Theory. In fact, the complexity of the digital network in its online-offline interactions and the acceleration that digital technology confers on global society multiplies the density of the network and related number and variety of knots (Piselli, 1995; Chiesi 1999); persons, contents, multimedia products, platforms and channels, media, represent to the 'always-on' individuals an endless possibility of connections and combinations. 'Connecting Dots' becomes an essential process of synthesis to generate innovation in complex environments with high connectivity.

Out of the vast scientific literature looking at the impact of global technology on society and other macro-systems (Appadurai 1997, Castells 2002, Bauman, 2007), it is relevant to highlight how the Theories of Complexity and a multidisciplinary approach can explain the digitalisation process. Edgar Morin (2001) evidences the relevance of a global approach to knowledge, connecting each single component, that is, each single area of knowledge, to the totality. Ilya Prigogyne (1986) has developed a theory which integrates traditionally opposing positions such as the STEM (Science, Technology, Engineering and Mathematics) disciplines with fields of the humanistic, arts and human sciences. On this basis, a science apparently distant from more traditional ones, such as Thermodynamics can be unusually applied to explain phenomena in social, economic and political contexts. Niklas Luhmann (2002), instead, defines a system as a self-referent entity, in constant self-reproduction and in osmosis with the environment (Maturana e Varela, 1987, p. 713, 1985).

### **1.2.1 Section 2. Key Lessons for Teachers:**

1. In a classroom, the 'dots' are the students and the teacher has to connect dots to generate new ideas. Group work, for instance, is a way to connect dots. Online wikis are another way to connect dots.
2. Connecting the experiences and knowledge of different students generates different outputs which could become different views on the same topic.
3. Connecting students via offline-online teamwork generates a social network of relationships, entailing socialization and exchange which enriches each student and helps to create a friendship environment.
4. Diverse classes generate rich outputs from digital collective-learning environments.

### 1.3 Horizontality

Complexity implies the impossibility of prediction. A global system, like the techno-social system (Magatti, 2011, pp. 61.65), generates an outcome which is different from the expected behaviour of each single component; the phenomenon of the wisdom of crowds (Surowiecki, 2004), or bottom-up digital movements such as the Arab Spring clearly confirm his. Bauman says postmodern global society, because of the processes of fragmentation and individualization, has produced a 'new global disorder' (Bauman, 2010, p. 49). A loss of order brings two main consequences; in terms of creativity and knowledge and in terms of power and control.

As for the first, it deals with liberating creativity (Padua, 2012a, p. 15). Both for individuals and organisations, new strategies for reacting positively to this scenario lie within the ability to quickly adjust strategies and projects to combat the precariousness and instability of the dynamic environment. The progressive lack of ties with material goods and places shown for example in the consumer product field becomes a chance to reinvent the future at any opportunity. This is 'creative disorder', where chaos is no longer the enemy to be fought and becomes instead an opportunity for growth, freedom of subjective expression and possibility of 'connecting dots'. New models of knowledge creation such as the Paretian 'Instinct for combination' lead to a horizontal approach in the creation of knowledge, contrasting with the verticality of the linear, modern, rational patterns.

As for the second, which is order, a consequence of power and control, it is easy to understand how we, in the Internet society, assist in the disruption of power and control systems.

In pre-modernity, order entails the idea of predictability, allowing persons to safely predict the consequences of their actions. In modernity, the rational linear patterns of Rational Choice Theory interpret reality under the theoretical approach of perfect information. In a complex social digital environment, there's an absence of comprehension, in the Latin meaning of *cumprehendere*, that is, to embrace all aspects, grasping all rational and irrational sides of subjective action. This view reflects the concept of a society of uncertainty as predicted by Bauman or, in economics, as predicted by Galbraith (Bauman, 2009, Galbraith, 1977). Related to the concept of uncertainty, the father of the Theory of Risk, Ulrich Beck (1999), maintains that society is founded on risk.

In synthesis, the vastness of the challenges we have in front of us and our lack of ability to manage new problems effectively using old patterns of thinking, lead us to question many fundamental values of our society. If we want to manage the new, we should radically change our models of thought, as facts are unpredictable and moreover will become more and more so. New holistic models of social intelligence have to cope with the lack of

predictability of linear rational models and with dynamic and multivariable environments, generating new challenges for organisations. This change in frame of mind drives companies and institutions to establish relationships with stakeholders based on values different from traditional make-or-buy patterns, introducing trust, listening and collaborating within new paradigms of development and innovation. It's the web 2.0 era.

In synthesis, the high level of complexity within the Internet Age has led to a paradigmatic shift from verticality to horizontality. This statement is justified by all the following facts which, relate to the reflections above:

- the disruption of vertical top-down power and control systems exerted by organisations and institutions leading to the creation of a new horizontal society.
- The creation of horizontal value-chains based on peer-to-peer sharing and on the production and control of information not governable by traditional top-down value chains.
- The speed of viral contagion fueled by connectivity, pervasively spreading through all connected surfaces.
- Multidimensionality and network relations, opposed to linearity and verticality.
- The dissolution of rational linear patterns versus creative disorder and connecting dots methodologies. This implies that knowledge develops more on the surface than mainstream vertical traditional patterns; the latter based on depth rather than superficiality.

According to this perspective, within a global ecosystem characterized by complexity and multidimensionality, the shift from a vertical to a horizontal paradigm reflects in processes and products, via:

- Co-production cases, such as Mulino Bianco and Dell that via dedicated platforms (Ilmulinochevorrei.it e Dellideastorm.com) allow the public to express their own ideas by presenting and posting proposals for the development of new products and services and improvement of existing ones. Ideas are voted peer-to-peer by the community and the best ones are realized by the company.
- Co-petition cases as between Toyota and Ford, where single phases of production processes are carried on in collaboration.
- Crowdsourcing, as in the case of online petitions (Petitonline.org).
- Crowdfunding, or 'horizontal' financing platforms, peer-to-peer, as Indiegogo and Kickstarter.
- Knowledge sharing, such as in Wikipedia clouds, allowing shared access to information, with the previously unimagined possibility of taking part

in the generation of information and the opportunity to modify existing knowledge.

- Open government forms, as Mysociety, supporting citizens to create a 'horizontal' subsidiary government.

### **1.3.1 Section 3. Key Lessons for Teachers:**

1. Inviting students to express their own ideas and encouraging peer-to-peer debates supported by digital platforms and tools such as forums and wikis, leads to unpredictable outcomes that the teacher has to learn to manage with experience. The freer (though critical) thought is encouraged, the more the role of the teacher as mediator requires appropriate competences and leadership in order to master the role of 'digital community manager'.
2. 'Creative disorder' may inspire a teacher to design a learning process which differs from traditional pre-organised linear modules, indeed built 'on the way' according to the specific learning needs arising from the digital collective learning process. While providing new opportunities for 'connecting dots' among new concepts, this is a valuable pattern which can stimulate the teacher herself or himself, in a challenging joint learning process with students.
3. A disruption of traditional top-down power and control teaching systems backed up by digital learning environments generates a stimulating creative environment, excellent for lab experiences. This pattern definitely requires a Digital Culture on the teacher's side and awareness of the millennials' profile and needs; individuality, fun, protagonism, freedom, proactiveness, call for a new concept of responsibility and for a new meaning of leadership on the teacher's side.

## **1.4 Trust**

In the Internet Age, trust has become essential to business. In a world where the new paradigm is based on connection, collaboration and innovation, marketing is shifting from a measure of success based on Return On Investment (ROI) to value measured in relationships and trustworthiness. This change is at the base of the urgent need for brands to create long-lasting relations with stakeholders and explains how Customer Lifetime Value (CLV) and Customer Equity (CE)<sup>1</sup> are increasing their strategic roles in brand strategies.

Since trust is the essence of a relationship, building a 'trust strategy' (Padua, 2012, pp. 91-95) will be of utmost importance. Some organisations

<sup>1</sup> CLV is a prediction of the net profit attributed to the entire future relationship with a customer, while CE is customer equity is the Value of potential future revenue generated by a company's customers in a lifetime. A company with high customer equity will be valued at a higher price than a company with a low customer equity. <http://www.businessdictionary.com/definition/customer-equity.html#ixzz2Qo9o42DC>.

are already operating in this direction via transparency politics, product withdrawals, offline corporate social responsibility and customer retention programs.

Designing a trust strategy, however, is a complex challenge for more than one reason; trust is multidimensional and it requires the establishment of a one-to-one personalized relationship between the brand and the customer to gain the insight into his or her real need; customers are increasingly distrustful, particularly of certain kinds of organisations; companies can't influence some aspects of building trust, which are deeply embedded in the psychology of the subject (*ivi*, 99).

To analyse the brand-stakeholder relationship in the digital context, we have to study the scientific constructs of trust and confidence. This will explain stakeholder behaviour and provide the bases for a trust strategy. The building blocks of this analysis refer to the concepts of free choice, expectation, trustworthiness, interaction, uncertainty, risk, dependency, reciprocity and loyalty.

Trust and confidence have several definitions in literature (Giddens, 1990, Luhmann, 2002). A synthesis of the various interpretations has been made, based upon which trust and confidence are considered two sides of the same coin; on the trust side, non-rational attributes prevail; on the confidence side, rationality emerges quite clearly.

Both trust and confidence are positive concepts of human interaction, implying a belief; they involve a person who projects his or her expectations into the future believing in a positive outcome, that is, that an action or a fact will occur. This action or fact appears to be at the base of the stakeholder-organisation relationship.

Trust allows the possibility of an action within a framework of reciprocity. Without the offer of trust, reciprocal action would be impossible. Reciprocity starts with a process of acknowledgment of the counterpart; indeed, the first act is to consider that there is someone to be trusted. Then, the trusted one will have to act compliantly, following the expectations of the trusting one (Padua, 2012, p. 81).

The circulatory process of exchange, which is an inside link among persons, a builder of society, is the main framework within which interaction takes place generating reciprocal influence and exchange (Simmel, 1908). As society is made up of social interactions and exchange is not possible without trust, it is clear how trust generates social cohesion and is a very powerful tool of integration, allowing action to take place (Giddens, 1990).

Indeed, trust and confidence belong to two different realms: trust is based on irrational elements and confidence on rational ones. Trust is an emotional process, stemming from a two-way, reciprocal interaction; confidence is a rational one-way process.

Also, trust is a key element of brand-customer relationships. However,

this construct is not able to fully explain the relational dynamics inextricably linked to the concept of confidence. This can be traced to the identity patterns underlying the relationship. In the perception of the stakeholder, the brand may be considered to be a person possessing competencies and abilities with which the stakeholder creates an interaction based on a congruence of values, emotions and personality.

We may say that trust is 'a bond between past and future'; the past is represented by experience, the future by expectations. Trust leverages past experience to anticipate the future. According to Simmel (Simmel, 1987 [1900]), expectations are born in an immediate zone somewhere between 'complete ignorance' and 'full knowledge'. This makes trust a way to fill a gap caused by a lack of information (Garfinkel, 2004, p. 30) and a compensation for a lack of control over reality.

That's why it is so important for brands to engage stakeholders on the trust side: it gives the customer a feeling of security, reducing risk and providing stability over time.

### **1,4,1 Trust Strategy**

Traditional one-way push strategies leverage solid informational bases and put the companies in the position of exerting control over the consumer. The Internet Age has now changed the scenario; companies have substantially lost that informational power by ceding control to customers who demand that brands meet their expectations. Many are the factors making the situation even more complex; competition has increased and consumers are more skeptical and difficult to engage, while the economic downturn impacts negatively on sales.

Given this picture, as traditional marketing mixes are not attaining a satisfactory and predictable level of success, *companies ought to move to a different strategy, based no longer on confidence, but on trust. This means moving from a one-way belief, based on control, to a two-way, reciprocal course of interaction.* It is a process in which companies aim for reciprocity to fill the information directly from the source: the stakeholder. The Internet Age customer, in turn, is empowered by access to a high level of information. In this way we may say that *stakeholder trust has to match company trustworthiness.* Stakeholders, then, have to trust companies and will act in the desired manner when they decide which brand they consider most trustworthy. Indeed, stakeholders' trust is based on two sides, a rational one, and an irrational one, thus they blend information with 'leaps of faith'.

*Consequently, building a trust strategy implies that organisations are called upon to create a rational profit-oriented approach combined with an apparently 'no-profit' emotional and 'non-rational' behaviour on the web, aiming to generate conversation rather than to sell.* Moreover, at the base of the problem there lies a general gap between the intentions of consumers

and those of companies: organisations are perceived by individuals as being on the web to make profits, while the members of social networks and most communities are connected mainly to ask for advice, to chat, to not feel alone, to find a friend, to share a concern, to ask for help.

In synthesis, the objective of a trust strategy which is embedded in a brand strategy (Padua, 2012, 95; 179-182), is to manage reputation via:

- a. a rational approach, working on five critical areas: competence, benevolence, integrity, transparency and value congruence.
  - *Competence* relates to technical ability and performance. It is a broad concept, taking various forms that include managerial competence, which is related to the ability of executives to increase the business in an effective way, creating value in the short and long run; and technical knowhow, such as the ability to produce quality goods and services and handling processes efficiently (Cofta, 2007).
  - *Benevolence* relates to the positive quality of relationship. 'It is the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive' (Mayer *et al.*, 1995).
  - *Integrity* refers to values and an ethical approach. It implies that the trustor perceives the trustee as adhering to a set of principles (personal integrity) considered acceptable (that is, to display moral integrity) by the trustor, including honesty, fair treatment and the avoidance of hypocrisy (*ivi*, p. 718).
  - *Transparency* relates to the rule to communicate. It may be interpreted as the possibility of the trustor acquiring information about the trustee's integrity. Communication management plays a relevant role as it enforces the goodwill of the trustee to be open and enables people to 'look inside'.
  - *Value congruence* is related to identity (Pirson and Malhotra, 2008). It expresses the sociological relation between identification and integration or sharing. According to Simmel, identity is tied intimately to differentiation; differentiation is the reason behind our identity. Indeed, for Simmel the logic of differentiation is the reason behind the creation of community. The atomization of individuals (the separation of individuals, with no relations) excludes any of the contact and interaction of which society is made up (Simmel, 1900, pp. 500-1). In truth, however, identification is tied to the concept of integration, while it is individualization that is behind the need for differentiation; the 'shape' of association is made up by the conflict between these two principles of action. This is the idea of ambivalence as formulated by Simmel, and characterizes his 'shapes' (Cotesta, 1996, pp. 20-3, Pendenza, 2010).

- b. On an irrational side, being able to create ‘unforgettable experiences’, emotions, and positive perceptions, via communication strategy and dialogue.

#### **1.4.2 Section 4. Key Lessons for Teachers:**

1. *As Erasmus of Rotterdam said ‘The mutual love between the learner and those who teach is the first and most important step to knowledge’, building trust means opening the door to a circulatory process of exchange, which is an inside link among the teacher and the students and allows action to take place.*
2. *Trust has two sides: a rational one, made up of solid information about the trustworthiness of the teacher and built on positive teaching performances; and an irrational one, stemming from the empathic relationship that the teacher is able to establish with students.*
3. *To be perceived trustworthy the teacher has to show:*
  - *Competence: that is, ability to master the subject, didactic and digital ability and communication performance.*
  - *Benevolence: that she or he cares about the students beyond the professional ties imposed by the role. This means that she or he is able to establish a human empathic relationship stemming from the genuine interest towards the growth of the students and their future.*
  - *Integrity: from adhering to a set of principles and values to an ethical approach, including honesty, fair treatment and the avoidance of hypocrisy.*
  - *Transparency: or opening herself or himself to the students’ understanding of the real intents of the teacher and of any information useful to students.*
  - *Value congruence: to be able to build a congruence of values between the teacher and students. When this belief is present, it means the teacher represents a model for students and the exchange reaches its deepest meaning. For this reason, being a teacher is a great responsibility and one of the most noble professions.*
  - *Moreover, this belief instils a sense of belonging to the entire class group, as the exchange occurs also horizontally between classmates.*

#### **1.5 Concluding remarks: The social culture of engagement**

*Engagement means opening a dialogue and winning stakeholders’ commitment while activating positive and effective emotional ties to the brand. This implies paving the way to a cooperative attitude from both sides.*

The engagement process develops within a wider process involving power and control relationships between organisations and stakeholders. The Internet age has brought with it an inversion of roles where organisations have to give up their controlling rule over customers and to act in a different way, which doesn't mean being passive, but certainly does mean being open to leaving space for customers' proactiveness. It's a new, subtle, though *transparent* role of attraction, of *pulling* customers, focused on the creation of an attractive environment as a context for websites. In this effort the prerequisite is to be perceived as *trustworthy*. Customers, then, have to *choose* whether to match a brand's trustworthiness or not. This new, bottom-up process allows customers to exercise their freedom to consider, evaluate, choose and act liberally, just as one does when one chooses a friend. This requires *new psychological and sociological competencies* in marketing experts.

The rules of engagement are based on two elements: the *brands' values* and the *environment* through which these values are transmitted. Brand values are the core components of the brand's world, contained also in the product's tangible and intangible benefits, in its contents, in its stories, in one word, in its culture.

What is of utmost importance, indeed, is the way stakeholders perceive the brand's culture to be *trustworthy*. This pertains to the customers' experience that builds over time throughout the relation to the brand, weaving a thread of a personalized story within the environment. Brand trustworthiness is the key condition for engagement. Indeed, as we have seen, trust has two sides: a *rational* one, based on competence, quality, information, responsiveness and customer care; and an *irrational* one founded in experiencing positive emotions and perceptions. Both sides are present in brand-customer conversations.

With the aim of capturing the value generated in a horizontal society through peer-to-peer relationships and integrating it in vertical economic processes, organisations have to adopt a social approach. This doesn't mean losing the focus on profit, which remains a requisite for the survival of the organisation. Indeed, it means having the ability to design and implement trust and engagement strategies to achieve positive win-win situations with stakeholders.

'Social' means that the stakeholder is a person that, being on the web, he or she is there *to share with other persons*. If you produce content and you don't want to share it with anyone, you write it in a Word document and save it to your pc. Conversely, if you post it and share it on the web, it means you are in relationship with other people, showing your innate need to communicate, express individuality and be a protagonist.

To match key need on the web, brands have to become 'relationship enablers', facilitating relationships among stakeholders with others sharing the same interests (Padua, 2012a, pp. 150-162). This means activating engagement and conversations with stakeholders.

### 1..5.1 Key Lessons for Teachers:

1. Engaging students means opening a dialogue and winning their commitment while activating a positive and effective interest in the subject while winning the students' acclaim.
2. If the teacher is perceived as trustworthy, she or he will be able to engage students' interest on a topic, while leaving space for proactiveness. It's the new role of attracting students to the topic via creating an engaging digital environment and entailing positive 'experiences'.
3. Engagement requires new digital, psychological and sociological competences on the teachers' side as they have to become 'relationship enablers'.

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# Chapter 2.

## Selecting Digital Tools to Create a Good Learning Environment

*Alexandros Liapis, Donatella Padua, Elena Karakolidou, Evangelia Karagiani, Lucrecia Rallo, Michalis Xenos, Stefania Spina*

This chapter presents a selection of digital tools used by the partners of the COLISEE Project to create a good Learning Environment. The tools have been classified into: a) tools for virtual communication between students, teachers and administrative staff and b) tools used mainly for delivering content to both students (primarily) and teachers.

Selected best cases from each category are presented in this chapter.

### 2.1 Tools for Virtual Communication between Students, Teachers and Administrative Staff

#### 2.1.1 Case study 1: The Learning Management System (LMS)

**Study** (study.eap.gr) is an example of a successfully working learning management system (LMS) which is, used at the Hellenic Open University (HOU). **Study** is an LMS that facilitates all the communication between tutors and students of the HOU. It is a web-based service that is used to plan, implement, and assess the institutione’s learning processes. Typically, **Study** provides a tutor with a way to create and deliver content, monitor student participation, and assess student performance. **Study** also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums.

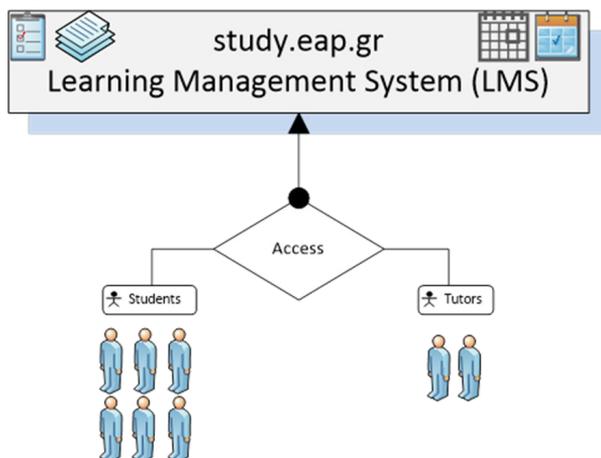


Figure 1. Structure of **Study**

Tables 1 and 2 present the basic options for students and tutors in the LMS. Students use the LMS platform offered by HOU as the main contact point with their tutors.

Table 1. Students options/actions in the **Study** LMS

Course schedule	
Curriculum	
Digital educational material	
News - Announcements	
Forum	
Assignment submission	
Mail notification about grades	

Table 2. Tutors options/actions in the **Study** LMS

Forum	
News - Announcements	
Upload extra educational material	
Check the student assignment submission process	
Assignment grading	
Plagiarism check	

Figure 2 illustrates the platform's (**Study**) login interface. From here students have access to important announcements, events in the Calendar, inbox messages and additional educational materials.

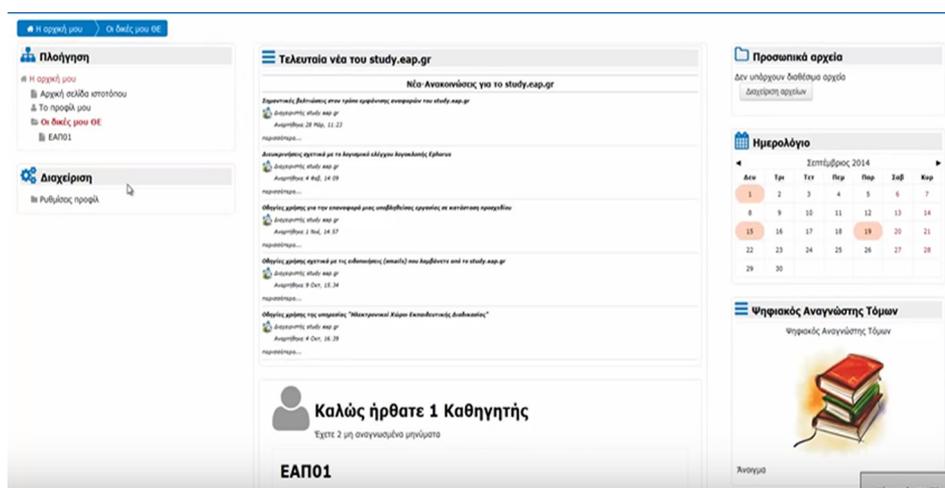


Figure 2. The Students' main interface on **Study**

Figure 3 represents the basic features of a module that a student is taking. The module is the minimum structural unit within the educational processes of the institution. Within the module, the educational process is organized into weeks (shown in frame 1 of figure 3). By clicking on each week (number) students can see the appropriate educational material and the **Study** guide for the specific week. Frame 2 in figure 3 shows that the students can be given information about important dates (e.g. the submission deadline for an assignment). Finally, in frame 3 of figure 3, shows how features such as announcements, the forum, extra educational material and information about the schedule of the advisory group meetings are made available to students.

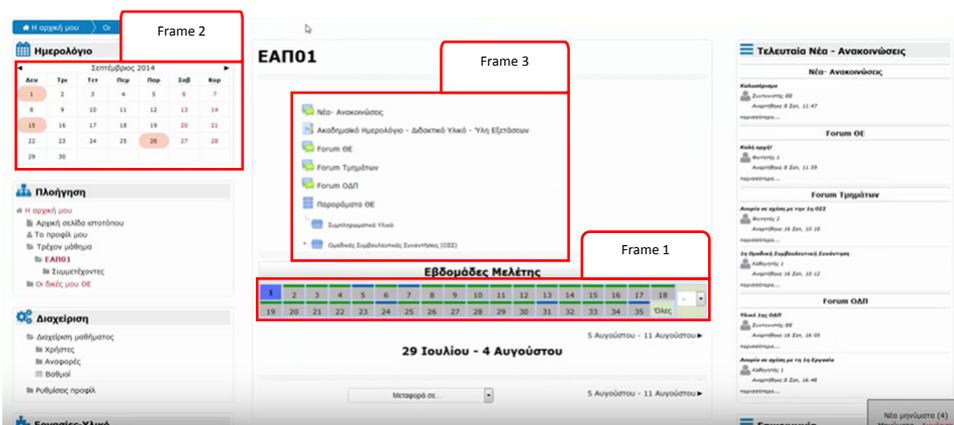


Figure 3. Structure of each module in **Study**

From the teachers' perspective, **Study** give them the ability to track the assignment submission process (shown in figure 4).

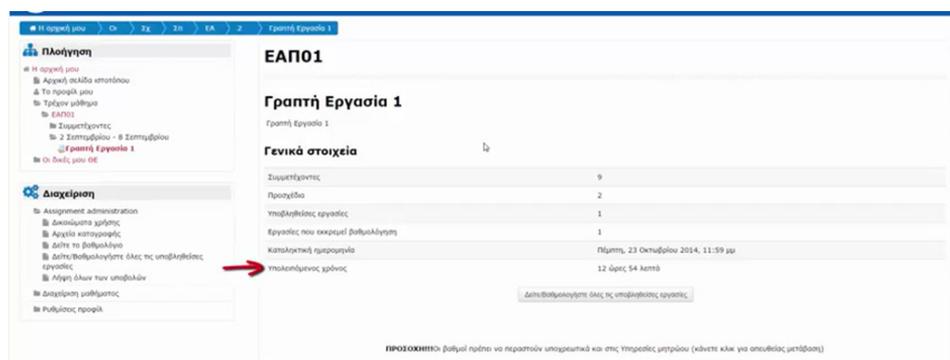


Figure 4. Assignments' Submission Tracking

Student grading is also available through **Study** (shown in figure 5).

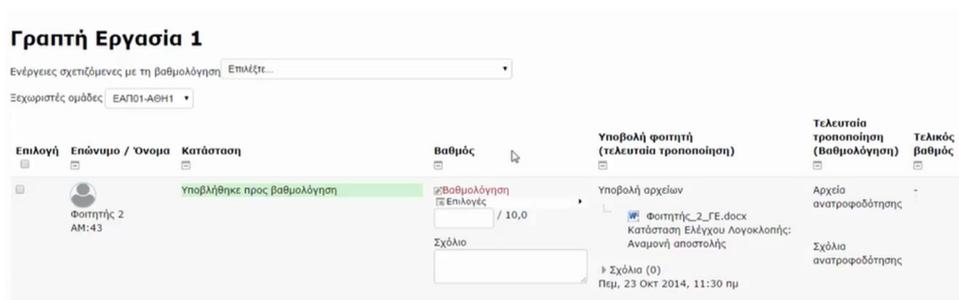


Figure 5. Assignments' Grading in **Study**

Finally, **Study** provides students and teachers with a digital reader. Figure 6 illustrates the functionality of the digital reader. The specific functionality of the reader allows students to access the digital educational material for the module.

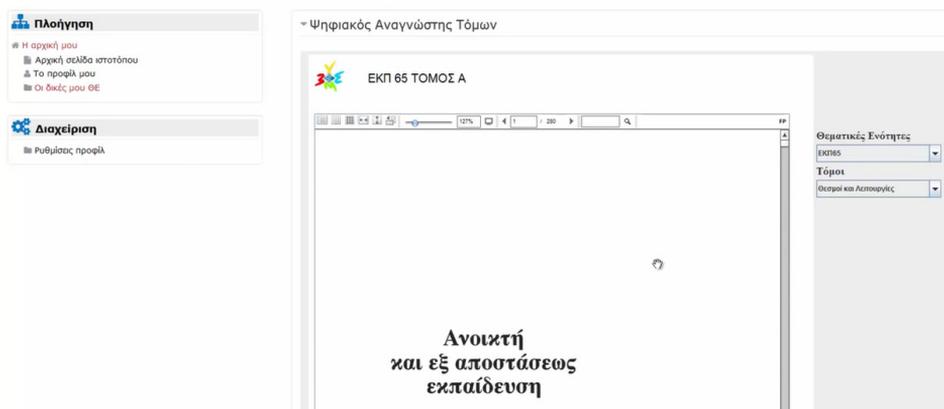


Figure 6. The digital reader of the **Study**

### 2.1.2 Case study 2: Virtual Classrooms

One example of a Virtual Classroom is the one provided by the (HOU) for students, tutors and administrative staff. The HOU uses **Saba Centra** (Saba Virtual Classrooms - teleconference) to give the option of attending online classes. Saba combines social, mobile, and real-time collaboration technologies to make working with classmates easier and more productive. It improves the quality of learning programmes delivered to remote areas and allows more efficient teamwork and greater engagement.

A teacher can set up a lesson/seminar with the following capabilities:

- Use of audio communication with others in the class.

- Display and marking up on a whiteboard.
- Demonstration of PowerPoint presentations.
- Playing of audio or video files.
- Private communicate with students through text chat.
- Desktop sharing.
- Organization of students into meetings for group assignments.

In this chapter we will make reference to the use of the HOU **Saba Centra** in order to explore the features of **Saba Centra** as they are used in the HOU's Virtual Classrooms. The HOU uses **Saba Centra** for online classes, seminars, online meetings with tutors and administrative staff.

The following screenshots are from the HOU **Saba Centra**. The user can select the event that want to participate in. There is a table with the scheduled events on the following screenshot (figure 7). The events are public with no need to sign in.

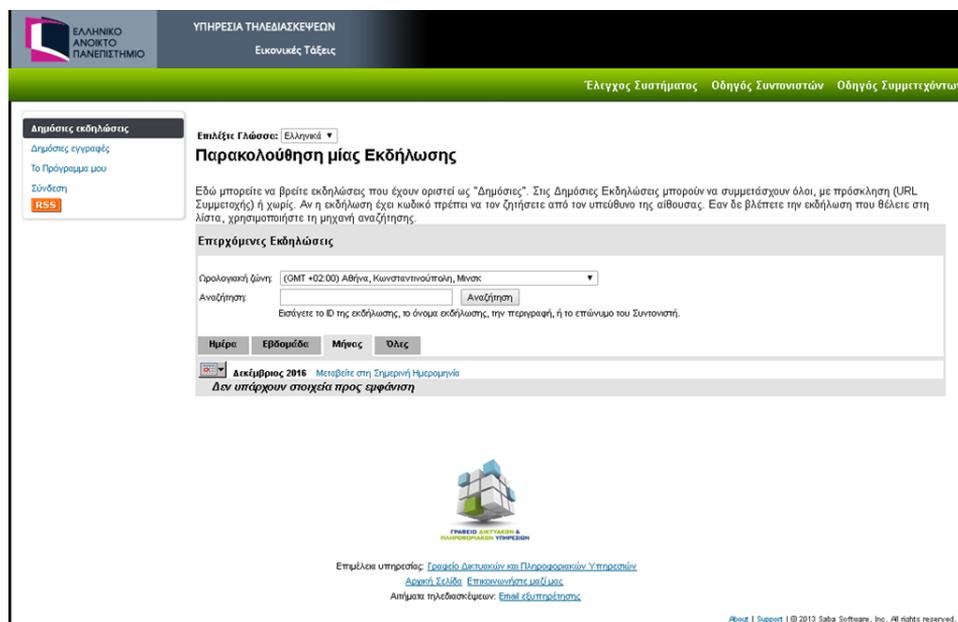


Figure 7. The HOU's **Saba Centra** public events

The user can select to watch a past event. There is a table with public records of past events on the following screenshot (figure 8). These is a public page with no need to sign in.

ΕΛΛΗΝΙΚΟ ΑΝΟΙΚΤΟ ΠΑΝΕΠΙΣΤΗΜΙΟ  
ΥΠΗΡΕΣΙΑ ΤΗΛΕΔΙΑΣΚΕΨΕΩΝ  
Εικονικές Τάξεις

Έλεγχος Συστήματος Οδηγός Συντονιστών Οδηγός Συμμετεχόντων

Δημόσιες εκδηλώσεις  
Δημόσιες εγγραφές  
Το Πρόγραμμά μου  
Σύνδεση  
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Εγγραφές 1-4 του 4 Προβολή ανά σελίδα: 20 < Σελίδα: 1 ▼ του 1 >

Ημερομηνία	Εκδήλωση ▼	Στοιχεία	Διάρκεια	Επίρροια
10/29/15	Εκδήλωση Ηράκλειος II	Ομηλίες Φυσικής Αلبουσις	02:43:16	Αναπαγωγή
4/11/4	Trekking@Science - Επιστήμη Πληροφορικής - Α. Σπύρος	Ομηλίες Φυσικής Αلبουσις	01:56:23	Αναπαγωγή
5/7/4	Trekking@Science - Επιστήμη Μαθηματικών - Σ. Πινταμπός	Ομηλίες Φυσικής Αلبουσις	01:47:30	Αναπαγωγή
7/11/0	Test Event	Test User	00:03:44	Αναπαγωγή

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Figure 8. The HOU's Saba Centra public past events records

The learner can sign into the HOU Saba Centra in order to participate in their online class meeting (figure 9).

ΕΛΛΗΝΙΚΟ ΑΝΟΙΚΤΟ ΠΑΝΕΠΙΣΤΗΜΙΟ  
ΥΠΗΡΕΣΙΑ ΤΗΛΕΔΙΑΣΚΕΨΕΩΝ  
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### Σύνδεση

Εάν είστε ήδη εγγεγραμμένος χρήστης, **Συνδεθείτε** στα Saba.

Όνομα σύνδεσης:

Κωδικός πρόσβασης:

Υποθύμιση

[Έχετε ξεχάσει τον κωδικό πρόσβασης;](#)

Στείλτε [email](#) στο Saba Διχειριστή Συστήματος

Επιμέλεια υπηρεσίας: [Γραφείο Διευτησίων και Πληροφορησίων Υπηρεσιών](#)  
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 Αιτήματα τηλεδιδασκόμετων: [Email εδύππορτοήσας](#)

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Figure 9. The HOU Saba Centra sign in page

A learner in a HOU Saba Centra Virtual Classroom, is able to speak, listen, chat, view presentations and interact with other learners. The learner can also “Raise his/her Hand” to ask a question or comment as in a traditional class.

Figure 10, is a screenshot from the system that presents the features of the HOU’s use of the Saba Centra web conference tool from the tutor view or the view of whoever is leading the meeting. For example, the Leader or Co-Presenter in the Saba Centra Virtual Classroom may give a learner or another person control of an application or Presenter capabilities. The following screenshot presents the features of the HOU’s use of the Sanba Centra web conference tool such as application share, whiteboard, markup, turn on/off microphone, pause or re-start recording the session, edit session settings etc.

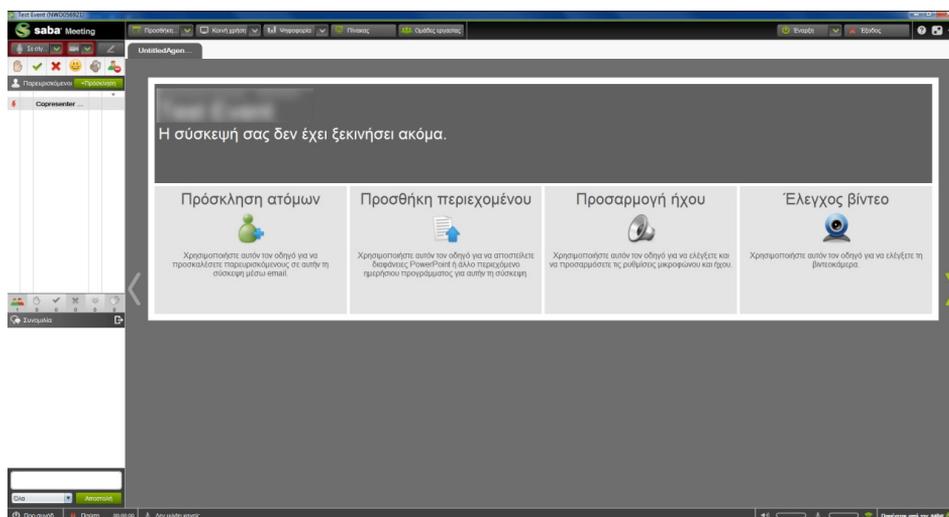


Figure 10. Features of the HOU Saba Centra

### 2.1.3 Case study 3: Virtual Worlds

Recently numerous 3D Virtual Worlds, formally called Multi-User Virtual Environments (MUEs), have become available, many of which are dedicated to specific uses, either for socialization and leisure activities, or for more “serious” purposes such as commercial facilitation (e.g. sales and marketing, or customer support) and educational enhancement (e.g. training simulations). The special characteristics and distinct possibilities of the Virtual Worlds (VWs) make them a powerful technological tool helping to enhance the learning experience.

Although various definitions of the VW have been proposed by different authors, there is no one commonly accepted definition as of yet. But all definitions have in common the following basic characteristics of the VW:

1. shared space which allows multiple concurrent users to be present,
2. a graphical user interface which depicts the virtual environment,
3. immediacy that supports real-time interactions,
4. interactivity that allows users to interact with the virtual environment, providing the means for building, creating and embedding digital content,
5. persistence which ensures that the VW (objects and constructs) as well as any alterations made by the user will continue to exist and function even after the user has left the VW,
6. synchronicity for synchronous user communication through text and/or voice,
7. a network of people who can communicate and interact with each other, forming short term and long term social groups, i.e. a sort of ecosystem,
8. avatar representation; in other words a digital representation beyond a simple label or name, that has agency (an ability to perform actions) and is controlled by a human in real time,
9. networked computers to manage all data and facilitate the virtual experience.

3D Virtual World platforms are an innovative ICT technology that can provide the tools for the creation of highly immersive 3D graphical and interactive online environments which can be either replicas of existing physical places, or imaginary places, or even places that are impossible to visit in real life due to restrictions such as cost or safety. These VW platforms can be either proprietary or open-source.

#### *2.1.3.1 Proprietary Platforms*

Some examples of proprietary 3D Virtual Worlds platforms are Second Life, Active Worlds, Jibe and Unity.

**Second Life** ([www.seconddlife.com](http://www.seconddlife.com)), launched by Linden Lab in 2003, is the most popular of the Social Worlds, with the largest active user and educational community. It features a detailed 3D graphical environment and customizable avatars, built-in voice and standard text communication tools (i.e. chat, IM). SL provides a social network with groups, through which information and object sharing can take place. SL also has an in-world economy (the virtual currency is Linden Dollars (L\$): 2500L\$=10.09USD) and an enormous market with user-generated virtual goods and tools. One of the most exceptional capabilities of SL is the ability to build objects and write scripts in-world. Registration and basic usage is free but the users have the option of paying a small monthly fee in exchange for a small parcel of land where they can build a home and become 'residents'. However, serious

building projects require the purchase of a private island or a large piece of land (parcel) in the Mainland. A parcel in the Mainland may be made private and accessible only to those who belong to a group, but visitor avatars may still access the neighboring land. Hundreds of learning organizations -from nearly every country- are either augmenting their current curriculum with a virtual learning component or they are holding classes and entire programmes exclusively in immersive learning environments in SL.

**Active Worlds** ([www.activeworlds.com](http://www.activeworlds.com)) was launched in 1997 and works much in the same way as SL. Although restricted usage is free through the "tourist" account, paying a small monthly fee allows one to become a "citizen". Only "citizens" can have a unique name, unrestricted access to any part of any world on the platform, avatar customization, object building and access to social networking features such as voice chat, IM and file sharing. For users who need more control over their environment and more privacy, private firewall-protected Universes are available for enterprise and educational projects. These are separate worlds from the main universe and their cost varies. A separate set of worlds and a community for educational projects is also available named Active Worlds Educational Universe where over 80 organizations have presence.

**Jibe** ([reactiongrid.myshopify.com](http://reactiongrid.myshopify.com)) is a multiuser 3D virtual world platform developed by ReactionGrid Inc. The developed virtual worlds can be embedded in any web page or accessed from mobile devices, they can either be hosted by ReactionGrid Inc. or fully installed on private servers. Jibe requires the installation of the Unity web plug-in with Android and iOS support under development. Using the Unity 3D editor to build a Jibe virtual world, results in a professional development environment with professional quality graphics, physics and sound. It allows the creation of 3D objects and the import of 3D models from Maya, Blender, etc. Jibe also features customizable 3D avatars, private/public text chat, user tracking, Vivox voice integration, built-in registration database, integration with Facebook, LMS, CMS, hooks for Augmented Reality apps, support for SCADA and Robotics.

**Unity** ([unity3d.com/unity](http://unity3d.com/unity)) is not a virtual world platform. It is a 3D (& 2D) professional game development tool which can be used to create from scratch suitable training simulations and educational virtual worlds in 3D which can then be accessed through a client or a web based player. Unity offers the possibility to develop a game and its user interface without having to program in complex computer languages, such as C++. The language behind the Unity scenes is C#. The development of single-player games/apps requires only downloading and installing Unity but the features and properties of the developed training environment depend mostly on the ability to use the content creation tools. The Unity Asset Store, a global marketplace of objects (as well as code) for Unity, provides content (character models, materials and textures, landscape painting tools, game

creating tools, audio effects, music, visual programming solutions, scripts, etc.) for free or low cost. Unity operates on the latest mobile (iOS, Android), desktop (PC, Mac, Linux), Web (web player, Flash) and console (Wii U, PS3, Xbox 360) technology, offering smooth development and deployment of a game with high quality of graphics and solid performance on any device.

#### *2.1.3.2 Open Source Platforms*

The platforms OpenSimulator, OpenWonderland and OpenCobalt are compared and analysed.

**OpenSimulator** ([www.opensimulator.org](http://www.opensimulator.org)) often referred to as Opensim, is a free, open-source, 3D application server that allows the creation of 3D virtual worlds, where multiple users can simultaneously be present. These virtual worlds can be accessed through various open source clients and can remain private, behind the firewalls, or become public. OpenSimulator is written in C# and its framework is designed to be easily extensible through external modules. The OpenSimulator project started in early 2007 as an open source server side to Linden Lab's Second Life open-source client. Consequently, OpenSimulator's current architecture is heavily influenced by that of Second Life, allowing the user to produce from scratch similar highly detailed 3D graphical environments at low cost, or at no cost provided that the hardware and software and the building, scripting and technical skills are offered for free. The avatars are fully customizable and resemble those of Second Life. The in-world communication is based on text communication tools (i.e. chat, IM). At the moment, a reliable choice for free voice service with lip sync is the one provided by Vivox Inc., on request. An exceptional feature is Hypergrid, a protocol that allows hyperlinking between Opensim worlds and supports seamless avatar transfers among these worlds. Despite the fact that the platform has not yet reached a beta version, it proves to be quite stable and robust. The aforementioned reasons plus the freedom of owning, building and configuring the virtual world, have made OpenSimulator very popular among the educational and science community. Virtual worlds and education.

**OpenWonderland** ([www.openwonderland.org](http://www.openwonderland.org)) is an open source 100% Java™ toolkit for creating 3D collaborative virtual worlds from scratch. OW is in its early stages of development and although the graphics of the environment are rather simplistic, other features of the platform are comprehensive. The toolkit allows the creation of modules which can extend any part of the system (client or server) and add functionality. Out of the box and with a bit of software development effort, customized, special-purpose virtual worlds can be created. Some examples of the external modules that have been created by different developers and can be downloaded from the Module Warehouse are: Authentication system, webcam viewer, writable (text or HTML) poster, collaborative text editor, etc. Open Wonderland offers the

ability to run Java and X11 (Linux) applications inside the virtual world. The Java applications, which can be 2D or 3D, are almost all created with multiple users in mind. For example, there is a shared whiteboard which multiple people can draw on at the same time, there are sticky notes for brainstorming and a multi-user PDF Viewer for browsing slides independently or in sync with a presenter. A distinct feature of Open Wonderland is the ability to easily bring in existing content. The list of document types that can be dragged and dropped into the world is ever growing. Moreover, a creator can import any content found in the Google 3D Warehouse. Open Wonderland does not offer in-world 3D building, but 3D stuff can be imported from Maya, Google SketchUp, Blender, etc. Hence, an avatar, instead of being built in-world, must be created on Evolver website and then dragged and dropped into the OW virtual worlds. Also, OW does not support an avatar's inventory. Within OW worlds, users can communicate with high-fidelity, immersive audio, share live desktop applications and collaborate in an education or business context (simulations, meeting rooms, mixed-reality worlds, etc).

**Open Cobalt** ([www.opencobalt.org](http://www.opencobalt.org)) is an open source virtual world browser and toolkit for creating private virtual worlds. OC shares similarities with other 3D virtual environments such as Second Life, but OC uses peer-to-peer technology instead of servers. Through the OC website, peer-to-peer technology allows its users to access OC virtual worlds on LANs, intranets, or across the Internet without any need to access anyone else's servers. Anyone can host an OC virtual world from all over the Internet and for free. Open Cobalt's ability to leverage peer-to-peer technology as a way of supporting interactions within virtual worlds is a major point of difference from commercial multi-user virtual world systems, such as Second Life, where all in-world interactions are managed by central servers. Hence, users can set up virtual spaces and interact with others of their choice with no hosting fees, licensing or virtual land lease costs. Similarly to OpenSimulator, OC makes it possible for people to hyperlink their virtual worlds via 3D portals in order to form a large distributed network of interconnected collaboration spaces. It also offers the set-up of public or private 3D virtual workspaces that feature integrated web browsing, voice chat, text chat, and access to remote desktop applications and services. OC lacks 3D content creation tools in-world. It provides the infrastructure for world creation, navigation and collaboration and it supports content created in free or open source authoring applications such as Sketchup or Blender. Through Open Cobalt's VNC capability, web resources (LMS, CMS, wikis, etc.) can be brought into the virtual spaces - interactively. One distinct advantage of OC is motion simulation. Motion Simulation written in Smalltalk through using FreeCAD application can be easily imported into OC virtual worlds.

### *2.1.3.3 The 3DVW of HOU for Learning Software Project Management*

A three-dimensional virtual world learning environment (3DVWLE) used for teaching Software Project Management in a game-based learning environment has been created at the HOU and is presented hereinafter. This 3DVWLE has been presented in detail in Maratou et al. (2016).

The virtual world of the game is completely customizable and oriented to various game scenarios; it is interactive and accessible for distant learners. The goal is to enhance SPM learning through active participation in the management of unexpected events which may occur during the lifetime of a real project. The conceptual design of the role play game environment was largely based on the best practices in the role play virtual world simulations proposed by Mayrath et al. (2011).

According to the game scenario, the game starts when a group of five students enter the virtual world to work for a software development company. Before the game, none of the students is aware of the critical details of the scenario and what they are expected to deal with. The unanticipated events of the game are part of the simulation of a real life working environment.

At the beginning of the game, the students are randomly assigned, the following roles: Project Manager, System Analyst, Team Leader (two roles) and the Human Resource Manager. Besides the roles for the students, the game scenario offers the role of the Chief Executive Officer (CEO) of the company and two roles for the CEO's assistants. Each role has specific responsibilities and duties which are, in fact, the only details of the game that the students are aware of before they enter the virtual world.

Although, the Project Manager has the overall responsibility for the two projects and the staff involved, they are expected to collaborate with the Team Leaders and the System Analyst before any decision making. Also, they can discuss with the Human Resource Manager the curriculum vitae information of the staff and candidates before they decide to hire new personnel. The Project Manager is the only role that is encouraged to have direct communication with the CEO of the company.

The role of Team Leader is to supervise a team of the three software developers who are working on a project. The developers are Non-Player Characters (NPCs). In the game there are two Team Leaders, one for each project (this can be expanded to more players in other scenarios). The responsibility of this role is to manage and solve the internal problems of the team. They are not allowed to hire or fire personnel (all NPCs), to communicate directly with the clients (also NPCs basing their actions on a predetermined script) or the CEO. When a problem overwhelms the duties of this role, the Team Leader must inform the Project Manager.

The System Analyst is responsible for communicating with the clients and for discussing any possible changes to the project requirements. Also, it is their duty to make sure that the changes will be applied as agreed. However,

the person in this role should communicate with the Project Manager and the Team Leaders and inform them about any issues relevant to the requirements of the projects.

The Human Resource Manager's basic duty is to be aware of details relating to the CVs of the staff and candidates. In addition, they are responsible to providing information about the availability of the staff and about the staff management policy of the company.

The CEO of the company and the two assistants are roles that mainly act as observers of the players' actions. The role of the CEO is assigned to the instructor who selects and activates the events in-world. The CEO is also capable of intervening and influencing the progress of the game by changing critical parameters, such as game rules for budget violation, rules for the management of important clients, rules for staff management, etc. The CEO's assistants act as assistants to the players, providing them with hints in case they ask for help in order to overcome possible dead-ends. Two of the instructor's associates are allocated these roles. The number of the assistants can be reduced to one or none, but in the first experiments two assistants participated to facilitate monitoring of the process.

The students constitute the team that is responsible for the management of two of the company's software development projects. During the game the students have to deal with various events which occur unexpectedly, threatening the predefined schedule and progress of the two projects. All the events are based on the game script and occur randomly with the exception of some events that can be triggered by the instructor reacting to particular students' choices. Aiming at the most realistic presentation of events and depending on their nature, they are communicated to the most relevant role by an NPC or a functional object found in the office. The goal of the team is to find solutions that will not conflict with agreements with clients or with the company policy. Any decision they end up with, must be announced by the Project Manager within pre-specified time limits. However, as in real life, their decisions may trigger new problems to be solved.

During the game, the students are completely free to decide whether they will collaborate or not in order to reach the best possible solution. All the necessary information about the projects, the personnel, the timetables and the (virtual) date is embedded in the virtual world and the players have the time to look for it and study it. In this way, the players can feel immersed in the virtual environment and engaged in the activity. However, each player has access only to that piece of information that is relevant to their role, which ensures that collaboration is unavoidable.

The participants' communication is written and it takes place in the local chatroom of the virtual world. In this way, log files of the dialogues can be kept so that possible confusion resulting in random voice communication is avoided. The duration of the game is predefined by the instructor and the

game ends without calculating any score for the players. The aim is to immerse the students in an environment where they have the chance to experience the management of real life problems, which may occur during a project. Through this procedure the students are free to apply their theoretical knowledge in practice and they are able to acknowledge the importance of issues like collaboration, healthy team working, flexibility and fast decision-making. The overall performance of the students can be evaluated by the instructor after the completion of the game.

The proposed virtual world consists of two main buildings; the one that hosts the company offices (Figure 11) and another one that serves as a 'welcome point' for the avatars (Figure 12). The company building contains six separate offices for the players and the CEO, a reception area and two leisure points for the staff. Additionally, there are two rooms designed for the software developers, each of which contains three workstations. The offices are fully equipped with furniture and objects in order to give the sense of a real company. The offices of the Project Manager and the CEO are properly designed for meetings. Interactive objects, supporting the needs of the scenario (i.e. dates, timetables, etc.), can be found inside every office and in the reception area.



Figure 11. Screen shot from the 3DVWLE during actual use by students and teachers



Figure 12. The Welcome Point of the 3DVWLE

On entering the virtual world of the game, the avatar finds him or herself at the ‘welcome point’, an independent building a few (virtual) metres away from the main building of the company. Information boards and interactive objects are embedded in this building, providing the players with information tips about the basic use of the viewer, the movement and the camera controls.

The players’ avatars are fully customizable, allowing the students to modify their appearance and clothing in-world. Apart from this function, however, the players do not have permission to build new objects or edit the existing virtual setting.

The game scenarios are designed to be event-driven. Based on the details and the timetables of the two, deliberately, overlapping projects, various different events are programmed to occur on specific (virtual) dates of both projects. A sudden absence of a core developer during a critical task, an unexpected diversification of the requirements by the client during the development phase, or a shift of a deadline to earlier for marketing reasons, are some of the events which the players have to face. Taking into account that the players are free to cope with the occurring problems, the scenario ‘foresees’ a number of probable decisions along with any following consequences which may trigger new events. Eventually, decisions trees are designed (as the one shown in Figure 13), covering both optimum and less optimum decisions.

The events to be presented during each game session are selected by the instructor in-world and are activated dynamically on the proper (virtual) date. However, the instructor is able to delay or postpone the announcement of an event or dynamically embed a new event (from the script) in an unnoticeable way to the players. Furthermore, the instructor is free to personally intervene as CEO in the players’ decisions in order to transform the progress of the game.

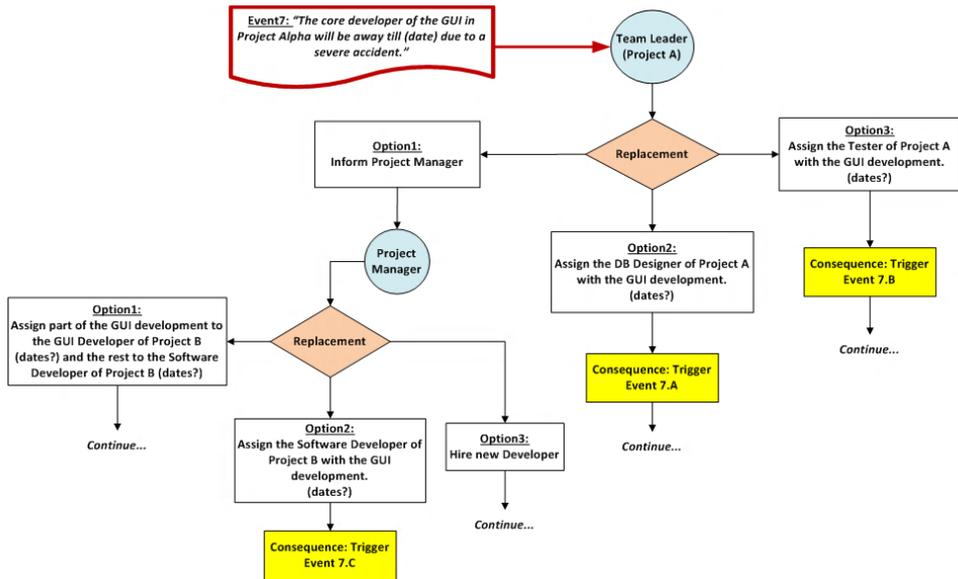


Figure 13. A decision tree that supports the activities in the 3DVWLE

The aforementioned scenario design is implemented through numerous scripts which are embedded in specific virtual objects or in NPCs.

Further details about this 3DVWLE can be found in Maratou et al. (2016).

#### 2.1.3.4 The 3DVW of HOU for Information Security

Another successful case study of a three-dimensional virtual world learning environment (3DVWLE) is the one used for teaching Information Security in a game-based learning environment which has been created in the HOU. Some examples of scenarios from this 3DVWLE are presented hereinafter, while a more detailed description of this 3DVWLE can be found in Ntokas et al. (2015)

Based on the results from a user needs analysis, various IS scenarios have been simulated; among them is the Phishing/Spam scenario. The conceptual design of each scenario and its virtualization approach has been based on the principles of experiential learning. The “branching scenario” approach has been used as a form of storytelling. The scenario unfolds its narrative as long as the learners use their critical thinking to decide on their next action in order to move forward along the path or “branch”.

Figure 14 shows a user that is entering the school secretary’s room, interacts with her (which is a bot) and tries to enter the password needed to unlock her pc.



Figure 14. A user interacting with a bot in the 3DVWLE

Figure 15 illustrates a scenario about Phishing. The student is learning about phishing by attending presentations and videos. When the educational part ends they take the quiz to get the password which unlocks the secretary's pc.



Figure 15. A user interacting with a bot in the 3DVWLE

All scenario-based simulations of this 3DVWLE put the users in a “role”, motivate them to explore the 3DVWLE, while offering sequences of tasks which the users must complete in order to accomplish the scenario-defined mission. As the simulation progresses, the embedded educational content is presented as part of the plot and the knowledge gained can eventually be used for the completion of the following tasks. The non-completed tasks may either lead to other situations which allow the user to experience the negative consequences, or simply prevent them from proceeding. At the end, all scenarios provide the user with general feedback on IS threats and preventing actions.



*Figure 16. Inside the INBOX room on the 3DVWLE*

Figure 16 is a metaphor that simulates what happens inside the “INBOX” room: The phishing/legitimate emails are presented as numbered boxes, the quiz chair initiates the quiz and the recommender system monitor, provides the user with personalized recommendation tips.



*Figure 17. The “Thefts Room” when the user has successfully identified the phishing/spam emails*

Figure 17 presents the “Thefts Room”. This is the place that the student can enter only if they have successfully identified the phishing/spam emails and therefore they are teleported to the thefts room.

The Phishing/Spam scenario has been designed as single-player simulation and aims to educate the user on phishing attacks. Figures 14 to 17 illustrate step by step the route that the user has to follow to accomplish their mission. The user holds the role of investigator whose mission is to investigate, resolve and report the phishing attack incident which has emptied the school bank account. According to the scenario, the user must find evidence as to what could have happened and through this quest they will get educated about phishing attacks.

Through the analysis of the evidence and clues collected through their interaction with the virtual environment, the user must discover the attackers’ lair and report everything to the Investigation Department (which is shown in figure 18). This simulation foresees two “turning points” where the user’s gained knowledge is tested through a quiz. Only when the user succeeds in the quiz can they proceed to the subsequent “episode” of the story.



Figure 18. The “Thefts Room” when the user has successfully identified the phishing/spam emails

Further details about this 3DVWLE can be found in Ntokas et al. (2015).

## 2.2 Tools for Delivering Content

### 2.2.1 Massive Open Online Courses (MOOCs)

#### 2.2.1.1 Edx MOOC platform

Edx is a non-profit MOOC (Massive Open Online Courses) platform established by Harvard and MIT in 2012. The design of the Edx platform was based on pedagogic principles such as constructive learning, active learning and self-regulated learning. The Edx platform provides an assortment of learning and networking tools that are part of each learner’s personal learning environment. Learners have access to online discussions boards, forums, readings, and can submit written work, contribute to the course wiki, take instructor-driven and automated assessments, simulations and activities. The features of the Edx platform for tutors are adding videos, adding subtitles to videos, creating assignments, importing and exporting courses, adding the course team, the adding the grading policy etc.

The platform provides the opportunity for meaningful exchange between faculty and peers in forums and discussion boards. Each open Edx instance can host many courses and hundreds of thousands of learners. Analytics and data visualization tools enable in-depth analysis of learners’ interaction with the platform.

#### *2.2.1.1.1 Pros and Cons of distance education*

The benefits and drawbacks of distance education have been researched by various individuals. The main benefits and drawbacks of distance education are the following.

##### Advantages of Online Education

- More flexibility for learners.
- Assignment completion at one's own pace.
- Opportunity for lifelong learning.
- No geographical restrictions.
- Learners can operate at the cutting-edge of technology/education.

##### Disadvantages of Online Education

- Learners may have problems comprehending course information (e.g. technical issues).
- The course expectations are often not clear.
- Distance education does not always allow instructors to modify lecture plans according to their learners' needs.
- The course may focus on technology rather than content.

All the above benefits and drawbacks apply to MOOCs. Other benefits of MOOCs are the following: self-paced learning, educational access to thousands of people, no entry requirements for the current range of MOOCs and a variety of free courses.

#### *2.2.1.2 HOU case study on using a MOOC*

The Hellenic Open University (HOU), used the Edx open source learning platform and provided a free online learning seminar for the tutors of the HOU. The topic of the seminar was the online educational technologies of HOU. In this chapter we will refer to the HOU case study in order to explore the features of Edx and the structure of Edx for seminars.

The seminar followed a blended learning structure. The learners, for the online part, were able to participate in their spare time and at their own pace without any time restrictions. Overall, the seminar delivered 14-hours of study material and 4 hours face-to-face classroom lessons. The available features were: a forum, automated assessments, videos, texts etc.

This case study describes how a teacher might create an online course for Edx. The descriptions and examples use the Edx platform but, the practices described are applicable to any platform. The case study discusses the

structure in creating a seminar on Edx. The online part of the seminar was composed of 2 weeks (7 hours per week), covering 4 topics. Each topic was made of units which go through all the material that the teacher needs to learn about the HOU Technologies.

The seminar material in the Edx platform was created according to the requirements of distance learning. The content of the HOU seminar took into account the learning schedule so that learners are not overloaded, the time required to complete the course and the number of units. Also, the creator of the seminar used visual and audio components, directed learner activity toward specified learning outcomes and created self-paced lessons.

The seminar structures generally follow the same template. The structural elements that might be omitted are an introductory video from the tutor, a general description of what the course is about, and a syllabus breaking down the topics to be covered. Although, we cannot find it as default in many Edx courses, an important structure field is a static page that presents the material in every chapter with links. So this structure is recommended.

The following screenshots are from the HOU seminar and provide a case study for the sequence of materials and the sequence of the navigation. The learner after signing up for the the HOU seminar can select the HOU lessons from the Edx platform. Clicking on the seminar the learner can see the whole syllabus and the seminar activities (figure 19).

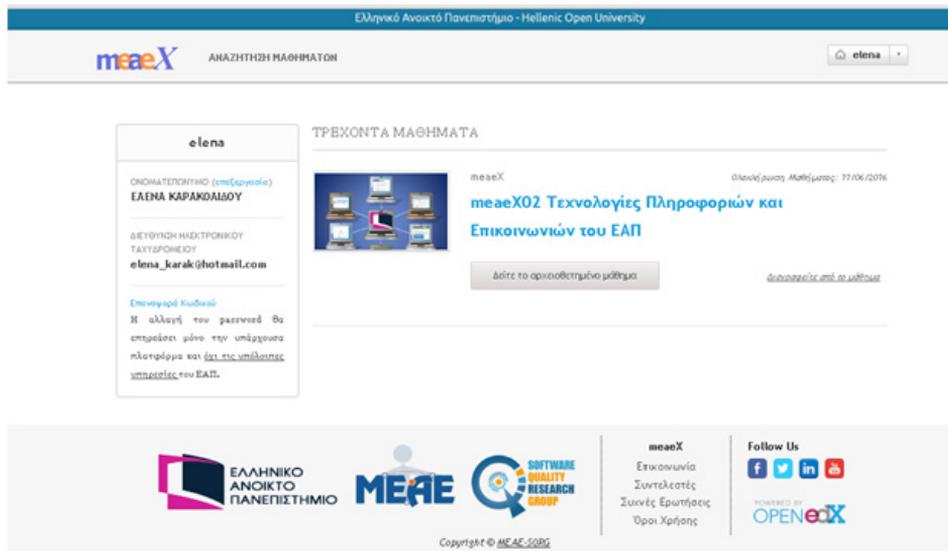


Figure 19. The HOU Seminar Course

The most important navigation point is the navigation bar that has images and arrows to move through each unit, the navigation bar of the HOU seminar is illustrated in figure 20.

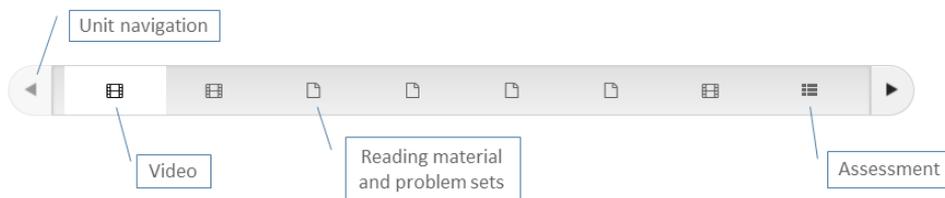


Figure 20. The Navigation bar

Using the HOU system, the learner was able to see the video lesson (shown in figure 21) where a user has selected the video image from the navigation bar. The video player in the HOU seminar has captions. A downloadable version of the video was available at the bottom of the page, and a transcription of the video was provided.

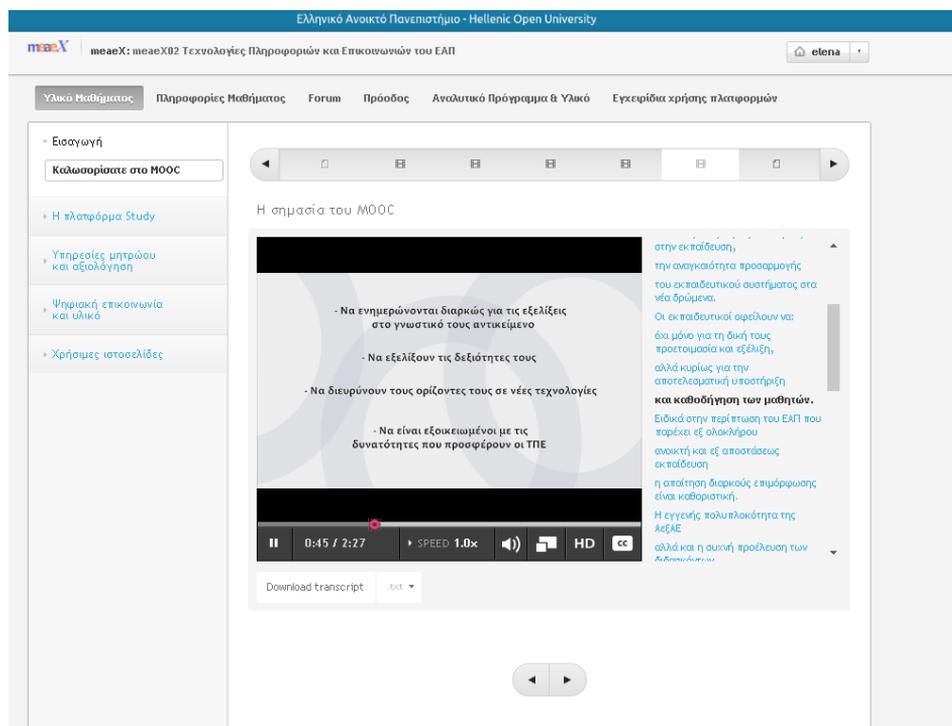


Figure 21. The video material

The learner participating in the HOU seminar was able to take automated grades assessment (multiple choice, checkboxes etc.);, this is illustrated in figure 22, where the learner submitted their answers. In the navigation bar there are 5 sets of assessments in a sequence of video lessons. In the sequence of learning there are tests designed to assess the progress of the seminar. Learners have instant feedback after answering the assessments. The assessments have a different number of attempts depending on the type of question.

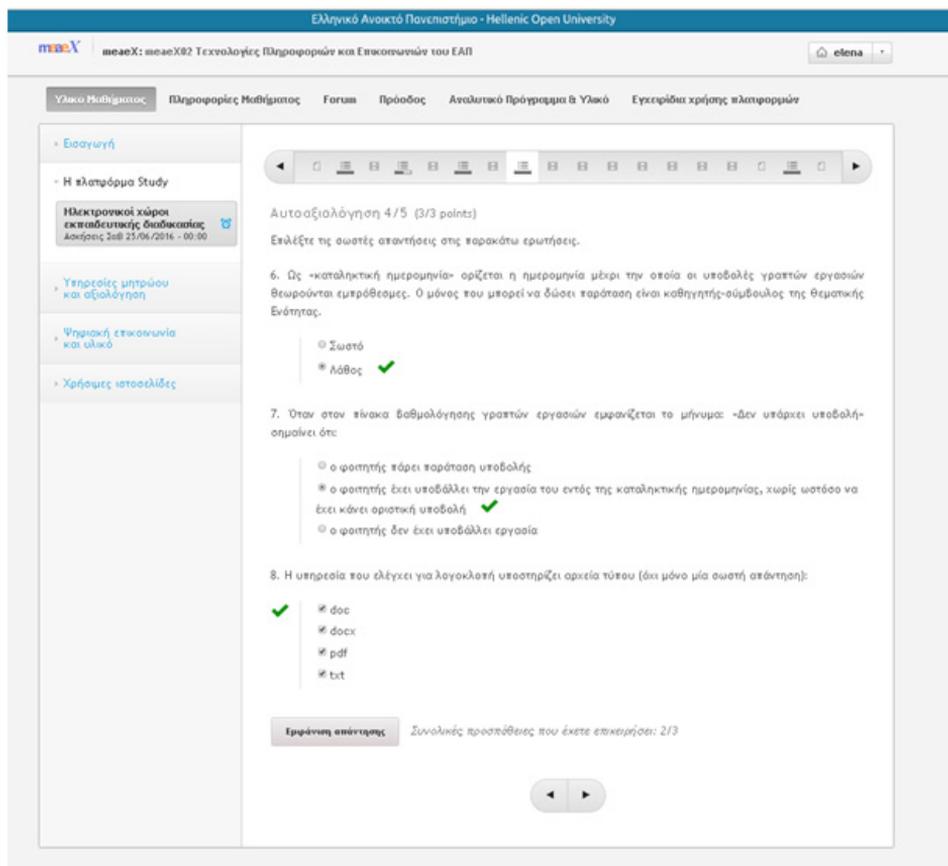


Figure 22. Assessments

The forum of the HOU seminar was used for creating posts, answering questions and evaluating or following posts. Using the HOU system, the learner was encouraged to use the forum. The forum is illustrated in figure 23.

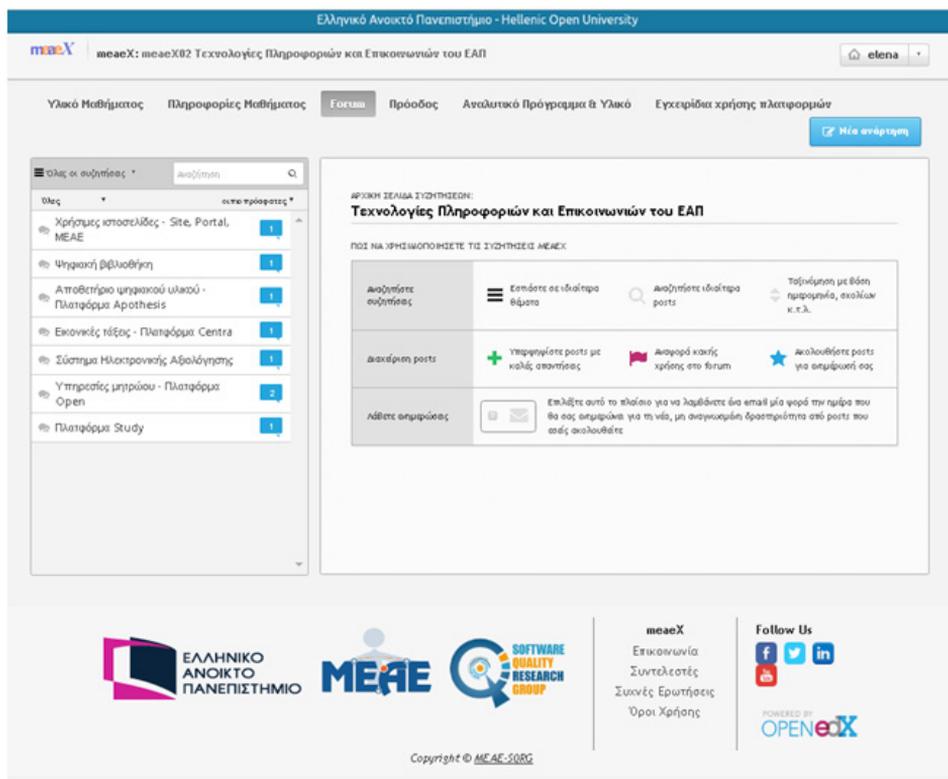


Figure 23. The forum of the HOU seminar

The Progress tab of the HOU seminar provided an indication of the learner's progress through the seminar and included their grade for each assessment, the Progress tab is illustrated in figure 24.

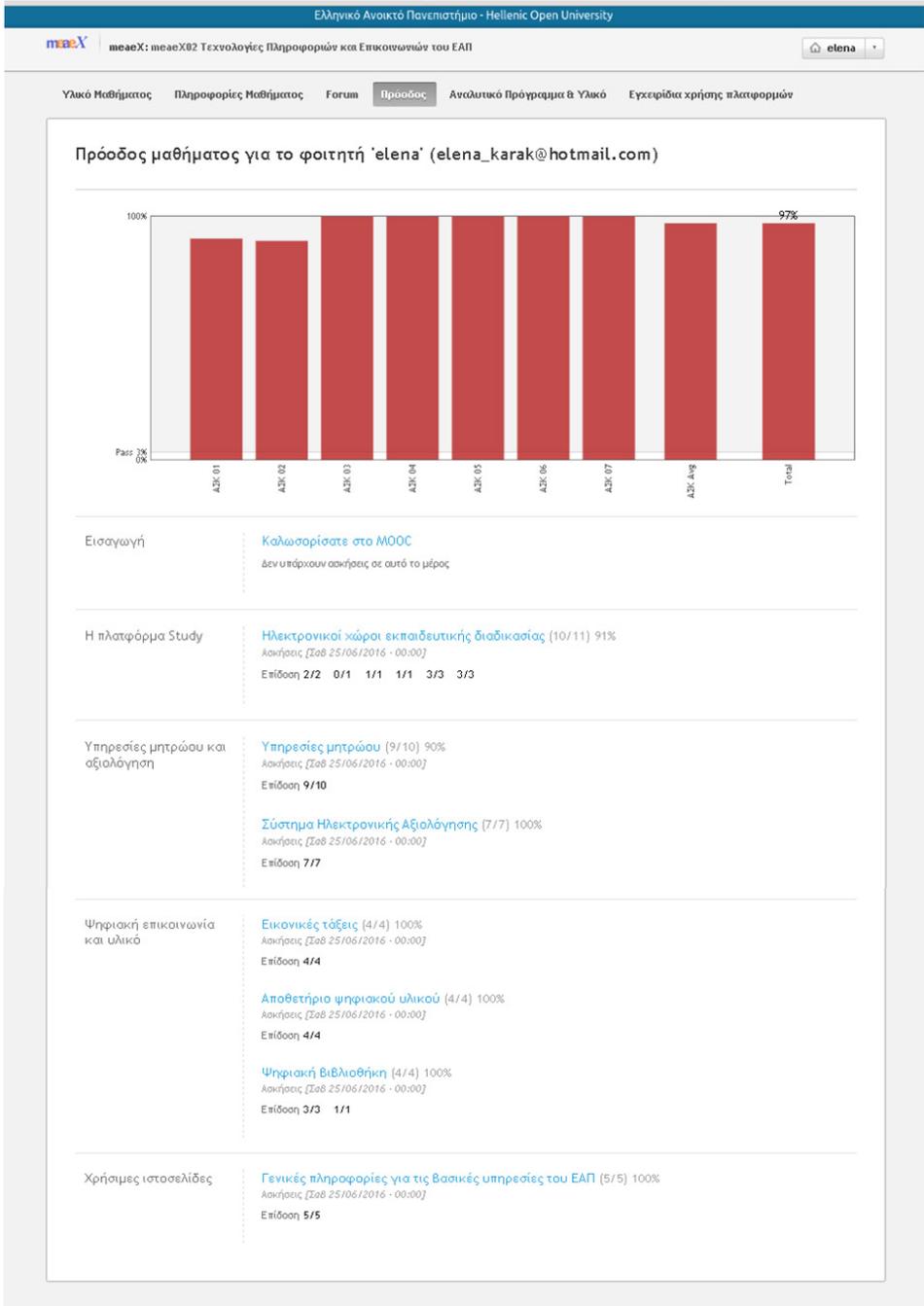


Figure 24. The progress tab

## 2.2.2 Other Collaborative Tools for Delivering Content

Education has been evolving over the centuries by learning and adapting to whatever technologies were available and has best served its purposes. Currently, various means of technology are used to improve, supplement and/or extend diverse modes of teaching in order to improve its quality, flexibility and effectiveness (Beetham & Sharpe, 2007). As a consequence, exploring how this aim can be achieved requires our full attention.

For the purposes of the COLISEE project a number of sessions were devoted to exploring the potential of a number of digital tools in an attempt to facilitate both the instructional and the learning process.

### a. Wikis

Description	A wiki is a website that provides collaborative modification of its content and structure directly from the web browser.
Objective	To allow students to experience a collaborative project online. Share texts, videos, books, websites, digital notes, data base and the articles students read online
Technical support required	Google Mail/ Windows Live mail / Linked In / Facebook account.
Examples	<p><b>Padlet</b> – is a tool to upload and share multimedia content in a collaborative blackboard environment. The board admits various file formats: images, videos, audio, presentation and text files. The resulting padlet board can be embedded in any platform (Moodle), blog or social network.</p> <p><b>Stormboard</b> – sharing ideas in a digital environment. These can be accessed any time and from any device. Participants can take a more active role in real time. The free licence allows maximum groups size of 5 participants. Some of the utilities include: add text, hand drawing, upload images, videos. &lt;<a href="https://stormboard.com/main/contact">https://stormboard.com/main/contact</a>&gt;</p> <p><b>Spiral</b> – a platform to facilitate active learning in 1:1 education environments (one student, one computer or mobile device). It integrates three apps: <b>Quickfire</b> improves student-teacher interaction in activities that involve the teacher posing questions and the students answering in real time using their own devices. No previous planning is required. Anonymous answers appear on a board in different formats.</p> <p><b>Discuss</b> is a powerful tool to develop student creativity, exploration and thorough learning through debate. Students are encouraged to share their ideas with peers. The content created is the basis of shared knowledge that can be accessed later for task solving or exam preparation. <b>Team up</b> facilitates the process and outcomes of group work. Students work in small groups in one or two face-to-face sessions contributing with ideas and creating joint presentations, posters</p> <p><b>NowComment</b> a tool to generate discussion from a document. Participants may add their comments. Document formats include .doc, .docx, .rtf, .odt, html. And also images.</p>

### b. Videotutorials

Description	Record videos of the computer screen activity (screencast) with voice.
Objective	Teach students tasks, content or procedures (i. e. the basics of a software used in class)
Example	<b>Screencast-O-Matic</b> is a free app that allows to record videos of 15-minute maximum. The videos can be embedded in YouTube or downloaded in mp4 .avi .flv formats.
Technical support required	Java 1.5 or a later version. Installation in a local computer is not required.

## Online Presentations

Description	Last generation online presentation tools.
Objective	Turn static PowerPoint presentations into dynamic, impressive lively stories.
Example	<b>Prezi</b> , <b>Emaze</b> uses big data and automatic learning algorithms to turn power-point presentations uploaded by users into dynamic presentations or visual stories.
Technical support required	Free educational licence (Prezi) 14-day trial licence (Emaze)

## Word Clouds

Description	Tools to create visual presentations using words from a text file.
Objective	Possible applications include: Gathering ideas in a collaborative environment. Summary of a book chapter. Vocabulary learning in a foreign language class.
Example	<b>Wordle</b> is an online tool to build word clouds. The size of the words adjusts to the frequency of appearance in the text. The clouds can be customized with different designs, fonts and colours. <b>Tagxedo</b> is a tool to build word clouds. Words can be clustered using different shapes images or maps.
Technical support required	Free apps. Do not require registration. Installation of Silverlight Plug-In (Tagxedo)

## Wikiglossary

Description	Use of a wiki (see wiki tool) to share the building of a glossary
Objective	To apply a 'Key-word' learning methodology, enforcing the ability of synthesis by identifying key concepts and related key-words. To entail a peer-to-peer critical learning in an enjoyable, distance-learning environment. To develop the ability of 'connecting dots' among massive amount of concepts and build mental maps.
Technical support required	Google Docs or see Wiki tool technical supports.

## Exploring, bookmarking and curating literature

Description	<p>In general, a new way of organizing information and categorizing resources, primarily for one's own use. Yet, it can be particularly useful when collecting a set of resources that are to be shared with others.</p> <ul style="list-style-type: none"> <li>• <b>Bookmarking</b> is the practice of saving the address of a website one wishes to visit in the future on their computer.</li> <li>• <b>Social bookmarking</b> is the practice of saving bookmarks to a public website and “tagging” them with keywords</li> <li>• <b>Content curation</b> is the process of finding content from the scattered and diverse mass of digital information available on the web organising it in a meaningful way and presenting it to benefit oneself and others. Content curation is not just collecting links or information in general (that's content aggregation). It requires deep critical thinking skills. It is more about putting what one collects into a context, organising, annotating and presenting it.</li> </ul>
Objective	Help tutors and students find and store the articles they are interested in and stay up to date with the relevant literature
Technical support required	A social bookmarking site; Most tools can be used on iOS or Android devices as well as on a laptop/desktop by adding an extension/add-on on the web browser. One way to decide which tools are more suitable is to find and view videos explaining how these tools work.
Examples	<ul style="list-style-type: none"> <li>• <b>CiteUlike</b> – Search, organize, and share scholarly papers.</li> <li>• <b>Colwiz</b> – Create citations and bibliography and set up your research groups on the cloud to share files and references.</li> <li>• <b>Delicious</b> – Save all your bookmarks in one place.</li> <li>• <b>Diigo</b> – Save all your bookmarks in one location and make them accessible online from any place.</li> <li>• <b>Google Scholar</b> – Provides a way to broadly search for scholarly literature across disciplines and sources.</li> <li>• <b>Microsoft Academic Search</b> – Find information about academic papers, authors, conferences, journals, and organizations from multiple sources.</li> <li>• <b>Paperity</b> – Aggregator of open access papers and journals.</li> <li>• <b>PearlTrees</b> – Create a mind map of your links and embed them on your website or blog.</li> <li>• <b>Pinterest</b> – Create a beautiful board of your links. It takes any image from the post and allows you to even play videos within the posts.</li> <li>• <b>ReadCube</b> – Read, manage and discover new literature.</li> <li>• <b>ScoopIt</b> – Collect, share and publish your digital discoveries. You set the keywords you are interested in and Scoopit collects all relevant resources such as sites, blogs, videos, etc. It also allows you to share your resources on social media. You can publish an online magazine with your links.</li> <li>• <b>Zotero</b> – Collect, organize, cite, and share your research sources.</li> </ul>

## Digital note-taking tools

Description	To highlight things, keep notes, comment on what they read. Instead of using paper or post-it notes, there are several note-taking applications they can use, which may make their life easier while writing an assignment.
Objective	Taking notes and having them available any time.
Technical support required	Most of the apps can be installed on PCs, Macintosh and any mobile devices (iOS and Android).
Examples	<p><b>A.nnotate</b> is an online service which allows users to upload and annotate documents. They can upload files in a wide range of formats which are converted to pdfs. They can also make and annotate snapshots of web pages. Documents can be organised using folders and tags, and can also be shared with other users. However, those who wish to upload more than thirty single-page documents each month need to purchase additional credits, on either a pay-as-you-go or monthly subscription basis.</p> <p><b>Diigo</b> allows users to highlight sections on websites and make notes, take clippings, tag, search, etc.</p> <p><b>Evernote</b> is an application used for taking notes, organising and archiving texts, webpages or webpage excerpts, photographs, voice memos, or handwritten "ink" notes. Notes can also have file attachments. Notebooks can be added to a stack while notes can be sorted into a notebook, tagged, annotated, edited, given comments, searched, and exported as part of a notebook.</p> <p><b>Google Keep</b> can be used to capture, edit, share, and collaborate on notes on any device, anywhere. Users can add notes, lists, photos, and audio. They can also organize their notes with labels and colours.</p> <p><b>OneNote</b> is a Microsoft application for storing and organising notes. It can be used to store or link to a diverse collection of material such as texts, images, audio and video files or web pages. The elements stored in a notebook can easily be rearranged. Notes are fully searchable.</p>

## Digital writing tools

Description	<p><b>Mind-mapping tools:</b> Mind-mapping is an extremely useful technique which helps writers organise their thoughts and ideas and can be successfully used at this stage.</p> <p><b>Improving writing</b> Written products can be improved by using a number of helpful tools to check meaning, avoid repetition, find collocations, improve grammar, syntax and style.</p> <p><b>Reference management tool</b> to manage citations makes the writing process much more efficient and improves productivity.</p>
Objective	Assist teachers/students with the arduous job of organizing ideas, writing and editing documents.
Technical support required	PC or Mac with any of these operating systems: Windows, Mac OS or Linux.
Examples	<p>Coggle is a free, simple mind-mapping tool designed by Google. It works as a web app, which means that it works both on PC and Mac.</p> <p>MindMeister is an online mind mapping tool that lets the user capture, develop and share ideas visually. It's ideal for brainstorming, note taking, project planning and tons of other creative tasks. Whether students or tutors work on Windows, Mac OS or Linux, they can always access their mind maps right inside the web-browser.</p> <p>Popplet is a free online tool that allows users to create mind-mapping and brainstorming diagrams. They may create a maximum of 5 Popplets.</p> <p><b>Improving writing</b>  <i>Online dictionaries:</i> (Macmillan Dictionary, Merriam-Webster.)  <i>Collocation dictionaries</i> ( Frazelt Lexipedia, Oxford Collocation Dictionary.)  <i>Grammar, syntax and style</i> (<a href="http://www.afterthedeadline.com/">http://www.afterthedeadline.com/</a>, <a href="https://languagetool.org/">https://languagetool.org/</a>)  <i>Check your work for plagiarism</i> (<a href="http://www.duplichecker.com/">http://www.duplichecker.com/</a>.)</p> <p><b>Reference management tools</b>  to manage citations makes the writing process much more efficient and improves productivity.  Microsoft Office Word has an in-built reference management tool  Paperpile is an add-on which can be used with Google Docs.  The most popular free reference managers are:  Mendeley  ReadCube  Zotero</p>

## GIS

Description	Geographic Information System (GIS) represents nowadays a fundamental tool for data analysis and visualization for the majority of business services and industries across multiple economic sectors and social frameworks.
Objective	GIS provides decision makers and users with a holistic data mapping framework for understanding forcing factors of the economic processes and are, consequently, used for any marketing, risk management, industrial development and strategic activity where the spatial component is predominant.
Technical support required	GIS dedicated software

## Instant test

Description	Quick, real time individual classroom test
Objective	To test the lesson of the day or modules
Technical support required	A survey website or social network; a mobile cellphone for each student with an internet connection
Example	Facebook surveys

## Social Bookmarking Contest

Description	<p>According to the innovative ‘flipped classroom’ framework, students are called to create a collaborative class-multimedia groupwork project to which single workgroups contribute (the classgroup is divided into small groups contributing to the class project). Each small group outcome is illustrated to other classmates and peer-to-peer voted. Based on the groupworks, questions and issues are raised to the teacher, who has to answer, taking the opportunity to go deeper into the topics tackled. The didactic framework implies:</p> <ol style="list-style-type: none"> <li>Creation of the virtual community of students on the digital platform. Usually it is a class group of students automatically enrolled on the university digital platform.</li> <li>‘Social Bookmarking Contest’ launch: the teacher selects a key topic and provides online materials: podcasts, key web search-words, case studies, links to relevant content. A further class discussion is made to provide explanations of not clear concepts and address issues raised.</li> <li>Each workgroup is invited to provide an original, creative, personal explanation by applying any multimedia resource (a piece of literature, of art, of technology, any historical or actual event, any discovery or digital app, any video or song or poem or movie...) able to explain the topic in a different and subjective way to peers, capturing their interest and curiosity. A critical explanation of the resource selected is required.</li> <li>Each work (a PPT with video embedded, or a Word document with links) is posted on the platform. Votations are opened. The teacher can see from the platform who is voting, how votations are proceeding. The system selects automatically the first three positions and the winners.</li> <li>The winners are invited to present their works and they are awarded as winners.</li> <li>A classroom debate is opened.</li> </ol>
Objective	<p>Deep-learning by a subjective interpretation and application of a concept. Develop critical sense. Develop ability to communicate in an engaging way and a sense of responsibility towards other classmates by playing the role of teachers; ability to work in groups. Generate cross-interactions among class members and circulation of information. Entail participation and enthusiasm towards active and dynamic learning processes. Entail creativity and self-learning.</p>
Technical support required	<p>A standard University digital platform (i.e. Moodle, or more basic ones). Collaboration of a technician, to post works for votations on the platform.</p>

## Gamification

Description	<ul style="list-style-type: none"> <li>• A quiz-based learning application for mobile phones to allow students testing, exercising, practising in any moment of the day, according to the topics tackled during lessons.</li> <li>• A challenging wiki-based tool to build a glossary of key-words shared among classmates.</li> <li>• A new way to deconstruct traditional learning format to study while having fun with one's own mobile, in any place.</li> </ul>
Objective	Far from traditional module-based teaching programs, it allows students to train gradually on a daily basis while providing teachers with a constant monitoring through a backend to check the general learning progresses by the class and single students.
Technical support required	Mobile App (Android, iOS) customised for each subject and teacher
Examples	Applyyourself (free download in a mobile appstore)

## Video-conference

Description	Online distance communication tools.
Objective	Online web meetings (webinars) Examine students on oral skills in distance education courses.
Technical support required	Firefox browser
Examples	Scopia Adobe Connect

## Digital Surveys

Description	A digital survey is a tool to design, administer and collect responses online by mail or by a link.
Objective	Know users' opinion about something Test students' knowledge about a topic/lesson in class. Useful for JITT (Just-in-time teaching)
Technical support required	Google Mail Account (Google Forms). Register through Gmail or Facebook (SurveyMonkey). Free account has a limit of 200 responses-
Examples	SurveyMonkey Google Forms Both tools have the options to choose different question formats: multiple choice, short answers and long answers.

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# Chapter 3.

## Developing of a Catalogue of Digital Resources for Competence/Skills Training

*Ana María Martín-Cuadrado, Carlos Cerrada, María Jordano de la Torre, David Cons Couselo*

### 3.1 Introduction

In our digital age we need to be able to make good use of digital resources if we are going to achieve good learning outcomes in any training or educational activity. This has become very evident in Higher Education which is competence-oriented and high levels of digital skills have become a requirement for staff in Distance Universities, although this is not yet quite the case in more traditional universities. Nevertheless, every day these skills are becoming ever more necessary in any university.

The evidence supporting has been taken into account in planning the COLISEE project outputs, and one key requirement, amongst others has been the identification and use of *Digital resources which can be used to train teachers and which, focus on linguistic, intercultural and entrepreneurial competences*. One of the main tasks of the COLISEE project therefore, was the “*elaboration of a catalogue of digital resources which could be used in the development of University Masters Programmes*”. The work needed to do this was led by UNED, one of the two Distance Universities within the COLISEE consortium, which both have extensive experience in the creation of digital resources and their integration with in online teaching environments.

This chapter describes in practical terms the experience of using WG-2, and focusses on the selection and use of digital resources. It focusses in particular on the procedure that we have followed for the development of a catalogue of digital resources for a set of given competences. Preliminary concepts on competence-based training are first defined and enumerated, and then the stages of the process are described. Examples of linguistic, intercultural and entrepreneurial competences are used as a appropriate in this case study.

The last part of the chapter gives practical examples of how a repository of digital resources can be used in training-courses. The use that UNED has made of the catalogue developed through the COLISEE project is briefly described. Three training sessions are presented, starting with a project training session held in Perugia. The second of the sessions demonstrates how UNED drew on the catalogue in the blended-learning course organised as a local training session. Finally, the evolution of this course into the design and production of new digital resources is described, showing the development of four MOOC courses organised around the COLISEE project competences.

## 3.2 Conceptualization

Some concepts and definitions are needed before describing the cataloguing procedure. This section is devoted to introducing the following concepts which will be used in the rest of the chapter: *Competences*, *Training by Competences*, *Digital Educational Resource* and *Digital Repository*,

A good starting reference for working on the concept of **Competencies** is the DeSeCo Project (*Definition and Selection of Competencies*), from the Organization for Economic Cooperation and Development (OECD), developed between 1997 and 2003. In particular, its Strategy Paper on Theoretical and Conceptual Foundations defines competence' as "the ability to respond to demands and to carry out tasks properly. It comes from the combination of practical skills, knowledge, motivation, ethical values, attitudes, emotions and other social and behavioural components that mobilise together for effective action". For Perrenoud (2004), competences are a combinatorial synthesis of cognitive processes, knowledge, skills, behaviours and attitudes, through which the innovative solution to the various problems posed by human life and productive organisations is achieved. For Román (2005), it is a complex and polysemic concept, which lends itself to multiple nuances and interpretations depending on the context in which it is addressed. For Feito (2008), the move from competence to learning is an attempt to propose a solution to the problem of "dead knowledge" and the "fragmentation of knowledge" existing in conventional programmes. The enormous problem of being able to use academic knowledge in the more concrete situations of everyday life is well known.

The **Training by Competences approach** is helping to transform the teaching-learning process into learning-teaching processes, thereby articulating theory with practice through the contextualization of training. Content is oriented as a means to promote comprehensive training, and the *know-by-knowledge* concept is diluted with the *know-how* and *know-by-being* concepts (Castillo and Cabrerizo, 2010).

**Digital Educational Resources** are the pedagogical materials that the teacher uses in virtual and/or online teaching for the student to learn. Digital Educational Resource is synonymous with *digital educational material*; it is designed and developed through the use of digital media, and its purpose is the acquisition of, and the training in specific competences by the student through the development of activities (Garcia-Barrera, 2016). Digital educational resources are used in face-to face teaching as support tools.

The teacher who uses digital educational resources in his or her teaching has two ways of locating them:

1. Searching external resources (after a process of selection, evaluation and storage).
2. Creating and publishing his/her own resources.

Benett et al. (2009) describe a **Digital Repository** as “a collection of items in digital format that can be accessed via an online catalogue”. In the case of COLISEE, all the resources needed to be labelled according to the specific competence each one supported, and according to their format, so that they could be used by future the teaching teams of the master to be<sup>2</sup>.

### 3.3 Methodology to compile and label the digital resources

This section describes the methods followed in order to compile a catalogue of digital resources for competency-based education and training. It is described in general terms, without making reference to specific competences. Nevertheless, examples used during the COLISEE project given where appropriate. COLISEE has suggested that linguistic, intercultural and entrepreneurial competences are crucial elements for a work-ready European student in this day and age.

#### 3.1. Participants

The first thing to take into account is who will be the participants in the process and secondly, to find out what the main interests of the institutions involved in the catalogue are and what they want it for. It is also important to know which competences the digital resources must cover, and who will be the subject experts involved in the process from each institution. If possible, it is also very important to count on the help of other experts such as librarians or audio-visual media producers.

In the context of the COLISEE project, a dedicated working group with members from the partner institutions was set up to deal with task of cataloguing the digital resources. It was put together by the Universidad Nacional de Educación a Distancia (UNED) in Spain, who acted as group leader and who were responsible for the project activities, with the participation of the Hellenic Open University (HOU) in Greece, the Université de Montpellier and the Università per Stranieri of Perugia in Italy.

The following human resources were involved:

- The leadership team of the University Institute for Distance Education (IUED) of the UNED, who were responsible for the coordination of the working group.
- Experts from the UNED’s Library (in the area of: search, selection and classification). Their expertise was key for understanding the operation of the existing database, also the criteria used for cataloguing information, and the Boolean operators used in the digital repository.
- Experts from the UNED’s Center for Audiovisual Media (CEMAV). They

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2 see at (<http://liu.se/colisee/project-documentation?l=en>) to download the document. Most of resources coming from the UNED’s Digital Resource.

supplied a varied selection of media and audio-visual formats in order to support the teaching and research of the teachers.

- Experts from the UNED's Faculty of Economics and Business Sciences, and the Centre for Orientation and Information for the Employment (COIE), who provided keys and criteria helpful for filtering the information on entrepreneurial competence.
- Experts from the UNED's Faculty of Philology, who provided keys and criteria helpful for filtering the information on linguistic competence.
- Experts from the UNED's Faculty of Education, who provided keys and the criteria helpful for filtering the information on intercultural competence.

### **3.2. Instruments**

When several institutions are participating in this process, common tools should be used for collecting and managing the information on the digital resources which will come from a variety of sources. The data collection instrument must be written in English and must be easy to work on and use online in order to ease the task of searching for existing digital resources. The attributes needed for describing each resource need to be standardised and the number needed agreed.

This last aspect is very important, but also harder to standardise, when the cataloguing is to be carried out according to competences. Again, the right tools are required in order to establish the right attributes for each competence. It would be very useful if any of these tools already existed, but unfortunately it is practically impossible to find a standard instrument to address these questions. There are number of reasons for not being able to find a generic instrument like this, but the most important factor is the limited number of tools for cataloguing digital resources in Social Sciences. For this reason-, the development of a new instrument which fitted the specific requirements of this collaborative project was an acceptable solution. The first decision is to choose an online platform that works in the same way in all partner countries. After that, the criteria for selecting the attributes of the digital resources based on the competence must be agreed; for this it is essential to consult beforehand with experts in each competence. An example of how these steps are carried out is given next and describes the development of the instrument for the COLISEE projec.

The first decision about the choice of online platform was made overwhelmingly in favour of questionnaires using Google Forms. The next step was to decide on the structure of the questionnaire and the number and type of categories necessary to make the information collected as

exhaustive as possible. To this end, several working meetings were held with Library staff (experts in resources cataloguing), CEMAV staff (specialists in the development and design of audio-visual educational material), COIE staff (experts in entrepreneurship and employability), and teachers of the Legal and Social Science, Linguistic and Educational branches. After that, and because there were three related areas of competence, although they were well differentiated, it was agreed to develop a section common to the three competencies, and another section specific to each competence. Reference documents for the preparation of these sections are given below.

Based on Martinez and Carmona (2009), a competence model that combines two fundamental aspects, social development and economic growth, was used for entrepreneurial competence. The analysis of the effects and impact of entrepreneurship programmes in higher education conducted by the European Commission (2012) was also studied, and the categorisation of the entrepreneurial capacities that emerged from this report was adopted:

- Knowledge: learn to understand entrepreneurship
- Skills: learn to become an entrepreneur
- Attitudes: learn to develop entrepreneurship

After reviewing several papers about entrepreneurial competence regarding skills, capabilities, attributes or other relevant characteristics (Christersen, 1994; Filella, 1997; Mateu, 1997; Olamendi, 1998; González-Domínguez, 2004; Marina, 2010, Bernal, 2014), we were able to complete this table with the descriptors found:

*Table 1. Characteristics related to entrepreneurial competence*

<b>Attitudes</b>	<b>Skills</b>	<b>Knowledges</b>
Positive mental attitude	Ability to overcome failure	Knowledge of the entrepreneurship process
Ability to overcome failure	Ability to conduct meetings	Knowledge of processes of innovation and creativity
Code of ethics attitude	Ability to manage stress	Knowledge to identify opportunities and trends
Personal autonomy	Ability for social relationships	Knowledge of business ethics
Initiative	Ability to time management	Knowledge of market analysis / segmentation
Tenacity	Personal autonomy	Knowledge of business development
Project and future vision	Self-knowledge (knowledge of their own capacities for entrepreneurship)	Knowledge of conceptualisation of products and value proposition
Teamwork	Ability to innovate	Knowledge of business model (feasibility plan)

Creativity	Leadership	Knowledge of entrepreneurship (partners, initial bureaucracy, resources, etc.)
Attitude to critical thinking	Ability to motivate employees	Knowledge of marketing and communication
Willingness to explore	Ability to negotiate	Knowledge of financing (funding, grants, FFF, cluster, etc.)
	Ability to organise and delegate	Knowledge of networking
	Ability to recruit staff	Knowledge of legal issues
	Ability to project and future vision	Knowledge of Financial Management (Accounting, etc.)
	Ability to work in a team	Knowledge of HR Management
	Ability to identify opportunities and trends	Knowledge of Project Management
	Ability to plan	
	Ability to take decisions	
	Ability to think critically	

The categorisation of capacities into knowledge, skills and attitudes was used for intercultural competence. This classification was extracted from the review of the following references: Bennett (2011), Byram (1997, 2008), Byram, Nichols and Stevens (2001), Gil-Jaurena (2008) and UNESCO (2013). As in the previous case, the necessary skills, capabilities, attributes or other relevant characteristics were identified and included in the corresponding section of the questionnaire (see Table 2).

*Table 2. Characteristics related to intercultural competence*

<b>Attitudes</b>	<b>Skills</b>	<b>Knowledges</b>
Curiosity	Relationship building skills	Cultural self-awareness
Cognitive flexibility	Listening	Culture-general knowledge
Motivation	Problem solving	Culture-specific knowledge
Open-mindedness	Empathy	Interaction analysis
Will to relativize self-beliefs and behaviours	Information gathering skills	Critical cultural awareness
Reflexivity	Interaction with cultural others	Analysis of prejudices and stereotypes
Intercultural sensitivity	Dialogue	Theoretical perspectives about interculturality
Recognition/appreciation of diversity	Communicative competence	Other related knowledges
Appreciation of complexity	Empowerment	
Other related attitudes	Other related skills	

Finally, the Common European Framework of Reference for Languages

was set as a benchmark for linguistic competence. It was published in 2001, and since then it has been the guide for all legislation and linguistic assessment within the European Union. In this case study, capacities were organised into three components: the language domain, the language level and the language skill area. Again, the skills, capabilities, attributes or other relevant characteristics of these elements were identified and included in the linguistic section of the questionnaire (see Table 3).

*Table 3. Characteristics related to linguistic competence*

<b>Language domain</b>	<b>Level</b>	<b>Skill</b>
General / Instructional use	A1	Reading
FL for Tourism	A2	Listening
FL for Health Sciences	B1	Writing
FL for Engineering	B2	Speaking
FL for Business	C1	Vocabulary
Other uses	C2	Grammar

### **3.3. Procedure**

Using the example of the COLISEE project, it was evident from the beginning that there was an enormous task ahead which consisted of selecting, editing and creating digital resources. The first part of this task, the selection and cataloguing, was considered to be the most expensive in terms of time and resource since a large number of resources already existed, mainly in distance learning universities like the UNED. That is why cataloguing was the main activity of the working group and the reason why the specific procedure was developed.

The first stage in this procedure should be a documentation phase looking at existing tools and resources in order to collect information about them and to ensure that they fulfil the intended purpose. As has been mentioned, this phase may not be successful for two possible reasons. On the one hand, this may be due to the lack of tools for cataloguing digital resources, since they are relatively new and consequently there is an absence of scientific publications that might be useful as a reference. On the other hand, there may be a lack of similar studies in the area of interest, as happened in the case of COLISEE which had a focus on the Social Sciences and Education areas.

While this drawback might hold up the overall process, it does allow the opportunity to design and create a dedicated instrument. The elaboration of the collection questionnaire is the first step (see Figure 1) of the cataloguing procedure and has been described in the last section.

## Stages of the Procedure

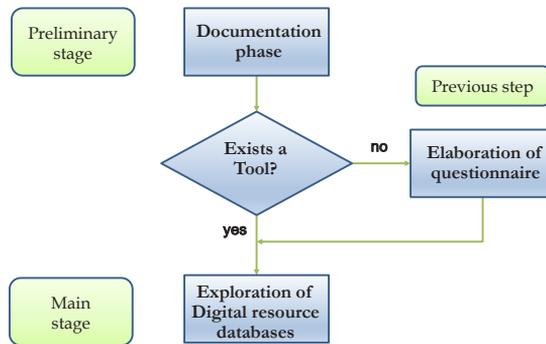


Figure 1. Staging of the cataloguing procedure

The main stage of the cataloguing procedure begins once the questionnaire has been chosen or elaborated. The operating scheme of this stage, known as *Exploration of Digital resource databases*, is shown in Figure 2, and is about exploring existing databases of digital resources to select and identify those that are of interest.

## Procedure: Main stage

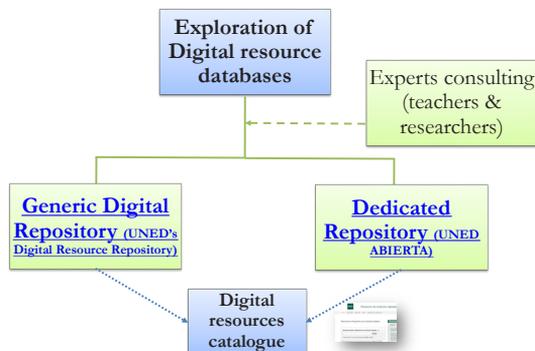


Figure 2. Scheme of the main stage of the procedure

Two different types of databases are considered: Generic Digital Repositories (containing huge amounts of resources from all areas) and Dedicated Repositories (containing fewer resources from a specific area). To achieve

the selection and identification of resources, qualitative methods should be followed based on the analysis of the available documentary sources, complemented by consultation with academic experts (teachers and researchers) in the area of competence involved. It can be divided in two phases: filtering and classification.

The filtering phase for Generic Digital Repositories differs to that for Dedicated Repositories. Generic Digital Repositories usually have a search engine that works with Boolean operators. In this case, it is vital to get the help of Library staff, experts in the area of search, selection and classification of information. Their expertise is key to managing the cataloguing criteria and Boolean operators, and in this way they help focus the search, saving time and effort. The search engine allows the search to be directed toward resources that might *a priori* be valid for the competence in mind. However, the effectiveness of this tool is limited, and the problem increases when the keywords linked to the stored resource are scarce or do not include exactly the name of the given competence. That is why, at this point the advice of academic experts in the competence is crucial for deciding whether certain resources are valid or should be discarded.

Consequently, two sequential filters must be applied in these kind of repositories in order to reduce their initial size. The first filter, built with the help of Library experts, will establish the appropriate criteria for filtering the search using the Boolean operators of the repository, and that will allow the resources that do not meet the general objectives to be discarded. The second filter, built with the help of the academic experts, will establish specific criteria for lightly filtering the previous results, and that will allow the resources that are not related to the given competence to be discarded.

The filtering phase in the case of Dedicated Repositories only requires one fine filter because they contain resources that are already related to the knowledge area.

In the classification phase each of the selected resources must be analysed. This means that, for example, video sources must be viewed and radio programmes must be listened to by the cataloguer, and then matched with the questionnaire items so that each resource can be labelled according to the appropriate competence. Other relevant data such as language, format, authors, copyright, etc. must also be taken into account, without forgetting each one of the sub-competences associated to each key competence that appears in the questionnaire items.

In summary, the most difficult work in the cataloguing process is related to how to reduce the initial database of existing digital resources. Some kind of filtering should be applied first. Then, the filtered resources must be visualized and their characteristics extracted. Finally, the characteristics should be collected in the questionnaire.

### 3.4. Data analysis

In order to have an idea of the amount of information managed, this section is devoted to analysing the performance of the proposed method. Data from experiences in the COLISEE project are used to give specific details of the general procedure discussed above.

Regarding the Generic Digital Repositories, in the case of UNED, the Library experts reported that the largest source of digital resources available at the University was the UNED's Digital Resource Repository<sup>3</sup>. It had exactly 66,471 entries at the beginning of the study, in November 2015 (the number of digital resources increased to 70,239 in October of 2016, date of the last consultation).

After applying the two sequential filters of the filtering phase described above, the number of potentially valid resources is reduced to 1783 for the three considered competences: 281 for entrepreneurial, 748 for intercultural and 754 for linguistic (see Figure 3).

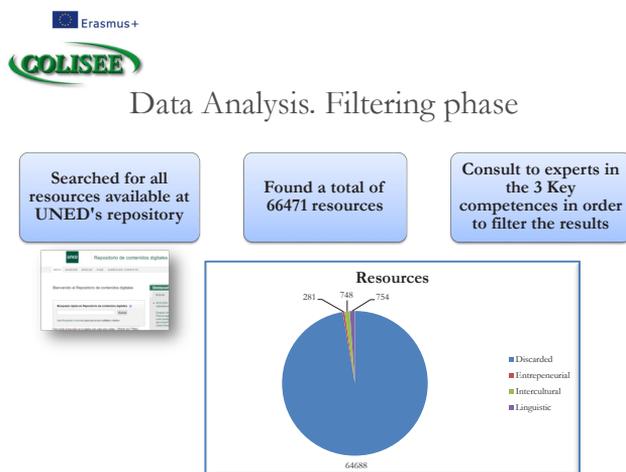


Figure 3. Results of the filtering phase to the UNED's Digital Resource Repository

Concerning the Dedicated Repositories it must be said that a significant number of digital resources were found in other virtual spaces such as *UNED Abierta*<sup>4</sup> (the official open contents platform at UNED), and *ECO Learning Platform*<sup>5</sup> (the European platform coordinated by UNED teachers, and from which a large number of MOOCs has been generated). The number of potentially valid resources from these sources was 260: 37 for entrepreneurial competences, 23 for intercultural competences and 200 for linguistic competences.

3 <http://contenidosdigitales.uned.es/fezUNED/>

4 <https://unedabierta.uned.es/>

5 <https://hub8.ecolearning.eu>

After that, the classification phase was applied to the selected resources of the three competences (see Figure 4). For entrepreneurial competences, 318 resources (=281+37) were analysed (viewed/listened), from which 58 were finally catalogued. For intercultural competences 771 resources (=748+23) were analysed (viewed/listened), from which 79 were eventually catalogued. Moreover, for linguistic competences 954 resources (=754+200) were analysed (viewed/listened), from which 42 were eventually catalogued.

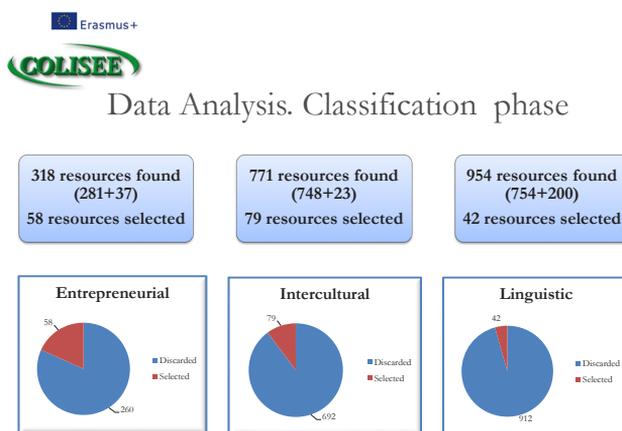


Figure 4. Results of the classification phase for the three competences

#### 4 Examples of good practice. The ICT training of university teachers in the use of digital resources

This section explores a set of practical examples of how digital resources and catalogues of digital resources can be used in the training process. In particular, it describes several UNED training activities carried out in the context of the COLISEE project that show the experience of this University on teaching at a distance with technology.

These examples are presented to show how different training contexts imply different digital resource needs. These different scenarios include the face-to-face training sessions held in Perugia the blended-learning course developed at UNED for academics, tutors and students, and the MOOCs which are, entirely online and open to all university teachers interested in being trained in the use of ICT.

These three teaching experiences are described next, starting with the Perugia training session. The second example outlines the UNED blended-learning course which was organised as a local training session. Finally, the evolution of the latter towards the design and production of new digital resources is described and, shows the development of four MOOCs within the

framework of the COLISEE project. The three different scenarios considered in these examples are represented in Figure 5.

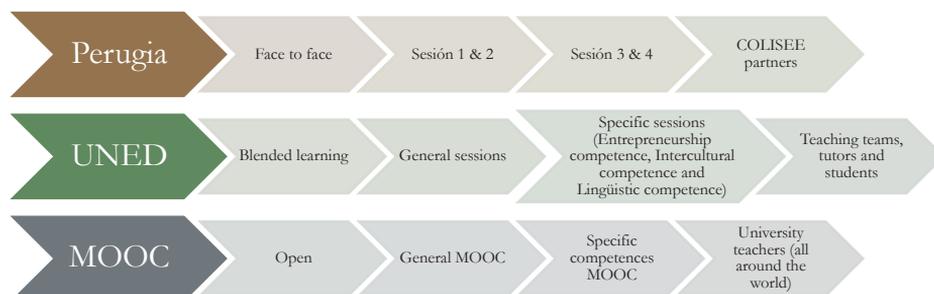


Figure 5. Relation across training experiences – courses -formats

#### 4.1 UNED participation in the Perugia training sessions

One of the five sessions, organized by the University of Perugia in the context of the COLISEE Training Sessions in the last week of January of 2016 is described here. More specifically, Perugia Training session 4, which was delivered by María Jordano de la Torre, from the Faculty of Philology (UNED).

The participants were the same as for the whole week of training and they came from the COLISEE partner institutions, and were all teachers, except for one administrator. Given that most of the institutions involved in the project were from traditional universities and given that the four sessions delivered by UNED were to be delivered face to face, the main aim was to present ideas on how to teach and learn in a distance and collaborative environment.

Although the four sessions were delivered face to face, all of the content was hosted on a Moodle platform, so that the participants could practise the content accessed through an online environment<sup>6</sup>. To ensure this could happen, all the participants enrolled in the course were provided with an access profile, generated before the beginning of the course.

Each session followed the same structure: an audiovisual presentation as a general introduction to the topic followed by a selection of hands-on activities based on the content of each session and discussion of what was learnt. All four sessions lasted two hours and covered one topic.

##### **Session 1 - Introduction - Collaborative work (teachers)**

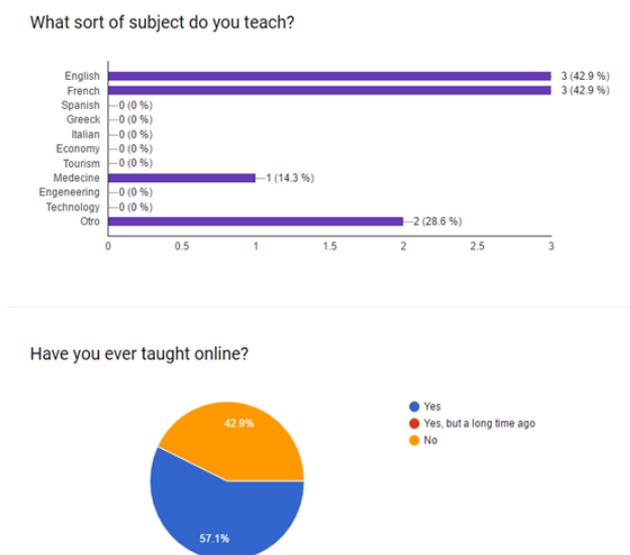
This session was mainly focused on presenting to the audience how to design an online course in a collaborative way. The tool selected for this section was Evernote, an application which creates and manages electronic notes. After this section, all the participants were able to share a notebook with their notes about that session.

<sup>6</sup> <http://moodle.mariajordano.com>

## **Session 2 - Collaborative work (students) - GoogleGroups/Wikis [wikispaces]**

The aim of this session was to introduce the audience to how to encourage their students to work collaboratively, using applications running in the cloud, such as Google Drive or Wikispaces. It was decided not to work on Wikispaces because it had been already seen in detail in a previous session.

To show how to work with online forms, the participants were asked to fill out a very simple form so that they could be invited to see the results later. This screenshot (Figure 6) shows how English and French as Foreign Languages were the subjects taught by the majority of attendees. These results validate the selection of the topics selected for the following sessions (three & four).



*Figure 6. Results of the very simple online form filled out by the participants*

## **Session 3- Teaching and learning written skills online**

This session was centred on teaching and assessing written skills in an online environment, either in receptive and productive mode. To achieve this, some examples of classroom blogging were shown and discussed to explain different techniques of improving writing skills on the web, including assessment. Participants showed a particular interest in the way the presenter provided feedback to her students when they wrote on the blogs. The final activity consisted of asking the participants to share their own experiences after having read the different blogs provided by the presenter. They could not interact due to Internet connection problems.

### ***Session 4- Teaching and learning speaking skills online***

The last session set out to demonstrate that oral skills can also be taught and practised online. Some examples were shown using AVIP, a tool developed by UNED ITs, and ideas relating to the use of online voice were also suggested and debated. Other tools, such as Big Blue Button<sup>7</sup> (Open source) or Blackboard Collaborate (Proprietary license), two add-on tools to be used with Moodle were presented as possible future options. These, were presented as alternatives for working on oral skills.

### **4.2 UNED local training sessions**

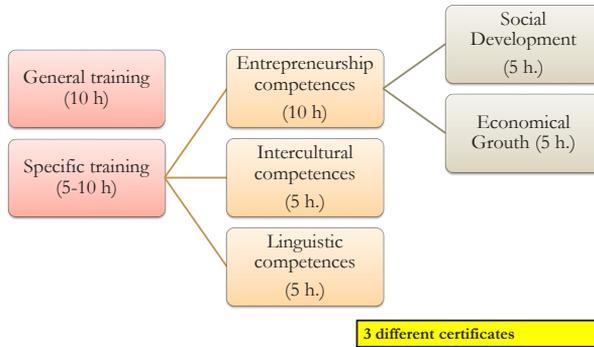
One of the issues around the Training sessions held at Perugia was the need to transfer the knowledge gained back to each partner institution. With this purpose in mind, the following four courses (in Spanish) were transformed and developed by the UNED, based on a modular design / modular certification concept as shown in Figure 7:

- 1. Recursos Tecno-Didácticos en la Formación Transversal de las Competencias LINGÜÍSTICAS, INTERCULTURALES y EMPRENDEDORAS: Formación general (10 h.)*
- 2. Recursos Tecno-Didácticos en la Formación Transversal de Competencias emprendedoras (10 h.)*
- 3. Recursos Tecno-Didácticos en la Formación Transversal de Competencias interculturales (5 h.)*
- 4. Recursos Tecno-Didácticos en la Formación Transversal de Competencias lingüísticas (5 h.)*

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<sup>7</sup> [https://moodle.org/plugins/mod\\_bigbluebuttonbn/](https://moodle.org/plugins/mod_bigbluebuttonbn/)

## Modular design / Modular certification



*Figure 7. Organization of the UNED local training sessions. Concept of Modular design / modular certification*

These courses were developed in a blended learning mode. Face-to-face sessions were held at the IUED Training Room at the same time as they were synchronously broadcast through web-conferencing using an AVIP-INTECCA classroom<sup>8</sup>. The Virtual Learning Environment used in the virtual part of the courses was the aLF platform (Figure 8).



*Figure 8. Aspect of the main page of the courses in aLF platform*

These courses were delivered in late May, early June 2016, to a wide range of staff, as shown in Figure 9. There were a total of 91 attendees from several different educational groupings, such as Professors/Tutors (62.4%), undergraduate students (10.8%), language staff from the Modern Languages Department -CUID- (10.8%), and others. Due to this heterogeneity, significant effort was needed to design an attractive and profitable course that suited everybody.

<sup>8</sup> <https://www.intecca.uned.es/inteccainfo/plataforma-avip/que-es-avip/aulas-avip-de-webconferencia/>

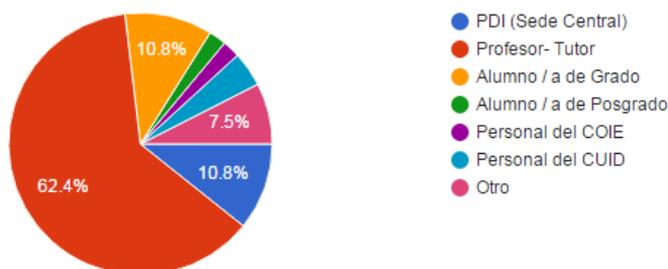


Figure 9. Range of staff (in Spanish) of the developed courses

Another point of heterogeneity was the academic and professional background (Figure 10): 18% came from Language Studies, but 54% came from different areas: Computer Sciences, Economics, Engineering, Health, etc.

Although the online participants had at least some training in distance language learning methods, as opposed to the Perugia audience, they lacked a solid grounding in collaboration tools and techniques. The Perugia group also shared this phenomenon.

Apart from focussing on tools to improve the digital environment, such as notetaking software and concept maps tools, a bibliographic tool to generate collaborative bibliographic references was included in the content of the general course.

The second part of the general session was centered on suggesting new ways of promoting collaborative work among students.

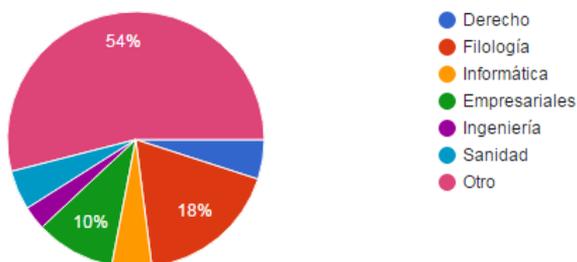


Figure 10. Academic and professional background (in Spanish) of the attendees

These sessions and the following ones had the particularity of being delivered face to face, online and asynchronously, in case any participants had problems attending.

Once the general session had taken place, a questionnaire was delivered to the participants so that they could give feedback on this new course modality.

The majority of respondents gave a course evaluation for the general session (Figure 11) of 8 points out of 10.

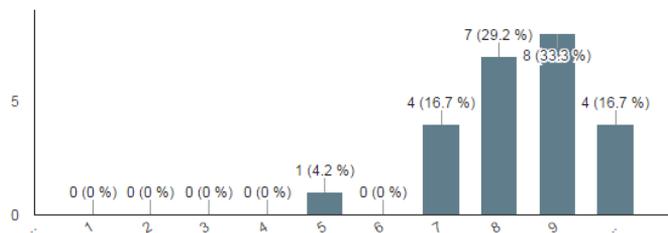


Figure 11. Results of evaluation

Most of the attendants followed the session from home/work (Figure 12): 16.7% attended the course at their Local Centre, 12.5% did it asynchronously, from home/work.

Several suggestions were collected and were taken into account in the delivery of the specific competences sessions. These competences were treated from a transversal perspective so that they could fit in with the different interests of the attendees.

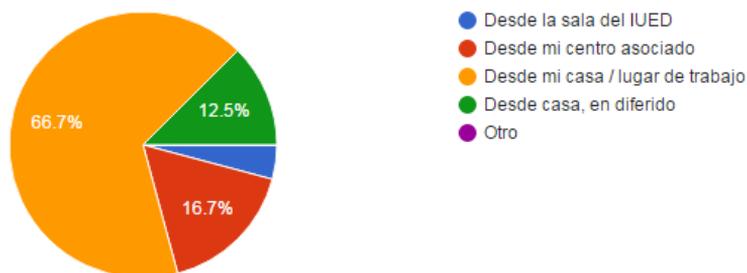


Figure 12. Session following from home/work

#### 4.3 MOOC. Teaching Linguistic, Intercultural and Entrepreneurial Competences in a cross-disciplinary ICT context.

This was the last teaching session planned by the UNED in order to disseminate the philosophy of the COLISEE project, in terms of Digital Resources and the three key competences. Due to the great success of the courses offered to UNED staff at the local training sessions, all the sessions were transformed into MOOCs so that they could be offered to other University teachers all around the world, even though they were not part of the COLISEE Project.

The names of the MOOCs were adaptations of the corresponding courses

for the local training sessions:

- Teaching Linguistic, Intercultural and Entrepreneurial Competences in a cross-disciplinary ICT context: General Training (TeLIEC)
- Using ICT to Teach Linguistic Competences in a cross-disciplinary context (ITeLiCo)
- Using ICT to Teach Intercultural Competences in a cross-disciplinary context (ITICo)
- Using ICT to Teach Entrepreneurial Competences in a cross-disciplinary context (ITECo)

A specific IUED website was created so that the four courses could be accessed directly (Figure 13). The generic title appearing on this page is *MOOCs: Teaching Linguistic, Intercultural and Entrepreneurial Competences in a cross-disciplinary ICT context*<sup>9</sup>. All MOOCs were made public in October 2016 and were planned to be delivered between January and February 2017. They were hosted on the EdEX Platform which is used by *UNED Abierta*<sup>10</sup> to run its MOOCs. All of the MOOCs last a week and offer the option of a certification if required by the student.

As mentioned before, all these courses are based on previous versions of the course, with the aim of using digital resources to train University teachers in the use of cross-disciplinary competences in an online and collaborative environment.

The contents of the General Training MOOC and the training for the Linguistic competence MOOC can be seen as a continuation of the sessions delivered in Perugia, given that the interests of both audiences are very similar. The content was firstly transformed into the corresponding courses for UNED staff in the local training sessions, and later complemented and adapted to the MOOC format. The contents of the two other MOOCs for Entrepreneurial and Intercultural competences were designed specifically to develop these competences in the local training sessions, and later complemented and transformed to MOOC format.

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<sup>9</sup> [http://portaluned.es/portal/page?\\_pageid=93,54656575&\\_dad=portal&\\_schema=PORTAL](http://portaluned.es/portal/page?_pageid=93,54656575&_dad=portal&_schema=PORTAL)

<sup>10</sup> <https://iedrauned.es>



1. Teaching Linguistic, Intercultural and Entrepreneurial Competences in a cross-disciplinary ICT context: General Training (ToLIEC) -



2. Using ICT to Teach Entrepreneurial Competences in a cross-disciplinary context (ITECo)

3. Using ICT to Teach Intercultural Competences in a cross-disciplinary context (ITICo)

4. Using ICT to Teach Linguistic Competences in a cross-disciplinary context (IToLiCo)

Figure 13. Global launching webpage for the UNED-COLISEE MOOCs. Teaching Linguistic, Intercultural and Entrepreneurial Competences in a cross-disciplinary ICT context

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# Chapter 4.

## Upskilling teaching staff

*Donatella Padua, Fernando Nardi, Lucrecia Rallo, Stefania Spina, Vicky Wright*

### 4.1 Needs analysis of teaching staff

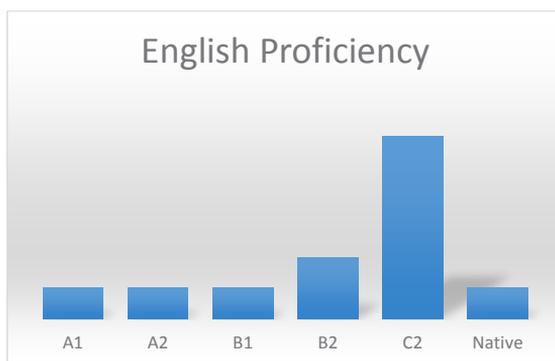
With the aim of designing a customized training course, the trainees' competences in languages and teaching skills were assessed by means of an open questionnaire. The questionnaire was developed by the staff at the University for Foreigners of Perugia (UniStraPg) and sent to the potential trainees by e-mail. The following sections will present quantitative and qualitative data of the information provided by the trainees, which served as the basis for defining the teachers' profiles and adjusting the course contents to suit the trainees' needs.

#### 4.1.1 Trainees

The trainees (n=12) were teaching and technical staff from the six partner universities: two members from the Hellenic Open University (HOU), two members from the University of the Balearic Islands (UIB), three members from the University of Montpellier (UM), one member from the Universidad de Educación a Distancia (UNED), two members from the University for Foreigners of Perugia (UniStraPg) and two members from the University of Southampton (USoton).

#### 4.1.2 English Proficiency

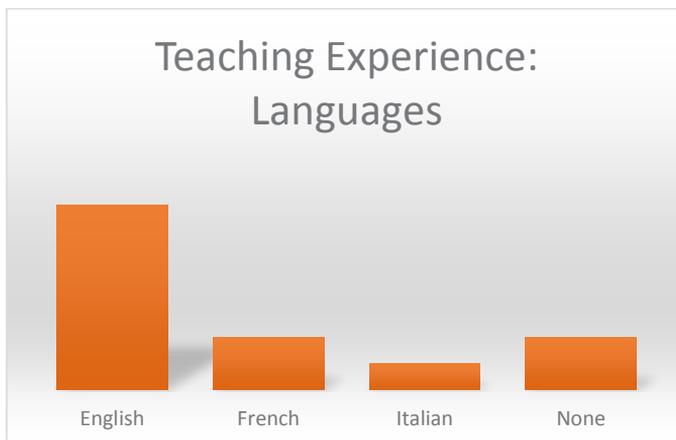
Based on the levels of Common European Framework for Languages, most trainees were experienced speakers of English and self-reported having a C2 level in oral English (speaking). The rest of participants' proficiency levels ranged from B2 to A1 levels (see Fig. 1):



*Fig. 1- English proficiency level of the trainees who participated in the training session at UniStraP.*

### 4.1.3 Teaching experience in languages

Most of the trainees had experience teaching one or more foreign languages, including English, French and Italian at primary, secondary and higher education levels. Some of the teachers reported teaching language for specific purposes, such as, business English and French, legal English, advertising English and French for Tourism, among others.



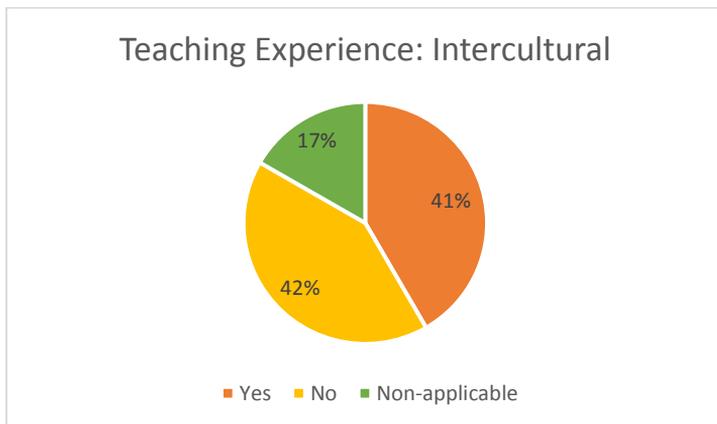
*Fig. 2 - Language teaching experience of the trainees who participated in the training course at UniStraP.*

### 4.1.4 Teaching experience in intercultural areas

The definition of intercultural competence provided by Byram (1997) includes the following attitudes, knowledge and skills:

- Attitudes: Curiosity and openness, readiness to suspend disbelief about other cultures and belief about one's own (p. 50).
- Knowledge of social groups and their practices in one's own and in one's interlocutor's country, and of the general processes of societal and individual interaction (p. 51).
- Skills of interpreting and relating: ability to interpret a document or event from another culture, to explain it and relate it to documents from one's own (p. 52).
- Skills of discovering and interacting: ability to acquire new knowledge of a culture and cultural practices and the ability to operate knowledge, attitudes and skills under the constraints of real-time communication and interaction (p. 52).
- Critical cultural awareness/political education: An ability to evaluate critically and on the basis of explicit criteria perspectives, practices and products in one's own and other cultures and countries (p. 53).

Not all teachers include intercultural competences as part of the language courses they deliver. For instance the French participants organise a research seminar called “Linguistic and cultural diversity in the primary school” to familiarize education undergraduates with the issue of children who have newly-arrived in the country. Students are encouraged to reflect on the integration and inclusion of children whose language(s) are other than the school language.

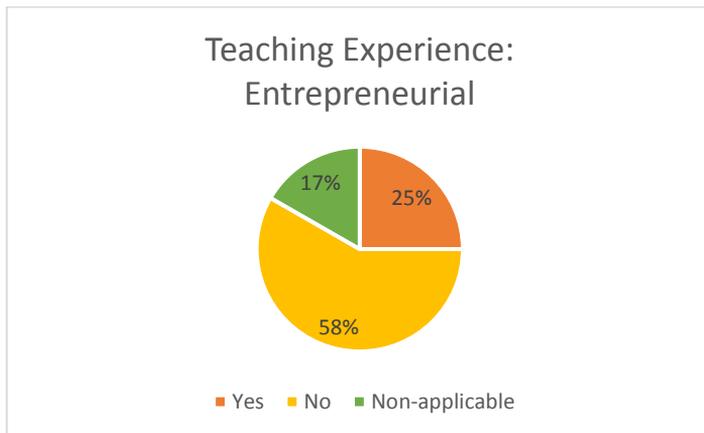


*Fig. 3 - Teaching experience in intercultural competences reported by the participants of the training course.*

#### **4.1.5 Teaching experience in entrepreneurial areas**

Only a small percentage of the teachers reported having teaching experience in entrepreneurial competences.

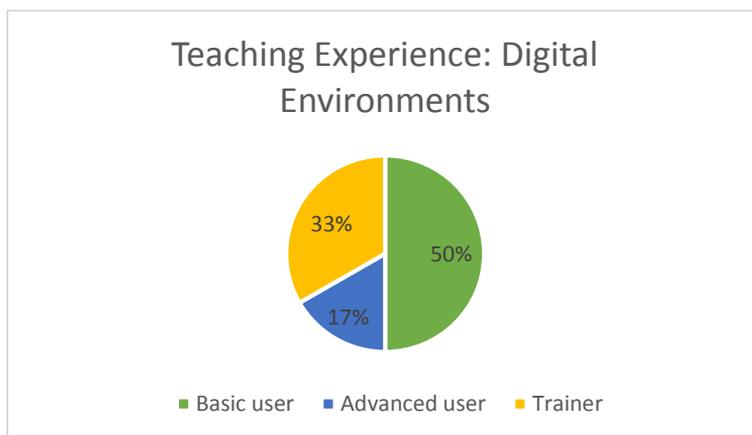
Entrepreneurial competences are characterised by two main levels: one is related to personal competences, on which the distinctiveness of a leading entrepreneur is based. They refer to leadership qualities, to the ability to perform decisively, the level of risk-taking, to the level of self-confidence, of willingness, of being enterprising and of being innovative. The other is based on business competences and refer to the competences related to key business areas: marketing, management, sales, distribution, accounting and finance, human resources.



*Fig. 4 - Teaching experience in entrepreneurial competences reported by the participants in the training course.*

#### **4.1.6. Teaching experience in digital environments**

There is a sharp difference in the digital competences of the participants. Fifty per cent report having only basic knowledge of digital environments, consisting of knowledge as a user, or of digital platforms such as Moodle. The other 50% reported having more advanced knowledge as trainers of software and presentation tools for education, development and assessment of MOOCs, online learning platforms.



*Fig. 5 - Teaching experience in digital environments reported by the participants of the training course.*

## 4.2 Training teaching staff in the use of technology

### 4.2.1 Introduction and background

We are living in a period of great transformation; digital technologies have transformed our society in a way that is frequently compared to the cultural, economic and social impact of the printing press. The change has been so rapid and so widespread that it has given rise to an economic transition from an industrial economy to an information-based economy, creating a new period in human history known as the Information Age or the digital revolution.

Digital technology has the potential to deeply transform teaching and learning processes. One of the consequences of this rapid and dramatic change in the field of education is that teachers need to acquire new knowledge, skills and competences in those digital technologies which play a more and more central role in the processes of teaching and learning.

It is well known that (digital) technologies have the power to restructure the way in which knowledge is organized, but also our social and interpersonal relationships, as well as many of our daily activities. Just to make few examples, technologies have completely changed

- the way we communicate with each other;
- the way we organize our free time;
- the way we orient ourselves and find our way when we travel.

The changes that digital technologies are introducing in the fields of teaching and learning, in contrast to other social activities, are happening more slowly and more gradually: it seems that the world of education has a strong cultural resistance to the big changes that are being introduced by digital technologies.

As a consequence, teachers play a key role in our contemporary society: they have to make students ready for the next generation's challenges, which will mainly rely on innovation through technology.

Teachers should become the facilitators of this shift towards the systematic use of technology in our society: to meet the needs of their students, thus, they should be:

- trained and skilled in technology;
- open to introducing innovation in teaching;
- inclined to experiment new methods, resources, tools and curricula.

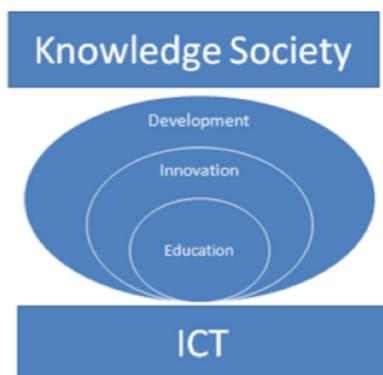
Therefore, the digital literacy that is required by teachers is not only a question of acquiring technical skills, but also a strong inclination to innovation and change: equipment means nothing unless teachers can productively use it to

supplement and improve teaching, adapting methods to the challenges that students will have to face in the future.

As we are living in exponential times, teachers are currently preparing students for jobs that don't yet exist: it is imperative that they provide the new generation with the skills and the open-mindedness which are the necessary prerequisite for becoming digital citizens and innovators.

#### 4.2.2 Objectives

As a consequence, it is essential to train the teachers of our knowledge society in the use of digital technologies for their teaching. Among the four pillars of a knowledge society (fig. 6) there is both education (because workers at all levels in the 21st century will need to be lifelong learners, adapting continuously to changed opportunities, work practices, business models and forms of economic and social organisation) and ICTs, which facilitate the application of knowledge to economic activity.



*Fig. 6 - The four pillars of a knowledge society*

The purpose of this training should be twofold: on the one hand, it must aim to stimulate the teachers' awareness of the radical changes that digital technology is producing, and, as a consequence, of the need of assuming a positive attitude towards innovation and change. One of the possible causes of resistance to change in the field of education is that the focus of innovation is too often and too much on hardware (interactive whiteboard, tablet, e-books, e-reader, etc.) rather than on software, which is the element from which real innovation arises. Software is the network of people that creates, uses and disseminates it. At a higher level, if we consider the Internet as a huge and collaborative piece of software:

- The Internet is us, connected.
- The Internet is not made of copper wire, glass fiber, radio waves, or even tubes.

- The devices we use to connect to the Internet are not the Internet.
- From us and from what we have built on it does the Internet derive all its value.

(from *New Clues - Doc Searls, David Weinberger*, January 2015)

On the other hand, any adequate training should provide the teachers with an updated guide of the most useful software and tools that they could use with their students, in order to meet their need for knowing and being able to productively use the most effective digital resources.

The following best practices are intended to meet the need to improve the quality of education and training, focusing specifically on three key competences:

- Linguistic competence
- Intercultural competence
- Business competence and knowledge of corporate culture.

The next sections will provide examples and descriptions of some of the most useful digital resources that should be a minimum requirement for a teacher of the 21st century. The five case-studies that will be presented are taken from the training session on the use of technology of teaching staff held as part of COLISEE project. They deal with blended and online learning (4.3.1), digital learning tools (4.3.2), Geographic Information Systems (4.3.3), linguistic assessment in online environments (4.3.4), and Customer Engagement in Digital Ecosystems (4.3.5).

## **4.3 Tools and resources: five case-studies**

### **4.3.1 Blended/On-line Learning**

In blended learning process students learn:

- through online learning, with some element of student control over time, place, path, and/or pace
- in a supervised brick-and-mortar location away from home, and
- the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.

#### *4.3.1.1 Teacher's roles in on-line learning*

Rather than follow the traditional roles of sharing content and grading papers, teachers participating in blended learning have several roles. Table 1 presents a list with the most important teachers' roles in such learning environments.

Table 1. Teachers' Roles

Role	Task areas
Content facilitator	Facilitate the learners understanding of the content ('In-course' activity)
Technologist	Making technology choices to improve the online environment
Designer	Designing worthwhile learning task ('Pre-course' activity)
Manager/administrator	Administration and record keeping
Process facilitator	Welcoming, establishing ground rules, creating community, managing communication, modeling social behavior, establishing own identity
Adviser/counselor	Providing students with advice or counseling on a one to one basis
Assessor	Provides grades and feedback
Researcher	Creation of new knowledge relevant to content

#### 4.3.1.2. Responsibilities of an on-line teacher

Teachers should encourage student engagement in teaching process by providing them with the necessary technical support. They should also help students to navigate in the on-line environment (e.g. find important documents) and respond in a timely manner to student requests - so students do not feel overwhelmed by the number of postings on the forum discussion-. As for contact with students teachers must be in touch with specific students privately to encourage more interaction.

Finally teachers must model the kind of engagement they are seeking from students in order to keep the group moving together as much as possible, so that often discussions are meaningful to all.

Teachers who are involved in on-line education face many challenges. The list below present some of the most common:

- Large number of students
- Large number of messages
- (tutor to student, student to student)
- Students with different learning experience
- Overcoming distance
- Time management
- Feedback demands

#### 4.3.1.3 Assessment and evaluation in online courses

The purpose of assessment is to provide staff and students with information and insights needed to improve teaching effectiveness and learning quality. Teachers evaluate students' ongoing progress toward learning goals with the aim of improving their strategies.

### 4.3.2 Digital Learning Tools

Education has been evolving over the centuries by learning and adapting to whatever technologies were available and has best served its purposes. Currently, various types of technology are used to improve, supplement and/or extend diverse modes of teaching in order to improve its quality, flexibility and effectiveness. As a consequence, exploring how this aim can be achieved requires our full attention.

For the purposes of the COLISEE project a number of sessions were devoted to exploring the potential of a number of digital tools in an attempt to facilitate both the instructional and the learning process.

First, a wiki (<https://coliseeperugia2016.wikispaces.com/>) was designed and exploited during training sessions and served as a showcase of the instructional content presented as well as an informal platform for the exchange of ideas and communication between tutor and students.

Secondly, what appears to be of utmost importance when studying or doing research is the familiarisation of tutors and students with digital tools which can often solve a number of practical issues, such as:

- organising the books and the articles students read online
- saving interesting websites and being able to retrieve them when needed
- keeping digital notes
- checking and improving work

#### 4.3.2.1 Exploring, bookmarking and curating literature

Apart from exploiting the university library facilities offered to students when they are physically present at the campus, there are millions of research articles available on the web which could be exploited. But how can they be explored effectively? There are numerous search engines, curators and bookmarking tools, each with benefits and limitations. Before presenting some of these tools, which can help tutors and students find and store the articles they are interested in and stay up to date with the relevant literature, it is important to explore what (social) bookmarking and content curation is. Although they are often thought to be referring to similar things and they do have a lot in common, the truth is that they are also different.

In very simple words, bookmarking is an early form of content curation. Bookmarking is the practice of saving the address of a website one wishes to visit in the future on one's computer. Social bookmarking, on the other hand, is the practice of saving bookmarks to a public website and "tagging" them with keywords. If one wishes to create a collection of social bookmarks, they need to be registered with a social bookmarking site (see suggestions below), which lets them store bookmarks, add tags of their choice, and designate individual bookmarks as public or private. It is a new way of organizing information and

categorizing resources, primarily for one's own use. Yet, it can be particularly useful when collecting a set of resources that are to be shared with others.

Content curation is the process of finding content from the scattered and diverse mass of digital information available on the web organising it in a meaningful way and presenting it to benefit oneself and others. Content curation is not just collecting links or information in general (that's content aggregation). It requires deep critical thinking skills. It is more about putting what one collects into a context, organising, annotating and presenting it.

Most tools can be used on iOS or Android devices as well as on a laptop/desktop by adding an extension/add-on on the web browser. One way to decide which tools are more suitable is to find and view videos explaining how these tools work.

*Here's a sample list of such tools:*

- **CiteUlike** – Search, organize, and share scholarly papers.
- **Colwiz** – Create citations and bibliography and set up your research groups on the cloud to share files and references.
- **Delicious** – Save all your bookmarks in one place.
- **Diigo** – Save all your bookmarks in one location and make them accessible online from any place.
- **Google Scholar** – Provides a way to broadly search for scholarly literature across disciplines and sources.
- **LazyScholar** – Chrome extension to help your literature search.
- **Mendeley** – A unique platform comprising a social network, reference manager, article visualization tools.
- **Microsoft Academic Search** – Find information about academic papers, authors, conferences, journals, and organizations from multiple sources.
- **Paperity** – Aggregator of open access papers and journals.
- **PearlTrees** – Create a mind map of your links and embed them on your website or blog.
- **Pinterest** – Create a beautiful board of your links. It takes any image from the post and allows you to even play videos within the posts.
- **ReadCube** – Read, manage and discover new literature.
- **ScoopIt** – Collect, share and publish your digital discoveries. You set the keywords you are interested in and Scoopit collects all relevant resources such as sites, blogs, videos, etc. It also allows you to share your resources on social media. You can publish an online magazine with your links.
- **Zotero** – Collect, organize, cite, and share your research sources.

#### 4.3.2.2 Taking notes

Collecting and bookmarking resources is not enough when doing research. Students often need to highlight things, keep notes, and comment on what they read. Instead of using paper or post-it notes, there are several note-taking applications they can use, which may make their life easier while writing an assignment. Some of the tools presented in the previous section also include note-taking facilities. Here are a few more suggestions:

**A.nnotate** is an online service which allows users to upload and annotate documents. They can upload files in a wide range of formats which are converted to pdfs. They can also make and annotate snapshots of web pages. Documents can be organised using folders and tags, and can also be shared with other users. However, those who wish to upload more than thirty single-page documents each month need to purchase additional credits, on either a pay-as-you-go or monthly subscription basis.

**Diigo** allows users to highlight sections on websites and make notes, take clippings, tag, search, etc.

**Evernote** is an application used for taking notes, organising and archiving texts, webpages or webpage excerpts, photographs, voice memos, or handwritten “ink” notes. Notes can also have file attachments. Notebooks can be added to a stack while notes can be sorted into a notebook, tagged, annotated, edited, given comments, searched, and exported as part of a notebook.

**Google Keep** can be used to capture, edit, share, and collaborate on notes on any device, anywhere. Users can add notes, lists, photos, and audio. They can also organize their notes with labels and colours.

**OneNote** is a Microsoft application for storing and organising notes. It can be used to store or link to a diverse collection of material such as texts, images, audio and video files or web pages. The elements stored in a notebook can easily be rearranged. Notes are fully searchable.

#### 4.3.2.3 Digital writing tools

##### **Mind-mapping tools**

After having collected the material one needs and having used some of the digital tools presented earlier, someone could start writing their first draft. Mind-mapping is an extremely useful technique which helps writers organise their thoughts and ideas and can be successfully used at this stage. Here are some mind-mapping tools which can be explored further:

- **Coggle** is a free, simple mind-mapping tool designed by Google. It works as a web app, which means that it works both on PC and Mac.
- **MindMeister** is an online mind mapping tool that lets the user capture, develop and share ideas visually. It’s ideal for brainstorming, note taking, project planning and tons of other creative tasks. Whether students or

tutors work on Windows, Mac OS or Linux, they can always access their mind maps right inside the web-browser.

- **Popplet** is a free online tool that allows users to create mind-mapping and brainstorming diagrams. They may create a maximum of 5 Popplets.
- **SpiderScribe** is an online mind mapping and brainstorming tool. It lets users organize their ideas by connecting notes, files, calendar events, etc. in free-form maps. They can also collaborate and share those maps online.
- **Text2MindMap** is a free mind-mapping tool which can be used to convert ideas into mind maps

### **Improving writing**

Written products can be improved by using a number of helpful tools to check meaning, avoid repetition, find collocations, and improve grammar, syntax and style. Here's a collection:

Online dictionaries:

- Macmillan Dictionary
- Merriam-Webster Dictionary
- Cambridge Dictionary

Collocation dictionaries:

- Frazelt
- Lexipedia
- Oxford Collocation Dictionary
- Ozdic

Grammar, syntax and style:

- <http://www.afterthedeadline.com/>
- <https://languagetool.org/>
- <https://www.nounplus.net/grammarcheck/>
- <http://www.onlinecorrection.com/>
- <http://www.paperrater.com/>
- <https://prowritingaid.com/>

Check your work for plagiarism:

- <http://www.duplichecker.com/>
- <http://www.plagiarism-detect.com/>
- <http://www.plagium.com/>
- <http://www.plagtracker.com/>

#### 4.3.2.4 Reference management tools

Last but not least, using a reference management tool to manage citations makes the writing process much more efficient and improves productivity. Microsoft Office Word has an in-built reference management tool (<https://support.office.com/en-us/article/Create-a-bibliography-3403c027-96c8-40d3-a386-bfd5c413d5bb>) while Paperpile is an add-on which can be used with Google Docs. Yet, the most popular free reference managers are:

Mendeley  
ReadCube  
Zotero

Besides sensitising students to the existence of digital tools and outlining how they work in theory, hands-on experience is also needed. Tutors can design a number of tasks regarding digital tools so that students can explore their potential and adopt those that suit their needs.

### 4.3.3 Geographic Information System (GIS)

This section describes a training session on the introduction of *Geographic Information System* (GIS) for a diverse set of applications concerning socio-economic and industrial development. The course is organized into two different lectures:

- Introduction of “Geographic Information Systems (GIS) for enterprise and tourism in a digital environment”;
- “Geointelligence and geomarketing for enterprise and tourism in a digital environment”.

Nowadays Geographic Information Systems (GIS) are fundamental tool for data analysis and visualization for the majority of business services and industries across multiple economic sectors and social frameworks. GIS provides decision makers and users with a holistic data mapping framework for understanding the push factors of economic processes and are, consequently, used for any marketing, risk management, industrial development and strategic activity where the spatial component is predominant.

The first slot of the course introduced participants to the GIS theoretical and practical fundamentals providing an extended overview of the GIS tools,

data and methods with specific regard to enterprise and tourism solutions. The different GIS data types are introduced, raster and vectors, and a complete overview of the geospatial data sources are presented considering earth observation, open and public data. GIS data portals are used inviting participants to test the ease of accessing an incredible amount of freely available data that can be used for geoprocessing land and socio-economic information supporting decision making by means of thematic maps.

The second section of the course extended the GIS knowledge towards new disciplines and applications with specific regard to the Geointelligence and geomarketing tools, data and procedures.

Geospatial analysis using GIS is a trending topic across multiple disciplines. The geointelligence sector, originally born within the military framework, is now used for referring to all those geo-smart activities that are implemented for enlarging the territorial digital data and analysis framework towards innovative solutions from the large (global) to the local scale. Territorial and geo marketing – that are the main sample business applications of the geointelligence framework – are discussed and presented in this short course that will also introduce participants to the significant potential of GIS for digital marketing within the business and tourism sectors. Finally several case studies are presented to participants for better understanding in practical terms the impact of GIS, Geointelligence and Geomarketing on business development. Successful case studies developed by public and private entities are described with particular regard to state of the art GIS projects used to foster industrial and tourism development in Italy and abroad.

#### **4.3.4 Linguistic assessment in online environments**

Processes underlying the *Testing Production Process* (TPP) in *Paper Based* (PB) or *Computer Based* (CB) tests follow a similar pattern. When the need for a new test arise, its construct needs to be established, following a model of reference and establishing how to implement it. The final stage on any test will be the delivery of results to the stakeholders concerned. In particular, those who are in charge of delivering test results, need to be sure that these results are considered valid, and, in order to do so, each stage in the TPP needs to be considered valid in turn, by giving evidence of the actions undertaken. As mentioned beforehand, this needs to be true for both “traditional” tests, PB, and, for CB, which pose new challenges to test constructors.

In fact CB tests allow different approaches to testing than PB. The latter are generally built following a linear approach, where candidates follow a pre-established path in their test. CB tests may also follow a similar path, but give, above all, the possibility of more customized modes of delivery, more suitable to the actual linguistic ability of the candidate. Such approaches are generally labelled adaptive tests, that is tests where items, i.e. questions,

delivered to the candidates depend on the response given by the candidates themselves on previous items. Such an approach, which may pose other challenges concerning the validity of the test itself when it comes to aspects such as its authenticity, and may appear too radical, can somehow be eased through the use of semi-adaptive tests, that is adaptive tests which work at task level (that is a pre-set number of items with the same assessment objective). Other possibilities in CB testing include the use of different media, the automation of scoring, and the assessment of integrated skills.

The CVCL (*Centro per le Valutazioni e Certificazioni Linguistiche, Centre for Linguistic Assessment and Certification*) of the University for Foreigners of Perugia has chosen a semi-adaptive approach in their upcoming CB test of certification in Italian, with the first part made up of objective items, which are automatically marked at the task level, and a second, linear one, to be centrally marked by expert raters. Candidates, according to the response given in the first part, will receive the second part of the test, to be subjectively marked, according to their level of ability according to the results obtained in the first part. In order for this to be accomplished, an there needs to be item bank substantial enough to create a number of parallel versions of the test, thanks to previously stored information in the bank about the item characteristics and their level of difficulty. The final target is to move from items with known characteristics to tests with known characteristics tailor made to the skills of candidates, giving a more faithful picture of their linguistic ability.

#### **4.3.5 Customer Engagement in Digital Ecosystems**

The Internet Age has brought with it a disruption of traditional linear patterns, of power-control dynamics, of vertical economic value-chains. In this scenario, the focus of the creation of value is shifted towards processes of relationship-building between organisations and stakeholders. Behind this, trust management, being at the core of the process, becomes a key factor of value creation. To match this new challenge, organisations are called on to design win-win situations with their stakeholders. This implies not only complying with ethics, norms, transparency but also matching the three basic needs of the web user: dialogue, sharing and participation. Brand-stakeholders conversations trigger proactiveness, expression, choice, participation, personalization, protagonism. Indeed, these new features have generated a new culture of participation entailing the request for more permanent and trustworthy relationships (Bauman, 2007, Putnam, 1993, Castells, 2002, Wellmann, 1999, Cavanah, 2007). All these new needs originated in the digital realm may be synthesized in one strong request: *engagement*. The above designed evolution of organisations and their relationships with stakeholders is profound and generates threats from one side and opportunities on the other side. Threats derive mainly from

the lack of a cultural shift that organisations and institutions ought to undergo. Opportunities, instead, are mainly related to the new virgin ground generated by the internet revolution where the smartest and most flexible organisations may gain new positions of leadership in innovative markets. To realize this process, organisations strive to intercept and understand behavioural patterns of individuals and groups. Opening a dialogue has become the critical objective for organisations as, in the Internet Age, building relationships means matching the stakeholder number one need. To achieve this intent, however, organisations have to become trustworthy, as trust allows the opening to the relationship. In the Internet Age, trust has become essential to business. In a world where the new paradigm is based on connection, collaboration and innovation, marketing is shifting from a measure of success based on Return On Investment (ROI) to value measured in relationships and trustworthiness. This change is at the base of the urgent need for brands to create long-lasting relations with stakeholders and explains how Customer Lifetime Value (CLV) and Customer Equity (CE) are increasing their strategic roles in brand strategies. The possibility to understand customers' behavior through Customer Journey analyses offers once unimaginable insights (tracking from the initial phase prior to access to the brand's website up to the final purchase decision). Web analytics such as sentiment, volume, source, author analysis and social network analysis all enable qualitative and quantitative monitoring of behavioral patterns of social media users. With a global coverage 365/24, at a zero cost, potentially to a global audience, the website informs whoever lands on it, provides answers, illustrates the brand, gathers data about visitors, stimulates dialogue, links and it is linked by other websites. Moreover, the generation of content at zero cost is progressively powered by mobile connectivity. Relevantly, the web offers a two-way brand-customer connection: on one side, it provides several touch-points at which to get in contact with the customer. *Media* as social networks, blogs, emails and video, *channels* such as mobile, PC, laptops, tablets and iPods, platforms such as Android or iOS, may all cross each other in an interactive way. On the other side, it is essential for companies to be easily reached by the customer. Search Engine Optimisation (SEO) and Social Media Optimization (SMO) are excellent facilitators by optimizing the visibility of a brand.

#### **4.4 Case study: Training Language Teachers at the University of the Balearic Islands**

Good teaching practices have always been one of the pillars of the University of the Balearic Islands (UIB). The UIB in-service organism responsible for teacher training (ICE) organizes teacher training actions on a yearly basis. They also encourage teachers to innovate in teaching through annual grant

calls and fund proposals that use ICTs as innovative teaching tools.

We must bear in mind that the generation of undergraduates of the last ten years have grown up with mobile devices. Yet, most practices used by current teachers in higher education are not different from the teaching practices I received as an undergraduate student in the late eighties. As for mobile devices, they have not just become essential in our daily lives, I would dare to say that most adults would panic if a pickpocket stole their mobile phone in the subway station. In the case of students, many recent reports warn about young people's dependence on their mobile phones and their anxiety at being "off-line".

In this scenario, it is surprising that the University intranet automatically inserts the following rule into the syllabuses of undergraduate courses:

"Mobile phones and other electronic devices are not allowed in the classroom. Laptop computers are acceptable only if used for purposes related to classroom activity. No electronic device whatsoever (including computers) is allowed in the classroom during examinations, unless otherwise specified by the lecturer (e.g. if the session entails use of the internet for pedagogical purposes)."

From this one assumes that mobile devices are evil, they are distractors that boycott the smooth running of lectures. And as such, the use of these devices in university classrooms must not be permitted. The publication of this paragraph in the teaching methodology section of the teaching guides gave rise to controversy. This decision was picked up by some local newspapers and it generated discussion in social networks such as Facebook or Twitter amongst my colleagues.

Perhaps we should ask ourselves why some students surf the internet or reply to a message on Whatsapp while the teacher is delivering a lecture. Could it be that some students are not engaged by the teaching practice of the lecturer? Could it be that our current undergraduates are not prepared to listen actively for more than twenty minutes? Isn't it surprising that some teaching practices today are the same as thirty years ago? Whatever the answer to these questions is, we need to ask ourselves what we have in our hands which will change this pattern and do something to turn our teacher-centered lectures into more student-centered classes that engage students, that is, students take a more active role in learning.

#### **4.4 1 ICT Training Actions at the University of the Balearic Islands**

The IRIE (Institut de Recerca i Innovació Educativa) is the Institute in charge of designing, organizing and implementing the training courses for the UIB staff. Every year the IRIE Board approves its "Pla de Formació PDI" for teachers and researchers at the UIB. The courses offered are classified into

three main groups:

- Innovation in Teaching.
- Research Support
- Tele-education and ICTs (20 courses). The modality of these courses is either, distance or blended. The duration of the courses is between 7-10 hours.

Moodle for beginners (3 courses).

Moodle advanced, including questionnaires and assessment (4 courses).

Digital image editing with GIMP.

Online editing of web pages.

Searching, organizing and filtering online resources

Online Office tools.

Queries and linguistic resources on the web.

Digital Blackboard.

Interactive images as teaching content.

Video-blogs for educational purposes.

Flipped Classroom (3 courses)

Learning with mobile devices: basic recommendations and general guides

- Managing, general health and cooperation

Aside from that, the university has a support service that is in charge of managing the activation of courses on the institutional Moodle platform (“Campus Extens”) and provides training in apps and resources for creating digital content and for engaging students.

#### **4.4.2 The COLISEE course for training the trainers**

The training of trainers course entitled “Les TIC aplicades a l’ensenyament/aprenentatge de llengües” (“ICTs for language teaching and learning”) had the following objectives:

*Objectives/learning outcomes*

- Understanding the profile of the 2.0 learner and digital communication.
- Learning apps to adapt language learning to the digital era.
- Creating learning materials through digital content.

Ideally, on completion of the course trainees should have developed the following skills:

- A gradual change in teaching methodology from a teacher-centered to a more student-centered style in line with European Higher Education Area (EHEA) recommendations.
- The gradual introduction of ICTs in the classroom.
- The use of tools such as wikis and blogs to boost collaborative work.
- Helping students to monitor their self-learning strategies.

### *Tools/resources*

The contents developed in the course was divided into three main blocks:

**Block 1:** Socio-cultural changes of ICTs: communication, teaching and learning (2 hours):

- Stocks and flows, Twitaliano, the learner Web 2.0.
- Customer empowerment and engagement, web democracy, co-economy.

To feedback on this block, participants were asked to study the materials provided and express their opinion through a forum in Moodle.

**Block 2:** Apps and resources to engage students through digital learning content (3 hours, 1 face-to-face, 2 distance):

- MOOC is short for Massive Online Open Course. Some of these MOOCs are available for free from YouTube. The Virtual Linguistics Campus is an award-winning MOOC created by the University of Marburg (<http://linguistics.online.uni-marburg.de/>). The videos created are an excellent tool to support lectures in Phonetics and Phonology. The lecturer uses a digital blackboard with interactive figures that help students understand the basics of the anatomy of voice production, fonation and articulation. The videos are easy to understand for non-native speakers of English.
- Digital communication with Emojis. Needless to say, Emojis have changed the way we communicate. The tool Emoji Translate is a very powerful tool boosting writing skills in the foreign language classroom. It can also be used as an “ice-breaker”, that is, a way for students to introduce themselves the first day of class. (<http://emojitranslate.com>).



content before an exam. In flipped-classroom methodology, questionnaires allow the adaption of the content to the students' needs. That is, to spend more time explaining issues that have been not fully understood and to skip or explain less thoroughly those issues that have been understood by the whole class. An example a questionnaire with *SurveyMonkey* can be found in the following link: <https://www.surveymonkey.com/r/2YTG2J8>.

- Lively presentations with *Prezi*.

The use of presentations by lecturers was probably the first step forward of the use of ICTs in Higher Education. At present, a lecture without the visual support of text and/or image is rare. Students no longer need to jot down everything the lecturer says, which can be tough for slow writers. However, a presentation can stop capturing the student's attention if it includes too much text and few images or if it is too static. The reason is simple: the daily schedules of some of our students are very tight. They may have to attend sessions of four to six hours of lectures in which the lecturer combines oral presentations with the visual support of "static" presentations with *OpenOffice* or *PowerPoint*. For this reason the use of more "dynamic" presentations incorporating movement and sound is highly recommended. Tools such as *Prezi* also allow teachers to share their presentations with the public, which saves a lot of time for other teachers using similar materials. An example of a presentation to introduce the vowel and consonant sounds of English can be found here: [https://prezi.com/mupkgghsgoouh/edit/#0\\_30863873](https://prezi.com/mupkgghsgoouh/edit/#0_30863873).

- Video Editing: *Educanon*.

The advantages of using YouTube videos for educational purposes are countless. But if we can edit these videos to introduce text, multiple-choice questions and any other activities to keep students' attention, the range of possibilities is even wider. This option is especially useful for language teachers who may want to use the videos as listening comprehension materials or to check whether students understand the content of a video used as support for content developed in class by the teacher. The following link is an example of a video from *Ted* "The Linguistic genius of babies" edited with *Educanon*. <http://www.educanon.com/public/22969/61875>.

- Video-tutorials: *Jing* and *Screencast-O-matic*.

These tools offer teachers the possibility of capturing the screen as well as incorporating voice and video. The following video-tutorials feature a *Prezi* presentation with sound for an undergraduate course in English Language (B2 level) <http://screencast-o-matic.com/watch/cDewXN1vIV> and a basic user to the *Praat* tool <http://www.screencast.com/users/lrf996/folders/Jing/media/5924b650-1b10-4573-85a5-f396c846ac12>.

- Managing your notes: *EverNote*

A note-taking app to jot down text and attach files in other formats: images,

sound, pdf files, etc. The advantage over other apps is that it works as a text editor and presentation tool all-in-one. The option of choosing between white or black desktop for the presentation mode may function as visual aids for students with special needs (impaired vision). This app also allows those students who cannot attend lectures regularly to catch up on courses. The link with the course timeline including practice exercises and key is all pasted in the *EverNote* file and the content is shared with the whole class through a link embedded on the UIB Moodle platform “Campus Extens”. The following example shows the contents developed in the UIB training course: <https://www.evernote.com/shard/s718/sh/dbf5ac60-319c-40ff-a3e2-67365aed3605/124618b6e8e673f9>.

- Managing meetings/appointments: *Doodle*

An easy-to-use app to manage time availability for meetings with colleagues or tutorials with students. Recipients receive the call by e-mail and answer the poll embedded in the message. The different time slots appear as a table so that participants only need to type their names and select the options that best fit their availability. The person who organizes the meeting then receives the summary of the time slots chosen by the participants and informs them about the final time and venue of the meeting. The app is thus a less time-consuming option than opening and reading the e-mails of the participants and making decisions about the time slot that works best for all of them.

- Learn more: *Google Groups, Scoop-It*

Two ways to receive up-dates of ICT resources for language teaching is through Google Groups. For those interested in free on-line resources, lesson sharing and teaching tips, the Google communities such as *ELT Free resources* and are good options (<https://plus.google.com/u/0/communities/115437705538329950673>). Another option is opening a Scoop-It account. All we need to do is enter the names of the topics we are interested in receiving updates for and select the frequency of the e-mail alerts. Scoop-It works as a “curator” selecting the content that might be of interest to us.

### *Implementation*

Following the methodology of the UIB “Pla de Formació” (Training Plan), the training course offered through the COLISEE Train the Trainers activity was offered as a “blended course” with 2 face-to-face hours and 6 distance hours. The institutional Moodle platform “Campus Extens” was used to give access to the course materials. The face-to-face session was used to give a brief presentation of the content and assessment procedures. Participants were asked to participate in a forum about the content of block 1 “Socio-cultural changes of the ICTs: communication, teaching and learning” and submit two assignments, specifically, create an application using a tool from block 2:

“Apps and resources to engage students through digital learning content”, and another application using a tool from block 3: “Apps and resources to create your own materials/self-development”.

Through the forum, participants had a chance to express their opinion, answering the following questions:

*i* **Why are many teachers reluctant to introduce ICTs in Higher Education?**

- The generational gap between students and teachers. A distinction should be made between “digital natives”, those born in the 1990s or later and the “digital immigrants” born before the 1990s. Usually the latter feel nostalgia for what teaching used to be like in the past.
- Economic and human resources. Adapting teaching practices with the use of ICTs involves considerable economic investment from Higher Education institutions as well as time investment from teaching staff. Many teachers consider that ICTs do not necessarily involve better quality teaching and they believe that the traditional method of lectures without the use of ICTs should not change. In addition, they prefer to invest time in doing research, which is what really matters to achieve promotion.
- Syllabus constraints. Subject syllabuses often include a certain number of units that must be covered throughout a semester. These syllabuses are usually very tight in the sense that a lot must be taught in a limited amount of time partly because they have been designed from a traditional teaching perspective. As a consequence, including ICTs in our teaching practices to increase students’ participation and motivation bears the cost of reducing content and some teachers are not prepared to do that.

*ii* **Have you noticed any changes in the undergraduates’ profiles in the last few years? Are they prepared to follow two-hour lectures?**

- Teachers have contradictory opinions about the profiles of today’s undergraduates. Some of them acknowledge that learners 2.0 prefer visual input to written input; they are “multi-task” learners that need to change tasks often and have trouble listening to the teacher for a long time. For this reason, changing the class structure incorporating videos and interactive activities using ICTs is a must if we want to keep them engaged.
- Other teachers reported not having seen a drastic change in students’ profiles in the last ten years. Mobile devices are an essential in their daily lives but the use of smartphones is often limited to social networks and interactive games. A teacher reported a pilot study about the use of Twitter as a tool to publish and share content about linguistics and the study of the English language. At the end of the academic year, the teacher ran a survey

to establish the students' opinions on this experience. Surprisingly, most students declared that they did not want to use *Twitter* for education and showed a clear preference for the institutional platform "Campus Extens". Apparently students' wanted to separate their personal life from their academic work and did not particularly like the idea of receiving news about English linguistics through *Facebook* or *Twitter*.

**iii What is your opinion of the concepts "web democracy", "knowledge sharing" and "customer empowerment"?**

- Teachers reported that they believed in "web democracy" and that they have benefit from customers' evaluations when booking a hotel or an apartment through collaborative holiday rental platforms. The subtitles provided by Fansubs are often more accurate than those provided by the film companies that sell the DVDs. Further, they appreciated the opinions given by users/customers before buying a product/service on the web. However, they warned that this method can be corrupt since some companies develop bots that imitate human behavior and evaluate positively their products or services.
- Other teachers have also highlighted the dark side of having all information available on the internet in that it facilitates plagiarism among students. Fortunately, most teachers use engines to detect bad practices but they argue that when students had to retrieve information from books, plagiarism was rare.

*Lessons learned*

Based on the feedback provided by the course participants through the class forum, the following conclusions can be made:

- Implications for teachers: participants report that many teachers do not incorporate ICTs in their teaching methodology for various reasons:

Time investment: learning the use of new tools is time-consuming. Most teachers are over-loaded with work and cannot spare time to attend training courses.

Rewards: Higher Education institutions and Government agencies give very little weight to teacher training. National agencies assessing the track records of academic staff often give more weight to scientific production: articles published in peer-reviewed journals, mentoring of Master's and PhD students, funding, etc.

Age factor: senior lecturers are reluctant to change their teaching styles. Most of them feel safe using the traditional method of lecturing with or even without the visual support of presentation aids (overhead, PowerPoint).

ICTs are 'evil'. Surprisingly, when asked about their opinion on the concepts of "customer empowerment", "web democracy", most participants expressed their concerns about the "evil" side of the ICTs. Some of the comments included the internet being responsible for "cheating", plagiarism and students' distraction in class. Few participants referred to the "good" side of the Internet, of how it has improved the way we communicate, have access to information and how it has facilitated some of our daily routines.

- Implications for students: some teachers complain that investing time in creating digital content for students can be frustrating at times. Some students admit that they do not use any of the learning materials and resources at their disposal in Moodle.

#### *Improvements to be proposed*

- Stocks versus flows: ICTs should not be used as merely repositories for upload files, teachers should be encouraged to use ICTs to engage students through collaborative work. This was very well explained in Professor Spina's lecture on "stocks" and "flows". Stocks can be understood as static information, whereas "flows" refers to information that moves, travels from one user to another, and is shared among users.
- Rewarding students: We must engage students by rewarding them for their participation. Students must know that their participation has a reward in the form of course credit, prizes, etc.
- Institutional teacher training courses should give answers to teachers' demands. At present, teacher training courses are too general and do not consider the specific needs of teachers in different areas of knowledge.
- More research is needed to train teachers on how to assess/reward student participation in collaborative work in digital environments.

## **4.5 Developing key competences with technology – examples from a campus-based university, Southampton**

### **4.5.1 Introduction**

The development of certain key competences (linguistic, entrepreneurial and intercultural) runs at the heart of the COLISEE project and the role of technology in promoting and developing these is central to the ethos of the university partners involved. This also chimes well with theories around learner autonomy, defined by Little (2002) for example, as the ‘capacity for detachment, critical reflection, decision-making, and independent action’ and with current calls to ‘rethink pedagogy for the twenty-first century’ (Luna Scott, 2015). We need to ‘identify the new competencies that today’s learners need to develop’ (ibid.) and the integration of technology into our teaching and learning is seen as absolutely crucial in this second decade of the twenty-first century if we are going to help our learners who ‘live in a technology and media-suffused environment’ (P21, 2015) to acquire the necessary skills and literacies (ibid) that they will need in a rapidly changing world. In sum, we need to give them the skills, strategies, and above all the confidence, to become lifelong, autonomous learners (Page, 1992; CIEL, 2000).

Taking these needs into account, this brief paper will give an overview of some of the pedagogical practice carried out in the area of language learning and academic skills at Southampton, a traditional campus-based university. It will show how many of these practices contribute to the three COLISEE key competences.

### **4.5.2 Blended learning at Southampton**

Along with many other traditional campus-based universities, Southampton offers a blended approach to learning, which supports the integration of classroom and online learning modes (e.g. MacDonald, 2008). In language learning this offers learners a more personalised approach to the development of individual language skills through independent learning outside the classroom, access to a range of dedicated and authentic resources, and the possibility of online and face to face collaboration with their peers as well as with other speakers of the target language (the L2).

Each language course (as with all taught modules within the university) has an online presence through *Blackboard*, the institutional virtual learning environment (VLE). The course site, depending on the language level of the learners, typically integrates course content (course outlines, course handbooks, course assessments, key texts etc.) with interactive language activities, either readily available (e.g. *Kerboodle*) or developed using third

party authoring tools, as well as listening practice materials, web links and suggested apps which can be used on mobile devices (e.g. *Duolingo*). They may include some of out of class activity (either inside or outside the VLE) to encourage interaction such as class blogs, a discussion forum or the use of social media such as *Twitter*, *Facebook* or *WhatsApp*. The university encourages the development of a rich learning environment with its annual VLE awards and innovation more generally through its Institute for Learning Innovation and Development. This is not to say that all teaching staff across the university take advantage of technology enhanced learning in the same way since a number, despite national and local initiatives and the pervasiveness of technology in everyday life, may be resistant to change. Looking further into this phenomenon, White et al (2007) suggest some of the critical success factors which might lead to e-learning and institutional change and also the barriers which might inhibit wide spread change. An institutional initiative (since 2012) has set out to improve digital literacy, as one of these barriers to change, and has used students as digital champions, or Digi Champs (see - <http://blog.soton.ac.uk/digichamps/>) who provide support and training to other students and staff and who add to their own employability skills (see <http://blog.soton.ac.uk/digichamps/digichamps-helped-get-hired/>).

Modern Languages as a discipline has long taken advantage of technology enhanced learning and there are many opportunities for teaching staff to learn about the latest tools and resources locally, at teaching and learning conferences and online. For the latter, see for example Russell Stannard's training videos (<http://www.teachertrainingvideos.com/> in which he gives a quick guide to the wealth of resources that can be used for language teaching and learning. Modern Languages at Southampton (see e.g. <http://www.languagesatsouthampton.soton.ac.uk/>) is no exception and uses blended learning for all taught classes as has been described briefly above. To give more insight into how different digital resources and tools are used for language learning, three case studies will be presented below – each of which highlight in some way the development of the COLISEE competences. Examples are given from Italian, Spanish and English as Foreign Language.

#### **4.5.3 An Italian language example**

One Italian teacher has set out to develop not only linguistic skills but intercultural awareness and employability skills within her teaching (see e.g. Plutino, 2012, Plutino, 2014). In one initiative, she developed reusable learning objects using a pedagogical authoring tool, the LOC tool, which was designed to 'help educators create effective online learning materials with little or no technical knowledge' developed within Modern Languages (see <http://loc.llas.ac.uk/>). The interactive materials in English and the target language that she created are designed to be incorporated into a module but

can be used by students working at their own pace. They are made available as Open Educational Resources (OER) for other teachers to use within Language Box, an OER database tool (see <http://languagebox.ac.uk/profile/198>). They include such topics as interview skills and using your language skills as a Graduate. She has also been involved in a tele-collaboration initiative with an Italian university (see <http://www.southampton.ac.uk/iliad/tel/alessia-plutino.page>) in which students in both universities exchanged ideas and materials and became producers of their own content - students were helped to produce their own media materials since they are not always as digitally literate as we might presume and often need more guidance than you might expect. The approach also used social media (blogs, *Skype* and *Twitter*) for communication and in this way technology was used to 'break down the walls created by the physical classroom' and to 'bond students with culture, people and language as part of a reflective process'.

#### 4.5.4 A Spanish language example

In this initiative, 30 students on a Spanish language accelerated beginners course (CEFRA1-A2) were introduced to digital tools, which as in the previous example, would allow them to become producers of their own materials. Their task was to hold an imaginary interview with a representative character from the Spanish-speaking world (400 words), to set the historical, social or cultural context of their imaginary conversation (300-400 words) and to develop an interactive audio-visual learning resource which could be used by others using a free digital content development tool called *Xerte* (see <http://www.xerte.org.uk/index.php?lang=en> and for an introduction to the tool, see [http://www.nottingham.ac.uk/toolkits/play\\_560](http://www.nottingham.ac.uk/toolkits/play_560)). Their assessment (10%) consisted of an oral presentation in class of their work 'in progress' and a visual aid. The language teacher worked closely with an e-learning specialist to develop the initiative and the learners all received appropriate technical training. It was emphasised to the learners that in addition to linguistic skills and digital skills, they were acquiring other professional skills – in this case not only the ability to give an oral presentation but the ability to reflect on learning design and how digital tools might facilitate this. This would be very useful for those who were considering teaching in the future but also would facilitate reflection on their own learning. Many of the students used *Xerte* in their final presentation whilst others used *Prezi* or *Powerpoint*. It was felt that all presentations were of a very high standard and were impressively creative. There was good use of *Xerte* and sophisticated use of *Powerpoint* and *Prezi*, especially for the interactive elements. Although, a number of drawbacks were identified in this initiative, not least the lack of time to become technically proficient, it was felt that the disadvantages significantly outweighed the advantages and that the task allowed students to build on existing linguistic and digital skills/knowledge and that *Xerte* acted as

a catalyst to inspire creativity. Most importantly, it was concluded that ‘the task is more important than the tool’.

#### **4.5.5 An English as Foreign language (EFL) example**

The last example of how of digital tools and resources can be found at the heart of 21st Century learning and teaching comes from an initiative to embed independent learning skills and the development of learner autonomy as a key strand within a large English for Academic Purposes pre-session course for International students coming to the UK to study. The online materials which are a core part of the course have been developed locally and include videocasts (video lectures), podcasts and interactive quizzes and cover such topics as motivation, digital literacies and aspects of independent learning (see Mar-Molinero and Lewis, 2016, for a description of this *Southampton Smart Skills* module). These are used in ‘flipped learning mode’ and prepare the students for face to face independent learning seminars which are led by trained student independent learning facilitators (ILFs). The learning resources are held on a VLE (*eFolio* in this case) which the learners also use to write (or record) compulsory reflective blogs or vlogs about their learning experiences. They also have one to one advising sessions with an ILF either face to face or via *Skype*. In this way digital tools and digital literacy are placed at the core of this ‘learning to learn’ module although the physical spaces offered by a Language Learning Resource Centre are also at the heart of the learning experience as are a range of optional seminars and meetings. Students following this module have much appreciated how it has enabled them to acculturate to a new academic culture which includes digital literacy, and how it has given them the independent learning skills to enable them to take more control of their own learning in the twenty-first century.

## **4.6 Conclusions**

As in other more traditional universities, Southampton has developed a portfolio of activities, (too many to mention them all here) involving the use of digital tools and resources in order to improve the learning experience of its students and to help them to develop key competences. In many ways it can be said to have developed the digital culture highlighted by Donatella Padua in Chapter 1 of this Handbook as necessary to effective learning nowadays, and crucial to employability. It is true that Southampton language students are using digital, as well as other, resources in their everyday learning, they keep learning and Year Abroad blogs for example, and enter digital photo competitions which invite them to reflect on their intercultural knowledge and understanding. Still others will do an online pre-session course before they arrive in Southampton ([https://www.elanguages.ac.uk/presessional\\_boarding\\_pass\\_online.php](https://www.elanguages.ac.uk/presessional_boarding_pass_online.php)) or study totally online on, for example, the MA

in English Language Teaching developed with the British Council (see e.g. [www.britishcouncil.in/university-southampton-ma-english-language-teaching](http://www.britishcouncil.in/university-southampton-ma-english-language-teaching)) or even join over 100,000 other learners on a Southampton / British Council MOOC run on the FutureLearn platform (see <https://www.futurelearn.com/courses/understanding-language>). There is still a long way to go however before we are all (teachers and learners) fully confident and competent in our use of digital tools and resources and before we catch up with all the affordances that new technologies offer the world of education and the bigger world outside.

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## Concluding Remarks

As we reach the end of this booklet on ‘The use of Digital Resources in University Programmes’, it is worth noting both the limitations of this piece of collaborative work and the contributions it has made, especially in terms of the sustainability of the project and the anticipated impact of the COLISEE project deliverables. Its limitations lie in the fact that it cannot lay any claim to have come up with a model which others can follow. The good practice identified through two years of activity within the COLISEE project is valuable since these activities have produced practical examples which can be analyzed, and pathways which can be followed, but not models which can be reproduced, given the fact that the local context and environment vary so much from one university to another. The authors of this booklet are aware that there is a long way for each university to go if they want to develop a true digital culture and overcome the well documented resistance to change. However, the contribution of the project in terms of the digital resources identified and made available to a varied public (students, university teachers etc.) is substantial given the fact that the digital resources which have been evaluated, developed (e.g. MOOCs) and tested within the bounds of the COLISEE project are numerous and respond to a real need. The effort expended by the authors on this piece of team work has centered on the three key competences of the project but also of the forthcoming Master’s programme (plurilingualism and corporate culture).

The students from the various universities who follow this Master’s course will be able to develop each of the three competences autonomously as well as develop familiarity with the use of new technologies. The university teachers who participate in the Master’s will be able to enrich their own professional practice so long as they make the effort to undertake training and to question their own practices. Overall, this good practice guide fully meets one of the outcomes expected from the COLISEE project.

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