

Preparation of Training Guidelines

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DESCRIPTION

This activity has involved the preparation of a comprehensive analysis of the most commonly used models of content delivery in VET in archaeological and natural heritage, as identified in national reports and the transnational report (project activities O1-A3 & O1-A4). Its goal has been to produce comprehensive guidelines for the most efficient content delivery in the domain of integrated archaeological and natural heritage. The document also serves as guidance for creating the *Centres of Integrated Heritage Teaching Excellence*.

Partners have prepared comprehensive analyses of several methods of distance learning: blended learning, synchronous distance learning, asynchronous distance learning and open schedule online courses, assessing their relevance for vocational training in the domain of combined archaeological and natural heritage taking into account the character of knowledge in both sectors and characteristic features of labour force.

These reviews include

- an introduction to and description of each particular method of distance learning
- a review of in which educational contexts this method has been commonly applied in the past
- identification of whether it has been used in the domain of either archaeological or natural heritage, and if so where it has been used and how it has been evaluated
- an evaluation of its suitability for use in the project's target sectors
- a recommendation on whether this method would be suitable for the delivery of vocational training in the domain of combined archaeological and natural heritage, taking into account the character of knowledge in both sectors and characteristic features of labour force (as identified in the O1 Transnational Report).

All reviews are incorporated in this text, either as the **Recommended Model** or as **Appendices**.

CONSOLIDATED REVIEW AND RECOMMENDED MODEL

After reviewing the reports on individual models of e-learning, it is recommended that the *Centres of Integrated Heritage Teaching Excellence* adopt the Open Schedule Online Courses model, using the five learning methods set out in **Recommended Guidelines** below.

This is the most flexible of the models reviewed, and it will ensure that resources can be used if any of the other models (blended learning, synchronous distance learning or

asynchronous distance learning) are used to deliver materials produced by the project at any time in the future.

CONSIDERATIONS

The **Recommended Guidelines** set out methods that should be used in the application of the **Recommended Model**. These have been prepared following the review of different models of e-learning and those used in previous projects, together with expected modifications in existing IT tools (Content Repository), the development of new ones (software for the Centre(s) of Excellence), the identified needs of target groups and anticipated financial and organisational restrictions on partners after the project.

The guidelines on the delivery of training based on e-learning content stored in the *E-archaeology Content Repository* presented here are not a specification, stipulating that each *Centre of Integrated Heritage Teaching Excellence* must adopt them all.

Rather, each Centre can select which of the Guidelines they want to follow (but to ensure comparable quality across all of the Centres, and so to allow shared badging of outcomes, Centres must follow at least some of these Guidelines). As an absolute minimum, a Centre must be providing courses through at least one of methods 1, 2 or 4 below.

RECOMMENDED GUIDELINES

Supporting the preferred model (Open Schedule Online Courses), the recommended methods of learning within the framework of ANHER Project, together with considerations for *Centres of Integrated Heritage Teaching Excellence*, are as follows:

1. Open access to didactic materials on a website

Self-paced learning from didactic material available online on website with no control or tracking / reporting on learners' activity and no human support for learners. Didactic materials would be accompanied by course syllabi, short videos with introduction, course objectives, information about linguistic versions of the course. This method does not require the use of an e-learning platform.

Target group: everyone interested in the subjects or some particular aspects of them.

Considerations:

- self-led training
- no set schedule
- no facilitator
- no trainer/mentor
- e-learning materials are chosen by partners (all/some curricula from *E-archaeology Content Repository*)
- "stamp of quality" for didactic materials (curricula) accessible on the website (according to ANHER project policy)

- no need for login
- no e-learning platform
- available for free

2. Open access to didactic materials on an e-learning platform

Community learning - no expert, but with discussion forums with facilitators, reports, delayed certification possible in separate examination session (Certification only mode).

Target group: people who really need to complete a thorough course, but for the time being do not need or cannot afford certification.

Considerations:

- self-led training
- no set schedule
- potential discussion fora with facilitators
- no trainer/mentor
- e-learning materials are chosen by partners (all/some curricula from *E-archaeology Content Repository*)
- “stamp of quality” for didactic materials (curricula) accessible on e-learning platform (according to ANHER project policy)
- login according to Centre of Excellence policy (i.e. login delivered to learner automatically or by human operator)
- can be paid for or for free

3. Certification sessions

Exam sessions for certification, available according to a fixed schedule (once or twice a year). Those who wish to gain certification of their competencies obtained from the didactic materials available online in open access (methods 1 or 2) or from other sources will have an opportunity to take a final exam for the course without needing to participate in the scheduled course session.

Target group: people for whom certification is the most important objective of the training.

Considerations:

- scheduled (i.e. 2-4 sessions/year)
- exam evaluation by trainers
- certificate delivered
- no e-learning materials available during certification session
- e-learning platform used for final exam delivery (distance mode) or a final exam held at a Centre of Excellence’s physical location
- paid for
- ECVET/ECTS credits awarded according to Centre of Excellence policy

4. Scheduled course sessions with instructor and certification

Content and examination on e-learning platform, sessions available according to a fixed schedule.

Target group: people who value the presence of an instructor on the course and who can follow a fixed schedule of the course session.

Considerations:

- scheduled
- facilitated e-learning or blended learning
- (optional) synchronous learning (instructor-led training) only when needed (e.g. web seminars)
- e-learning materials can be any curriculum from *E-archaeology Content Repository*
- “stamp of quality” for didactic materials (curricula) accessible on e-learning platform (according to ANHER project policy)
- login according to Centre of Excellence policy (i.e. login delivered to learner automatically or by human operator)
- can be available for free (without synchronous learning) or paid for
- certification if needed

5. E-mentoring

Consultation with an expert available online through a chat room, skype or other synchronous or asynchronous tool. Participants may or may not also be undertaking (or have undertaken) a course via methods 1, 2 or 4.

Target group: experts of other domains who require professional consulting.

Considerations:

- scheduled (e.g. 2 sessions/week)
- synchronous (e.g. Skype) or asynchronous (e.g. fora) tools
- e-learning materials distributed as described in 1 and 2 above

FURTHER RECOMMENDATIONS

The partners should also consider:

- The potential for the introduction of **ECVET credits** (European Credit system for Vocational Education and Training: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:c11107>) for candidates successfully completing ANHER courses;
- Publishing information about ANHER courses that are available as open access and scheduled sessions on websites cataloguing MOOC platform offers such as:

<http://academicearth.org/online-college-courses/>

http://study.com/articles/Universities_with_the_Best_Free_Online_Courses.html

http://www.openculture.com/free_certificate_courses

- Recording introduction videos for some modules or curricula;
- Using an existing MOOC platform as a model framework when designing the competence *Centres of Integrated Heritage Teaching Excellence*.

Appendix 1 – Synchronous Distance Learning

BRIEF DESCRIPTION OF THE SYNCHRONOUS DISTANCE LEARNING METHOD AND ITS SUITABILITY FOR ANHER PROJECT

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1. INTRODUCTION AND DESCRIPTION OF SYNCHRONOUS DISTANCE E-LEARNING MODE

Nowadays, the e-learning is a recurrent tool of learning for professionals from different domains. E-learning is defined, in general, as learning and teaching online method through network technologies (Zhang et alii, 2004). However, to design an effective strategy for e-learning education is important to understand the benefits and limits of different techniques. For that reason, ANHER Project proposes to analyse different e-learning methods.

As the name indicates, the synchronous method is an e-learning method in which the learning process occurs at the same time. This kind of e-learning method is characterized by two aspects: i) it is independent of the place and ii) it is temporally dependent. It comprises a concrete way of interacting with the group such as videoconferencing and chat. It requires logging at the same time and it is commonly supported by media such as video conferencing, webcasts, interactive learning modes, telephone conferences and chat (Er et alii, 2009). It enables to ask and answer questions in real time. This method facilitates a wide range of types of communications:

- Discussions limited on time
- Monitoring the receiver's reaction to the message
- Personalized learning opportunities
- Personal and cognitive participation
- Development of learning communities

Indeed, this kind of e-learning method increases arousal and motivation (Hrastinski, 2008) and it has a great potential to increase individual participation and group collaboration (Park and Bonk, 2007). The synchronous method facilitates two types of interaction: the communication with the teacher and with others students.

2. REVIEW OF THE USE OF SYNCHRONOUS DISTANCE LEARNING: GENERAL APPROACH

Nowadays, the application of the synchronous e-learning method is frequent in the professional domains. There is high variability of masters and expertise courses based on these learning methods. These e-learning methods are promoted by universities and professional training centres, and popular softwares such as Blackboard, Saba Centra or Elluminate Live! share several interactive characteristics that are suitable for educational settings (McBrien and Jones, 2009).

For the purposes of this report, we have chosen examples of synchronous e-learning in Spain and specific initiatives within the European Union. The National Distance Education University (Universidad Nacional de Educación a Distancia -UNED-) is entirely focused on [e-learning methods](#), is based on both a synchronous and asynchronous approach, in which students have some face-to-face lessons and some online resources to prepare their different subjects. Face-to-face lessons (synchronous e-learning mode) can be divided in two modes: traditional classroom (one time per week) and/or video conferencing lessons. This university combines different e-learning methods to guarantee a quality education. UNED offers a high variability of degrees such as History, Literature, or Maths. Nowadays, it is the university with more students registered in Spain, probably related to flexibility of learning methods.

The synchronous e-learning method is also used in some seminars offered by the European Union to inform of the requirements of different calls of the [HORIZON2020](#). These synchronous virtual classrooms are really useful to train professionals in concrete aspects.

Nowadays, the use of synchronous virtual classrooms is very common in all domains and, in some cases, they are promoted by professional associations or enterprises such as [Elsevier](#).

3. REVIEW OF THE USE OF SYNCHRONOUS DISTANCE LEARNING IN THE CULTURAL AND NATURAL HERITAGE E-LEARNING

Different institutions offer masters and professional courses in cultural and natural heritage. In a national framework, these courses are offered by public or private universities from [The National Distance Education University](#), Distance University of Madrid [UDIMA](#), to the [European University Miguel de Cervantes](#), or by different companies focused on training and professional activities ([Liceus](#)). The most usual e-learning method is focused on an asynchronous mode. Usually, they offer online contents (lessons, videos...) and the students have a deadline to finish the different training modules. Usually, students have to complete a questionnaire about the theoretical concepts learned during each module. Even masters apply this method and they do manage without face-to-face communication between teachers and students. The ways to keep in touch with student communities are usually based on chat, forums and email.

On the other side, the courses focused on natural heritage management are developed by public or private universities (e. g. [University of Valencia](#); [University of Alcalá de Henares](#)) and companies ([Environmental Institute](#)). Other institutions such as the National Centre for

Environmental Education (CENEAM), dependent of the Spanish Ministry of Agriculture and Environment, offer blended [courses](#) focused mainly on National Park management. These courses combine traditional face-to-face teaching with online modules, all of them using an asynchronous method. These courses are mainly focused on legal aspects of protection and management of natural heritage.

4. EVALUATION OF THIS E-LEARNING METHOD

Online learning offers students the potential for more self-directed learning opportunities and flexible structures for engagement, which can increase student levels of autonomy, emotional independence, and self-direction (Belz and Müller-Hartmann, 2003). As for synchronous e-learning, students experience a number of advantages even if they pursue the training process individually and without a real-life interaction with teachers and other students. One of the main positive aspects of synchronous e-learning is the capacity of providing immediate feedback to teachers and to facilitate constructive feedback between students themselves (McBrien and Jones, 2009), which allows a constant restructuring of the course content and materials throughout the learning process and according to students' needs. This real time communication facilitates the training process of the students and the development of the personal participation. Indeed, this face-to-face communication reinforces the motivation of the students and facilitates the creation of a community and it allows conducting group activities and exercises. Furthermore, it allows the instructor to recognize when participants are confused or frustrated and it offers the possibility of providing additional explanations or examples to clarify concepts. In the same way, students can get their questions answered immediately and receive instant feedback.

On the other hand, the activity that occurs on the screen is qualitatively different from the stimuli created by students and teacher in a traditional classroom. In these circumstances, the dialogue and the communication between them, which is predominantly seen as a way to improve interaction, could lead to confusion and overlapping between speakers. It may be that students making these comments perceive a lack of stimulus due to the loss of nonverbal communication and the lack of physical contact with their peers and instructor. As well as other methods in e-learning, the training of the students is dependent of the internet self-efficacy and their attitudes towards technologies (Kuo et alii, 2014) but the synchronous method requires also that the trainer and the students stay connected during the required time. This aspect is in contrast with one of the most estimated aspects of e-learning, flexibility, so it requires to be connected at the same time. Indeed, it shows other disadvantages that we can observe in the traditional classroom, such as 'the course is as good as its trainer' and 'the dynamic of the course must be matched to the slowest learner and it avoids opportunities for more advanced learners'.

5. EVALUATION OF ITS SUITABILITY FOR USE IN THE PROJECT'S TARGET SECTORS

Online vocational training is perceived as an attractive learning method for professionals from both archaeological and natural heritage sectors, according to the opinions gathered in the preliminary study carried out by ANHER project. Specifically, the analysis developed in Output 1 highlights that a successful course would have to take flexibility into account, as

flexibility is regarded as one of the major means of measuring the usefulness of this training method. Therefore, a rigid timetable with scheduled hours wouldn't be effective for the potential students of ANHER's course, a fact that goes against the synchronous learning mode.

On the other hand, professionals tend to be in line with the strongest aspects of synchronous e-learning mode such as the capacity to have a personalized training and a collaborative training, in particular keeping contact with the student group and creating a learning community. In this sense, to achieve a desired degree of engagement, synchronous method will be suitable. Experts mention that tools like forums or social media groups would be useful to allow trainees to keep in touch between them and with the teachers.

6. FINAL REMARKS: RECOMMENDATIONS

The revision of the bibliography available about the synchronous method applied to e-learning allows us to propose some advantages and disadvantages of its application. However, it is not possible to establish the ideal situation of its application.

First of all, the synchronous method is against the quality more appreciated of the e-learning methods: flexibility (see Transnational report), so this e-learning method requires logging at the same time. For that reason, nowadays, the e-learning methods try to combine both approaches. The synchronous approach allows a face-to-face relation with the tutor and the other students and it facilitates the creation of communities. These aspects reflect that synchronous and asynchronous methods differ in terms of interaction and, for that reason, they require a different type of support. However, its application allows us to resolve other major concern of the e-learning students, the communication and the creation of communities (see Transnational report). It would be interesting to analyze if this need is related to the practical or theoretical contents of the modules.

So, for that reason, synchronous method is a perfect teaching tool when the content of the modules requires a collaboration between students or a tutorial of the instructor, given the facility to create communication in different ways (student-teacher and between the students). However, this didactic tool is less efficient when the contents of the modules are more theoretical or don't require the collaboration between students.

To summarize, the synchronous methods is perfect to use it in combination with other methods which allow more flexibility and it is a useful tool to improve communication especially when the modules require it.

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Appendix 2 – Asynchronous Distance Learning

Asynchronous distance learning

1.1. An introduction to asynchronous distance learning – a definition

Asynchronous learning is a student-centred teaching method where participants in the didactic process (teachers and students) do not need to be in the same place at the same time.

As a matter of fact, the sources of knowledge are didactic materials delivered to the trainee in electronic form or multimedia learning resources stored online that can be explored and experience at the learner's own speed.

These asynchronous forms of communication are sometimes supplemented with synchronous components, so as to allow discussions among groups of students or follow directly some parts of the training.

An important aspect that differentiates asynchronous distance learning from self-study is its institutional character. Institutions referred to might be both traditional institutions (universities, schools, etc.) and emerging non-traditional institutions as well (Michael Simonson et al. 2008).

1.2. The use of asynchronous distance learning in educational contexts

We hereby present a couple of recent best practices of application of such method in some very different contexts all over the world that offer a matter for reflection particular into the specific characteristics that could make asynchronous distance learning more effective.

The article "Asynchronous vs didactic education: it's too early to throw in the towel on tradition" (Jordan J. et al. 2013) reports the result of a test done with senior medical students during a week-long intensive course to assess if they would improve their medical knowledge with asynchronous, computer-based instruction and traditional didactic lectures to the same and explore students' attitudes towards asynchronous and didactic instruction.

Results were:

- When the training imparts information across a diverse range of topics, it is required the use of an interactive supplement to the independent learning modules in the form of face-to-face encounters or mandatory online teacher-moderated discussion in order to mitigate the difficulties in mastering new information.
- Asynchronous instruction supports flexibility, use of technology but at the same time it places a high responsibility and need for independent monitoring on the learner. In this regard, learning should be developed as to provide frequent formative quizzes.
- Asynchronous and didactic education may not be equivalent for knowledge acquisition, but no evidence in terms of knowledge retention as to prefer one method.

The study "Question Generation as a Learning Multiplier in Distributed Learning Environments" (Graesser G. et al. 2001) reports the result of a research carried out within a soldier-centric distributed learning environment. In particular, the concern of the course planners was that of incorporating question generation into advanced training systems.

Question Generation is a strategy that assists students with their comprehension of text. Students learn to formulate and respond to questions about situations, facts, and ideas while engaged in understanding a text.

The hypothesis was that anytime-anywhere instruction, as for example asynchronous instruction, may lack the mechanism for students to get a timely response to a spontaneous questions that are proved to improve the comprehension and learning of technical materials.

Among the results:

1 – if employed properly, question generation strategies in asynchronous distance learning can increase students' (in this case soldiers') understanding of training materials and improve retention as well

2 – proper question generation mechanism should be investigated as an essential feature of asynchronous distance learning

The article "Synchronous and asynchronous e-learning styles and academic performance of e-learners" (Mehdi Mehri Shahabadi et al. 2015), investigates the learning styles of 731 students from 6 virtual Tehran universities in mode of synchronous and asynchronous. Sample students have been grouped in three main categories depending on their academic performances (low, mediocre and high) since the study was also aimed at analyzing differences in learning styles within different performing groups.

The article was aimed at answering three main questions reported below:

- What are preferred learning styles of synchronous and asynchronous e-learners?
- Is there any significant difference in learning styles within different performing groups?
- Is there any significant difference between learning styles in mode of synchronous or asynchronous?

Results: asynchronous e-learners prefer converging and assimilating styles, namely those that call for the practical application of ideas and theories. Among preferred methods of learning by asynchronous learners figure: learning projects allowing for practical applications, online laboratories, provision of information in different formats as text, videos, etc.

1.3 Asynchronous distance learning applied to archaeological and natural heritage – best practices and their evaluation

1.3.1 Asynchronous distance learning in Archaeology

The publication “E-Learning Archaeology. Theory and Practice” (H. van Londen, et al. 2009) has already extensively discussed the issue of the application of e-learning solutions to Archaeology that is a relatively new phenomenon. Such publication is the result of a Leonardo da Vinci project “E-learning as a tool of knowledge transfer in the field of protection and management of Archaeological heritage” carried out in 6 European countries. In particular, the project facilitated the sharing of existing best practices and developed a tailored distance learning course “Archaeology heritage in contemporary Europe” to answer the training needs of the project targets (professionals in the field of Archaeology) and was among the first examples of its genre.

These target groups are among the same targets of ANHER project (professionals in both the fields of Archaeology and Nature). As a matter of fact, since ANHER develops as the capitalization of previous projects carried out by the same core group of partners, the analysis and conclusions carried out in such previous project can be considered a solid scientific basis to be considered to take further steps in the building of the most effective training tools for a similar targets.

The need for upgrading professional skills is a result of various social dynamics, among which the growing of threats to archaeological heritage (intensive infrastructure development, urban expansion, intensive agriculture and we could add these days terrorism) and the adoption of international standard and regulations focusing on landscape and planning, that made the integration between archaeological heritage management and planning urgent and new professional standards and accountability needed in Archaeology. In addition to that, the dynamic development of rescue Archaeology, through the multiplication of private archaeological firms, and the growing demand of the public as a stakeholder that is increasingly becoming a consumer of archaeological heritage (“audience”) – also thanks to ITs – moved archaeological heritage concern out of the academic community and generated the development of new professional figures that are pushed by the market to invest in their own professionalization (A. Marciniak in H. van Londen and al. 2009, pag. 41-44).

Such course was structured into modules conducted in an assisted distance training mode (the training process was supervised by a teacher) and included discussion forum to allow exchanges among students.

Also, illustrations and interactive system forced students to slow their reading and take time for reflection.

Among the relevant highlights of such LLP project experience evaluation:

1 – beyond motivations such as curiosity, improvement of skills and job prospects, participants indicated that the course changed their view quite considerably about current and actual issues and themes about archaeological heritage in Europe despite the different practices among countries. As a matter of fact, the course was created by various European Universities representing different cultural heritage management traditions

2 – the course was considered by trainees as very competitive if compared with other training methods in terms of flexibility and costs

1.3.2 Asynchronous distance learning in Nature

On the web, there are examples of asynchronous distance learning courses dealing with Nature, natural heritage and relative topics, for both professionals and students.

The University UCD of Dublin offers Masters in Science, Graduate Diploma and Certificate in World Heritage Conservation, namely distance learning courses designed to equip participants with current thinking and professional understanding of the UNESCO World Heritage Convention (UCD 2015). The methodologies adopted throughout the course comprehend: independent learning, project work and discussion forums. Topics examined deal with: the World Heritage Convention, international strategies for conservation, cultural heritage and biodiversity, endangered heritage and sustainable development, best practices case studies. Such course may be considered one of the few existing attempts to make Culture and Nature converge in vocational training.

The UNCCD (United Nation Convention to Combat Desertification) website contains a dedicated section with a number of links to e-learning courses provided by major institutions (Universities, Education platforms, the World Bank e-Institute and UN Agencies E-learning Centres such as the Unesco and FAO E-learning Centres, etc.) on: biodiversity, climate change, drought, ecology, forests, land degradation and restoration, land and water management (UNCCD 2015).

Specifically, the World Bank e-Institute website, contains a session of e-courses dealing with Climate Change-Toward a Landscape Approach (sustainable land and water management, reforestation and water footprint) that are targeted to professionals and development practitioners with a general understanding of the issues (WB e-Institute 2015).

On Coursera website is then possible to consult a list of courses provided by Universities dealing with Environmental Science (Coursera 2015). Among these, of particular interest is the e-course “Introduction to environmental law and policy” organized by the University of North Carolina, dealing with: law approaches to environmental problems, property and environment, endangered-species protection, risk analysis, environmental justice and water pollution.

Over the period 2006-2008, 5 PPs from Italy, Turkey, Portugal, Malta and Romania have implemented a project called EDUNATHER (Educational Strategies for the Promotion of natural heritage), financed by the Leonardo da Vinci European Initiative. This pilot project was aimed at introducing web-based GIS technologies in distance learning courses (EDUNATHER 2006-2008).

However, there is no evaluation available to assess the effectiveness of the application of asynchronous distance learning to vocational training in the Nature field.

1.3. Sustainability of asynchronous distance learning for ANHER project target groups

ANHER target groups, and in particular those reached by the initial survey for the production of O1 Transnational Report, are mainly professionals such as Archaeologists, Building restorators, Architects, Teachers/Lecturers, Administrative workers – for the Archaeological domain – having for the majority between 10 and 20 years of experience (28% of respondents to online questionnaires and 24% of respondents to interviews) and Biologists, Ecologists, Foresters, Wildlife managers, Teachers/Lecturers – for the Nature domain – (28% of respondents to online questionnaires and 27% of respondents to interviews). Such professionals experience common challenges in lifelong learning education:

1 – geographical dispersion and lack of time. Due to time constraints and geographical dispersion, professionals of both domains highlight online courses as an attractive learning method compared to traditional teaching (e.g. university, professional schools, etc.).

2 – lack of the possibility of a comparison of experiences with other specialist form the same and complementary fields. The analysis highlights the importance of some aspects such as practical contents of the e-learning course, personalized training, and collaborative training, the importance of keeping contact with the student group and creating a community.

3 – quality of the training and preference for a practical approach: respondents requested specialized trainers and the chance to do hands-on experiences

4 – most of the professionals point out as relevant aspects: the cost of the course and the importance of obtaining a certificate to prove the professional attitude and experience.

5 – interest in enlarging professional networks and contact and get in touch with sector experts

Asynchronous distance learning seems to answer almost all these challenges:

1 –this kind of vocational educational training provides a flexible timetable, as flexibility is one of the keys to the usefulness of this training method. Also, it allows to differentiate the learning process for the different targets i.e. professionals and students that may have different needs.

2 – in line with targets' training needs, asynchronous distance learning can itself allow exchanges with other participants and may be enriched with some forms of synchronous communication (forums, communities or social media groups).

3 – asynchronous distance learning can guarantee the quality of the contents, that can be elaborated by specialized experts of different countries and subjects. It also allow the use of ITC tools that are nowadays fundamental for a correct approach to Archaeology and Nature heritage management i.e. GIS, GPS and mobile technologies. The learning by doing approach is ensured by the fact that trainees have the chance to independently explore knowledge and experience it practically and by the software/technical solutions allowing flexible building, management and publishing of didactic contents.

Moreover, as pointed out by attendees, the international character of the such course can itself constitute an added value to targets' experiences by allowing them to learn about archaeological heritage management in other contexts.

However, in addition to that, in a way to meet targets' needs, such method should be completed with some interactive and practical learning sessions into the system together with synchronous learning experiences and / or practical lessons, fieldtrips or workshops.

4 – asynchronous distance learning may foresee the preparation of specialized manuals and handbooks is advisable for the learning process. Also, depending on the software/technical solutions chosen asynchronous distance learning may foresee the presence of a supervisor that can guarantee monitoring of the trainees' progress.

5 – also, such method can offer the chance to enlarge business networks and get in touch with some experts.

1.4. Asynchronous distance learning and vocational training in the domain of combined archaeological and natural heritage – Recommendations

On the basis of the data collected, taking into account the challenges and the character of knowledge in both sectors and the features of interviewed labor force (professionals of both Archeological and Nature domain as identified in O1 Transnational Report) we found that asynchronous distance learning may be useful within ANHER project, but such method should be completed with some synchronous learning experiences. We hereby recommend the adoption of a blended learning approach to ensure that we can answer targets' needs and guarantee the effectiveness of the training.

In addition to that, it would be interesting to integrate asynchronous distance learning with practical lessons, fieldtrips or workshops. We think that most probably it will not be possible to include practical experiences within ANHER, both because of budget constraints and for logistics reasons. However, we suggest that the partnership consider the chance to exploit the network of Excellence Centres to allow participants to take part in sector practical experience that some of the partners offer within their ordinary activities, ie at the end of the course we may offer trainees the chance to participate to a practical lesson, fieldtrip or workshop offered by another partner at their own expenses. The feasibility of such proposal should be further examined and discussed within the partnership.

Also, the international character of a possible course developed within ANHER would be an additional aspect appealing project targets, and would give to trainees a unique insight into the possible positive spillovers of the integration between archaeological and nature heritage management in other contexts.

In addition to that, it will be important to ensure quality standards required by the interviewed European professionals. One way of doing that may be fostering courses accreditation, for example from regional accrediting agencies. In this sense, the foreseen ANHER O5 – Creation of Centers of Integrated Heritage Teaching Excellence is going in the right direction.

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Appendix 3 – Blended Learning

Blended learning

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Introduction

The term blended learning finds its origin in the early years of the last decade (Yaman & Graf, 2010). It is widely used in current education but the definitions are unclear (Oliver & Trigwell, 2005; Torrisi-Steele, 2011). Some possible definitions are “the integrated combination of traditional learning with web-based online approaches”, “the combination of media and tools employed in an e-learning environment” and “the combination of a number of pedagogic approaches, irrespective of learning technology use” (Whitelock & Jelfs, 2003). However, there are many other definitions possible (Oliver & Trigwell, 2005). For the purposes of this report, the authors consider that blended learning can be defined as ‘the combination of a number of pedagogic approaches in an e-learning environment, with the possibility to have interaction between teachers and students’.

Review educational contexts

Most commonly blended learning has been used as the use of online material in face to face education (Oliver & Trigwell, 2005; Şahin, 2010). The method has been used in all kinds of education, from primary school until university courses (Torrisi-Steele, 2011; Monteiro et al., 2013; GWF, 2015), and as well as in vocational educational training (VET) (Comba et al., 2010; Şahin, 2010). The number of participants of courses that work with blended learning is rising (Comba et al., 2010). The outcomes of studies on blended learning are in general positive, highlighting the importance of different learning styles for the students to grasp the subject studied (Alfonso et al., 2005; Şahin, 2010; Yaman & Graf, 2010).

Use in archaeological and natural heritage

There are many examples available of the use of blended learning. A selection of examples in the domains of archaeology and nature have been described and evaluated in this section.

Archaeological heritage

An example of blended learning in an archaeology course is given by the Italian university of Bologna in the course ‘Methodologies for the Conservation of the Archaeological Heritage’ (Università di Bologna, 2015). It combines 15 hours of face to face lectures with 15 hours of online lessons with the use of Moodle. The course is finished with an oral exam, not just to

test the knowledge acquired by the participant, but also to evaluate the learning and teaching methods.

A good example of the use of blended learning in archaeology is the previous e-archaeology project (Kok *et al.*, 2012). The course contains written text, movies and interactive assignments. The content is structured in units in a content repository. Teachers can choose the units they want to use in their lessons and create their own structure. They can use this online content then in their classes.

Natural heritage

In South Africa, a course has been developed which makes use of blended learning for local primary school children to learn more about the natural heritage around them (GWF, 2015). The course uses a mix of reading, puzzles, videos, e-books and lectures. This way children don't learn just the content of the course, but they learn to work with digital equipment as well. The course designers acknowledge that they are in a beginners phase, but they are very positive about the outcomes.

The University of Barcelona has a course on 'Management Plans for World Heritage Sites', using blended learning (University of Barcelona, 2015), which took place in September 2015. It is an e-learning initiative that allows students to communicate with each other and with the teachers through a Facebook group and other social media.

The University of Technology Dortmund and Hacettepe University in Ankara gave an international course in winter 2008/09 for biology teachers with the use of blended learning (Yaman & Graf, 2010). Face to face courses were given on both universities, and next to that students made use of an e-learning environment in which they could study and communicate with each other. Assignments were made in international teams. The overall evaluation of the course was positive, but the face to face teaching and individual assignments were rated higher than the e-learning options. The authors think this is due to the lack of experience of the participants with e-learning.

Evaluation

As seen in the used examples, the term blended learning is used with many definitions. Using the definition in the introduction, blended learning can have useful aspects for the ANHER project. The use of a mix of written text, videos and interactive questions can be considered as blended learning (Şahin, 2010). The participants of O1 have indicated that they would like to have interaction with each other and the teachers next to the online content (ANHER, 2015). This has been noted in other studies and communication between students and teachers is a crucial factor within blended learning (Rovai & Jordan, 2004; Monteiro *et al.*, 2013). However, it can be considered a key component that the communication happens live and face to face (Carman, 2005).

Recommendation

For this project it can be recommended to blend different methods of e-learning, such as written text, assignments, videos and an online communication system for students and teachers in which they can ask questions and exchange ideas (Alonso et al., 2005). However, it needs to be discussed who is responsible for this online communication system, and for which time it will be open and moderated. This is something which can be discussed and created in the Centres of Integrated Heritage Teaching Excellence. An extra option is to make the content again available in a content repository (Kok et al., 2012), in which teachers can structure their own content and use it in their classes.

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