The UOC's educational model

Evolution and future perspectives

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Presentation

The UOC's Educational Model: Evolution and Prospects is a document that aims to present the bases of the evolution and innovation of the UOC's educational model.

Since the start, the UOC has developed its own educational model in order to respond to the needs of adults in lifelong learning, taking full advantage of the potential of information and communication technologies.

The evolution of training needs and the development of the technology itself mean that the educational model also has to evolve, introducing changes and innovations to improve learning by increasing and improving use of the web.

The model we present is dynamic and flexible. It is designed to adapt and evolve constantly. It is a model that guarantees closer links between the learning methodology and the students' experience, emphasising networked and web-based learning.

It is a model based on the design of spaces, resources and dynamics that aid learning. Students and their learning activities are the focus for training activities that look to ensure constant improvement of student competences.

The educational model promotes participation and collective knowledge building through an interdisciplinary and open approach to students' educational, social and working experience. The model incorporates collaborative learning through methodologies that involve problem-solving, participation in the development of projects, joint creation of products, discussion and investigation. Efforts are made to introduce entertaining elements to increase motivation and aid learning of complex knowledge.

Students are accompanied throughout by specialist faculty whose main functions include guiding, orienting, supporting and catalysing the whole of their learning process.

The document presents the basic features of the model and details its evolution and flexibility in a series of innovative methodological and technological proposals.

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1 Introduction

The main objective of this document is to identify and specify the lines along which the evolution of the UOC's educational model must be directed and driven. This model was adequate when it was designed. The evolution of the university and the technological developments which have taken place over recent years mean that it now needs to be revised and new lines established to guide its development and to include innovation as an element which will help achieve and boost the UOC's leadership in the field of e-learning.

This document has been drafted by the team working in the UOC Open Innovation Office[1] on the basis of different contributions:

/ The documentation generated by the European Higher Education Area working groups (academic years 2006-2007 and 2007-2008).

/ The Innovation in the Educational Model working group[2].

/ The analysis of the areas worked on as part of the innovation projects and the documentation generated by the innovation team.

As regards the structure, it is organised into four parts. The first part refers to the analysis of the UOC's educational model based on the contributions from the Innovation in the Educational Model working group. The second part describes the fundamental characteristics of the development of the proposed educational model. The third details the UOC's mission in relation to its teaching. And finally, the fourth section presents a series of teaching scenarios to identify and highlight the lines of action to ensure the model's continuous evolution.

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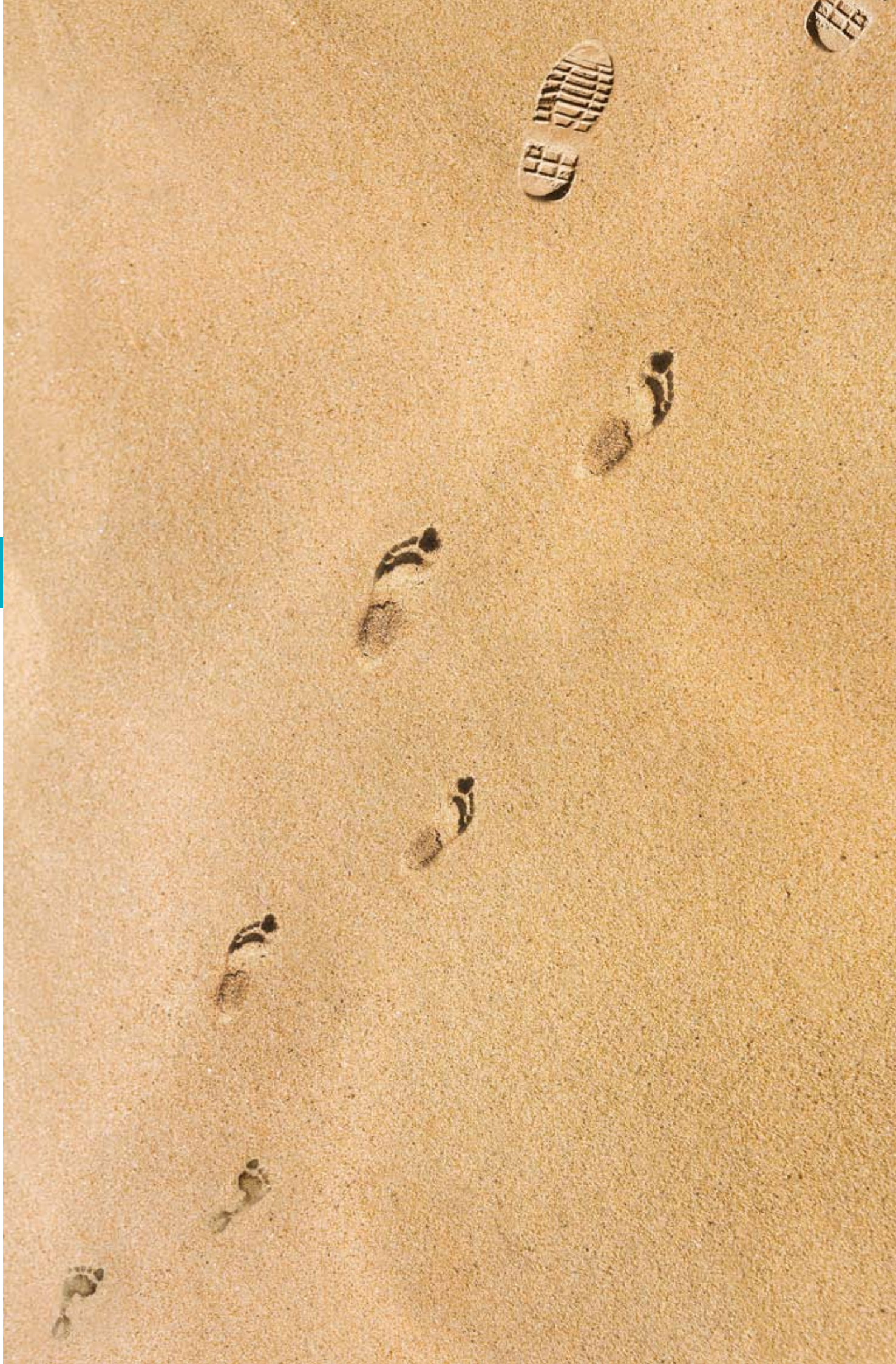
The UOC's educational model (1994-2008)

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The UOC's educational model started as a response to the need to imbue the university with a strong sense of identity and to attempt to establish a methodology which would overcome the deficits of traditional distance learning institutions.

The UOC wants a coherent and consistent model to guarantee that the University can develop regardless of the studies being offered. It is a matter of providing an adequate response for the profile of students wishing to study at the UOC, considering the social and technical conditions in place at the time of creation: guaranteeing non-discrimination on the basis of the level of access to technology.

It may well be that the basic tenets of the model adopted to date at the UOC are not outdated, having been a model for success thus far. However, the new international competitive context and the changes taking place in learning make it advisable to review it so as to adapt it adequately to new social demands and situations. As a result, it must be subjected to a process of innovation; a process which will maintain coherence with the path followed until now, but which makes those changes that are necessary.

Flexibility, personalisation, interactiveness and cooperation have been the four basic principles on which the UOC's educational model has been built over recent years.

Flexibility is what has allowed the great challenge facing the UOC – overcoming the barriers of space and time – to be met head-on. Our students' schedules, where they live, their family and social respon-

sibilities are no longer important. They can study and train at the UOC thanks to the our educational model.

Asynchronicity has played an important role, allowing each student to adapt their studies at the UOC to their lifestyle and career. The UOC has proven time and time again that studying asynchronously is possible, that faculty and students (or even the students themselves) need not coincide in time or space.

Personalisation has allowed the UOC to overcome, to a great extent, the industrial models on which distance education was based in the 1970s and 1980s. Models which developed a uniform vision for all students, with automated processes which could not be adapted to the needs of each of them.

The UOC's collaborating teaching staff and their interactions with students and, above all, the teaching plan around which the learning of each subject hinges have been the elements that have allowed the University to personalise the dealings between teachers and students.

Interactiveness has been one of the principles developed from the options that the Virtual Campus has made available. The distance learning with which the UOC began its operations involved virtual learning environments, in which the World Wide Web and hypertext played important roles.

The UOC's **teaching materials** have been a very important element and have developed as far as technological innovations have allowed, although we need to consider the economic restrictions which have often limited how much the possibilities for interaction have been updated.

Finally, **cooperation** has been one of the principles closely linked to the possibilities that the resources have provided for establishing joint working rela-

tions between students. Building knowledge together has been one of the foundations of the information and knowledge society, as is reflected in the UOC's educational model.

These four principles are coherent with a **continuous assessment system**. The use of this system, back in 1995, represented an innovative and risky methodological approach, whose objective was to allow students to see the progress they were making in their learning process while providing an alternative method of assessment to the traditional final exam. Over the years, this has become one of the characteristic elements of the UOC model which other institutions have also taken on board, proving that its use was the right course of action.

Despite the fact that there has always been a constant tension between the desire to increase continuous assessment and the more conservative approaches which favoured a return to final exams, the emergence of alternative assessment systems based on the possibilities offered by ICTs clearly shows the path we need to follow if we want an educational model that can respond to the expectations of present-day society. The University itself acknowledges, with objective data, that "the number of students who choose to be tested using continuous assessment continues to grow".

Following the application of this model over these years, we have been able to collect objective data on student performance and their levels of satisfaction, which allows us to assess its benefits. The characteristics we have described above, which are the foundations of the UOC's educational model, need updating, both as regards their sense and their meaning. The most important aspect is to guarantee a constant change which will maintain the unique educational model that characterises the UOC's teaching style, the application of which has to be compatible with a wide range of situations.

3 An educational model focused on the learning

The educational model must be **shared** by the entire UOC community as regards its basic principles, but it must also remain highly flexible in its application to be able to adapt to the specific requirements of the various programmes and studies.

It must be **dynamic** and **ambitious** in its objectives to allow for its natural evolution in response to the changes seen in the network society. The UOC has to lead teaching innovation in virtual learning environments. To achieve this aim, the model needs to be flexible and allow students to participate in this innovation. The communication of the teaching innovations to students is one of the important elements of the educational model. The student needs to feel that they are part of a community carrying out research and experiments to improve their training.

The model that we are proposing is systematic in nature and needs to be approached from this perspective. This means that the different elements it comprises, to which we shall refer below, are shaped and relate amongst themselves via a networked structure. In accordance with this structure, the elements of the model interact amongst themselves without following any pre-established order; interrelations are constantly being built in a dynamic and flexible manner. New elements or new connections can be added to the system at any time and affect the previous forms of interrelation to a greater or lesser extent. There is no hierarchy among them, considering that they all have a specific and essential function required for the model to work. However, some of these elements turn into nodes with more connections than others, since they are involved and necessary in the development of a larger number of processes. Below we describe the most outstanding elements or nodes in the model.

In the UOC's educational model, the student occupies a predominant position. The entire process revolves around designing areas and resources to enhance their learning. Centring the teaching action around the student means **focusing teaching on the design of learning areas and situations**; i.e., not on the content to be transmitted, but on the type of interaction that the student needs to establish. This means taking the kind of activity that students need to do as part of the learning process as the core of our work. From this perspective, the design of learning activities and assessment activities can be viewed as two sides of the same coin.

Learning activities are, therefore, they key element in the UOC's educational model, the core around which teaching is organised and sense is made of student learning.

Starting with student learning activity within a virtual environment means taking into account different perspectives and a series of specific elements with transversal effects on the design of possible learning situations. Garrison (2005) identifies three elements which need to be present – the cognitive element, the social element and the teaching element – in the design of learning processes in virtual environments.

A/ The cognitive presence refers to the design of the interaction between the student and the specific learning content, based on the design of materials and resources for learning.

B/ Social presence is defined as the students' ability to become involved in the working areas with all the other participants (teaching staff and students).

C/ The teaching presence is developed on the basis of the action of designing, facilitating and guiding cognitive and social processes with the aim of obtaining educational results which are meaningful for students and increase the feeling that the teaching staff support them throughout.

The UOC's educational model includes three essential elements which all come together in the design of learning activities: learning resources, collaboration and teaching presence

Basing the teaching action on the design of activities makes it easier to revise the sense of the teaching materials, which can then be considered more as learning resources.

Learning resources include both educational materials expressly designed to support and convey learning content, and other types of documents and tools, whether text or multimedia; taken from the web, created by the students themselves, etc.

The **Virtual Campus** is the environment which provides access to learning resources and content and makes a certain kind of interaction possible through them; in this sense, it can be considered to be yet another learning resource. The virtual classroom is the specific area where the three presences we have referred to come together and interrelate: content and resources, classmates and the teacher. The Virtual Campus is, then, a fundamental element for the development of the educational model. It needs to provide a student-friendly environment and must be a reference area in their learning process. This fact does not mean that all learning activities must necessarily take place within a virtual classroom.

The internet in which the UOC was born was based on a model of distributing and accessing information. Student training within the virtual environment was based on learning basic office suite tools and acquiring the competences required to seek out information on the web. These days, networked training is more oriented towards teamwork and the student is required to be able to manage and produce knowledge as a joint effort. It is an approach to work which is much more coherent with the philosophy of the Web 2.0, based on participation and the collective building of knowledge in terms of an interdisciplinary and transversal perspective on the students' life experiences (as much from a training as a social and work-related point of view). In fact, many 2.0 tools are already being used by students outside the Virtual Campus on their own initiative. Thus, one of the important values of the UOC's training is that students must be skilled at networking and working on the internet. Collaborative work provides a new teaching methodology and new ways of learning which are coherent with this approach.

Committing to **collaborative learning methodologies** means deeming

communicative processes and student teamwork (social presence) to be fundamental when designing the learning activities. This involves considering learning situations which require students to coordinate joint activities, manage information and resources, discuss and argue their own ideas, make critical judgements about others' work, etc.

Learning collaboratively means using teamwork, through communication and discussion with the teacher and other classmates, to solve problems, develop projects, create products jointly, etc. The collaborative construction of knowledge must combine personal experience, group research processes and knowledge management with the support of Virtual Campus tools.

However, the model cannot only be based on teamwork. In fact, learning cooperatively also means leaving space for independent work. Students need to learn to be virtual students and need guidance in scheduling their time, performing tasks, assessing their individual progress and reorienting their learning process, etc. **Independent learning** is also, therefore, necessary learning which needs to be combined in a flexible manner with other methodological approaches.

The third fundamental element of the model is **accompaniment**. If we agree that the student is the centre, the teacher must act as their guide and counsellor, supporting and catalysing activities throughout the learning process and helping them reach the objectives set. The idea of accompaniment is also reflected by aiding organisation of resources and designing the most appropriate ways of interacting and collaborating to achieve the learning objectives in each case, encouraging the highest levels of personalisation possible.

Unlike other open universities, the UOC has always placed great importance on the process of accompanying students through its counsellors and tutors. The student's constant monitoring and support is a value which we must continue to drive forward and improve. To achieve this objective, collaborating teaching staff and tutors need to be encouraged to join the UOC's teaching teams, and the teaching innovation and research projects. Their teacher-training also needs to be improved and accredited within the Catalan university system.
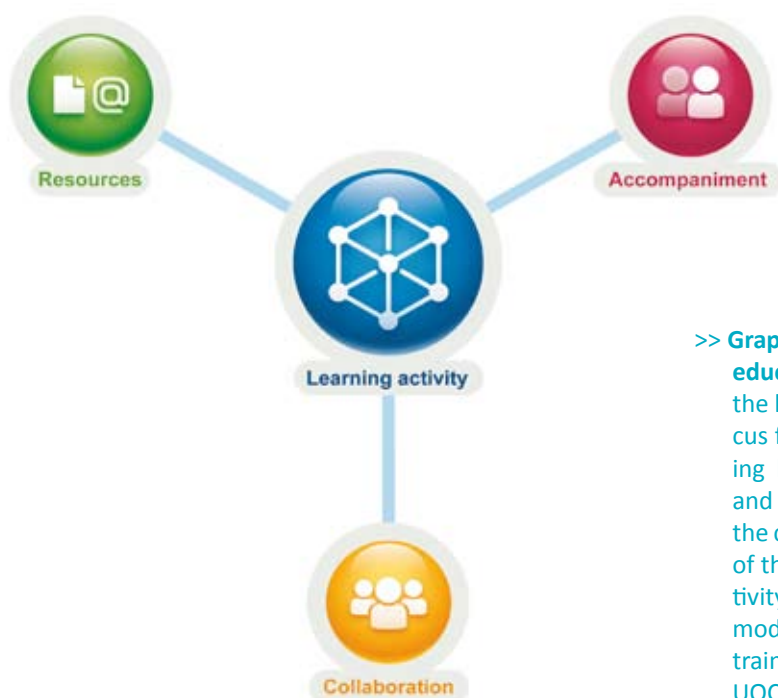
>> **Graphic representation of the UOC's educational model**. You can see how the learning activity is the central focus for the three fundamental building blocks: resources, collaboration and accompaniment. Depending on the content and specific roles of each of these elements, each teaching activity can generate variations on this model, adapting it to the diversity of training possibilities offered by the UOC.

This constant monitoring by the teaching figure is connected to the **focus on continued and participatory training assessment** which constantly provides information to students so that they can conduct and manage their own training processes. Considering the figure of the teacher from the perspective of accompanying the student helps us see assessment as an activity shared between the teacher and the students, where the student takes part in their own assessment process and that of their classmates. Assessment needs to be viewed as an **assessment of competences** and a student's learning process be contemplated as a whole, from an interdisciplinary and transversal perspective throughout the training itinerary, to provide them with relevant information throughout their entire time at the UOC.

Innovation in the educational model also requires **games based learning** without giving up on the kind of academic rigour that the university must provide. Learning in the UOC must mean networked learning in an amenable way and also learning by doing: **learning through gratifying activities and experiences**.

In summary, the UOC's e-learning model must move forward from system fundamentally based on materials and the virtual classroom to a third-generation model where emphasis is placed on flexibility and participation as shown in the following table. This

should allow us to maintain the principles which have served as a basis for the UOC educational model, but from a new perspective:

/ flexibility must lead to the specification of multiple and diverse applications of the model, based on the kind of learning situation that we want to generate;

/ personalisation must lead to each student designing and managing their own training process under the best possible conditions and with all the support necessary;

/ the possibility of interactiveness must come from an openness of methodology and also technology, based on the premise of interoperability between tools and making available multimedia resources.

/ cooperation must become collaborative knowledge-building within a network of learning communities.

Finally, quality must be a value to be pursued in each and every action and component of the model, which is why it has to be subjected to ongoing analysis which will guarantee sustained development which is coherent with the requirements identified.

E-LEARNING MODELS	CHARACTERISTICS OF SUPPORT MATERIALS AND TECHNOLOGY
FIRST GENERATION **Content** models	• Contents on paper • Digital content reproducing the books • Audioconference • Videoconference • Instructional schedule
SECOND GENERATION **Virtual-classroom**	• Virtual learning environments (classroom-model) • Real-time video streaming • Online materials • Access to internet resources • Start of interactiveness: e-mail, forum • Online materials
THIRD GENERATION Model focused on **flexibility & participation**	• Specialised, online content, also student-generated content • Reflection (e-portfolio, blogs) • Highly-interactive technologies (games, simulations, online visualisation, etc.) • Online learning communities • m-learning (mobile learning)
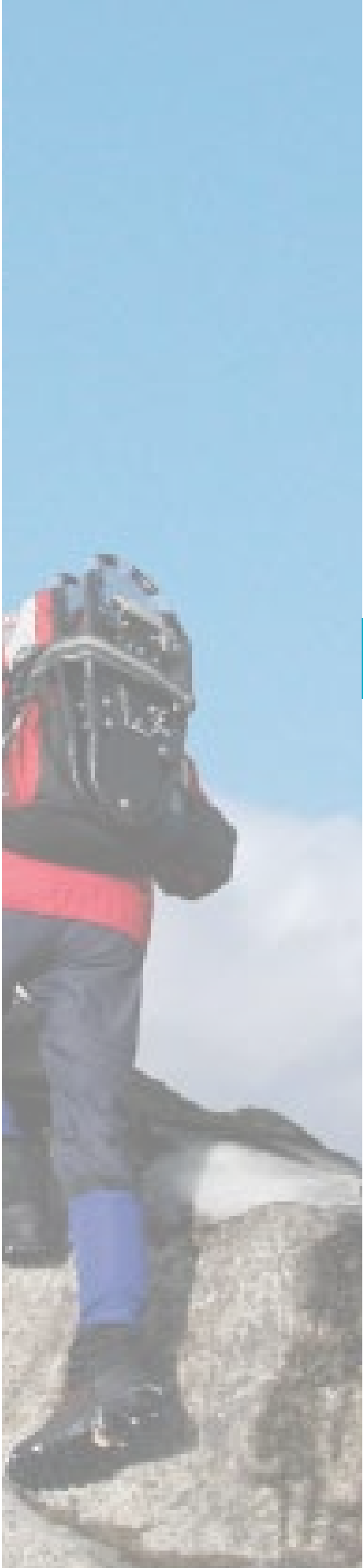
4 The UOC's mission and commitment

The UOC's objective is to train people and help them, and society, to progress, establishing alliances with other universities and institutions all around the world to facilitate mobility and build a global knowledge space. The UOC is a university which has grown up within the context of the knowledge-based society, whose mission is to provide training to people throughout their lives.

At the UOC, people can undertake lifelong learning while working and having a personal life, since training activities are designed to allow for gradual progress through the training itineraries that each student chooses.

To guarantee quality training, the UOC provides students with graduate and masters degree courses adapted to the European Higher Education Area, thus ensuring the quality of, and recognition for, its degrees. Through the postgraduate offer and ongoing training offered by the International Graduate Institute, the student can access a wide training offer, adapted to their requirements.

The UOC attempts to ensure that each person can satisfy their training requirements through maximum access to knowledge. To achieve this objective, the university makes intensive use of ICTs and offers an educational model based on the acquisition of the skill sets used in the digital society with a permanent system of accompaniment and a social learning network. The UOC, like the internet university, promotes a model of creating and managing networked and web-based knowledge.

The UOC's educational model is student-focused, to encourage the acquisition and improvement of student competences. The training system com-

bines individual learning and the joint production of knowledge. The UOC student belongs to a learning community with multiple areas for communication, interaction and learning. The accompaniment of tutors and teachers is a fundamental part of the educational and training process.

The UOC promises students that it will:

/ Make learning resources accessible anywhere and at any time;

/ Offer high-quality content and open learning resources;

/ Train them as a virtual student to take the maximum advantage of the technologies available for learning;

/ Help them to manage and plan their time, a fundamental aspect of academic success;

/ Promote activities based on knowledge and students' professional practice;

/ Help them to develop entrepreneurial skills;

/ Give them the competences to work as part of a network, and

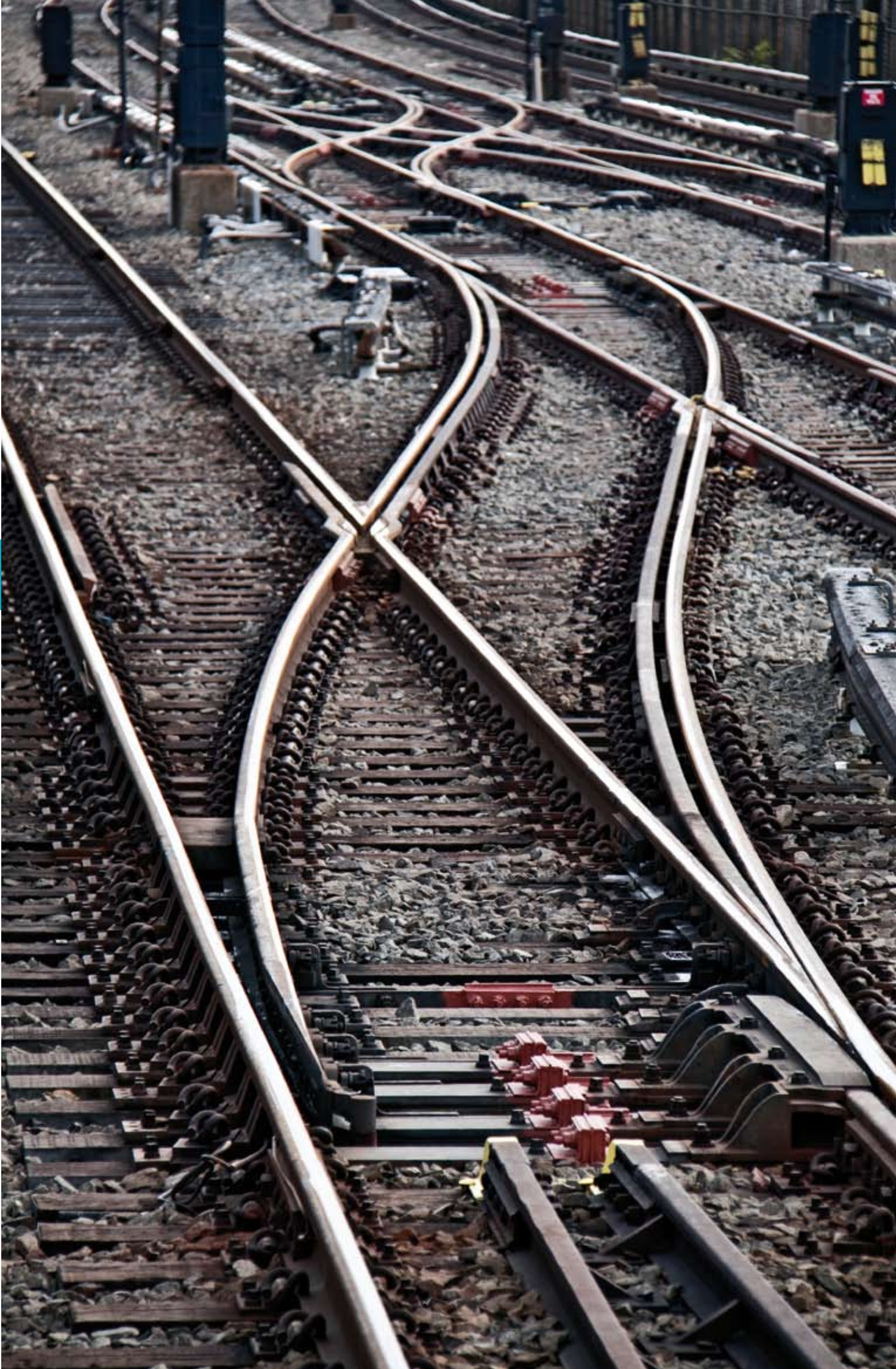/ Promote cooperation and the internationalisation of its studies.

The UOC student must promise to:

/ Improve their competences on an ongoing basis;

/ Undertake rigorous, critical and reflective work;

/ Learn to manage their time properly;

/ Make intensive use of technologies;

/ Take part in the academic work on the Virtual Campus, and

/ Network.

5 Teaching scenarios: proposal of lines of work for developing the educational model

The educational model described is a reference framework to be used as a starting point for developing and innovating the system.

As a result, the model has to be built up on a day-by-day basis, in a dynamic fashion, based on the improvements and innovation processes contained in the system itself. To provide guidance for developing the model, the **_teaching scenarios_** document was drafted to identify a series of scenarios based on eight themed axes with various areas for the application of methodology and ICTs in relation to the UOC educational model. Each axis, therefore, considers a key theme where pedagogical and technological aspects come together, whereby the development of the model must include these two perspectives in an integrated manner.

All the axes proposed are expressed along two poles, between which the various training scenarios can be identified. The first pole on each axis is defined by the starting point or situation closest to the current UOC model in relation to the issue being dealt with. The second pole is located at the opposite end or point of maximum achievable development as regards the same aspect. The scenarios proposed within each axis adopt one characteristic or another, depending on their proximity to one end or the other, so they help to describe the limits of the model and to identify the new frontiers to be explored.

AREAS	THEMED AXES Teaching scenarios	
	Pole A ←	→ Pole B
Learning activities	Application activities • Individual • Non-immersive	Inquiry activities • Collaborative • Immersive
Learning resources	Teaching materials	Content management
	Textual content	Multimedia content
Communication	Asynchronous communication	Synchronous communication
Virtual environments	Virtual classroom	2.0 areas
	Web	Virtual worlds
	Computers	Other devices
Assessment	Assessment of learning	Assessment of competences

The proposal made is not final – and should not be so – since the purpose of the document is to set up lines leading towards ongoing development and not to limit any updates. Therefore the proposed axes are not a closed list, and neither is the content definitive, in particularly as regards the number and specificity of the scenarios presented in each.

The themed axes, with their corresponding scenarios, are grouped together into blocks which can be more directly related to the elements of the educational model as described in the above table.
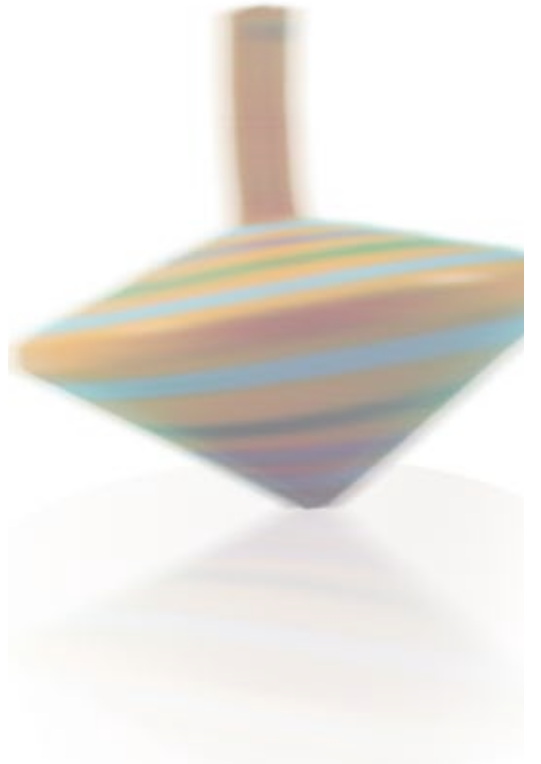
6 Axes

In this section, we develop each of the axes we presented above. Each axis is articulated in the same way, with three sections. The first of the sections, entitled *Context*, defines the framework and the extent of the axis in question. The second, *Possible scenarios*, presents examples of teaching applications located at different points within the axis described, the purpose of which is to illustrate it and propose real scenarios which can be developed. Finally, the third section, *Application within the context of the UOC*, provides an assessment of the possibilities which will open up, the elements which need to be foreseen and the considerations to be taken into account in a wide sense, if the teaching scenarios presented are to be developed and generalised.

Axis 1

Application /
Inquiry Activities

Context

Learning activities are the key element of the UOC educational model and, therefore, constitute the core of the first axis we will be dealing with. All the other components involved in any learning process come together and are organised around the design and performance of the activities: the role of the teacher, the function of the tools and the resources to be used, the role of the processes for communicating with classmates, etc.

From a traditional perspective, learning activities are conceived as opportunities for the students to apply the content worked on with expressly-designed actions or tasks. In the face of a specific question, problem or task, students must identify the most adequate content from among all the ones available to resolve the allocated task correctly. This application may be more or less direct and require a greater or lesser reflective process, but the aim of the activities is fundamentally for the students, through the application, to understand the sense and function of specific content, be it concepts, procedures or value-related issues.

This type of learning activity is necessary and must continue to occupy a place in the educational model towards which we are tending, but there are certain cognitive competences and abilities which find other learning situations which are more appropriate for development. Certain processes or complex and polyhedral problems require a more multidimensional and open contemplation to be fully understood. Scientific processes or issues that need to be contextualised within a specific social and cultural reality, for example, tend to receive only partial, barely tolerant treatment when worked on using application activities. We are referring to issues or problems for which there is no single, correct solution to be linked to specific content. Not only that, but there is no single, valid path or procedure to reach such a solution.

This kind of issue requires setting open-ended learning activities, also known as "unstructured" activities which place the educational burden on the richness of the process of elaboration rather than on the completeness and correction of the end result. This kind of activity must allow students to produce singular responses to the issue raised by participating in knowledge-building processes.

These are activities which allow them to base their work on their own experiences and interpretation of the content worked on and which encourage progressive deepening of knowledge of the concepts through the promotion of both personal and interpersonal critical questioning.

This kind of activity is a form of understanding learning as research or a process of inquiry. In this sense, we refer to research activities as learning situations in which the students construct knowledge socially, i.e. socialising the processes of searching, organising, reflecting, integrating, drafting, etc. These are intentional and self-driven processes which might involve diagnosing problems, planning actions, building models, discussing and criticising arguments, etc. The true purpose is not so much to find answers as to construct new questions which will help glean more in-depth knowledge of the issues raised, from a perspective which is meaningful for the students.

If we start from the basis that knowledge is built socially, these activities must necessarily include a component of communication and collaboration.

Another aspect of learning activities refers to the metaphor used to conceive the dimensions of space and time and, therefore, the forms of access, movement, action and relationship with people and objects. In this sense, 3D virtual worlds, also known as immersive worlds, make new forms of representing reality and interacting with it possible, no matter how complex reality is. Even more: these environments allow new worlds to be created and new experiences generated to help students understand concepts and processes and carry out specific actions with a high degree of realism. The increased possibility of creating objects, structures, actions, etc. easily within these environments multiplies the opportunities for exploring and investigating and for establishing and consolidating social networks which will become learning communities.

The following scenarios show possible methodological concretions, the result of combining the various traits which characterise the learning activities discussed.

Possible scenarios

Scenario 1.1. Blended-learning activities: individual, cooperative and collaborative

This is a scenario which covers a whole range of working situations which may alternate moments and tasks developed collaboratively, cooperatively and individually.

We are referring to activities linked to learning strategies based on problems or projects for collaborative research which invite students to take part in collective knowledge-building processes, hinging around the shared preparation of discourse for producing objects of knowledge.

These are complementary or alternative teamwork situations to individual activity and go beyond mere cooperative activity. This means that, although they can be combined with them, they must go beyond cooperative learning processes, the product of parallel undertaking and the addition of tasks, directed to a greater or lesser extent by the teacher for the purpose of drafting a common product; and the processes of collaborative learning, the result of joint and ongoing participation in discussion and self-organised processes coordinated by the group of students itself for resolving a problem or answering a question.

This scenario should include a series of tools described more specifically in "Scenario 5.1" of *Axis 5*, to be used either in combination or separately. Broadly speaking, the most relevant groups of tools included here will be communication tools, systems for the shared management of content and the self-management of working groups. This series of available tools should allow teaching staff to design virtual, collaborative micro-environments adapted to the type of processes that they wish to generate among the students. While some of the tools that we will be using are more general in nature in terms of functionality, others have specific elements which can be used to support the collaborative work and learning processes.

Scenario 1.2. Learning activities in immersive environments

In this scenario we will discuss activities developed within virtual 3D worlds and which might lead to various degrees of modification of the structure and methodology of the training action being developed through conventional virtual environments (see "Scenarios for Axis 6") and therefore may require different degrees of coordination for the activities developed both inside and outside of the immersion environments.

In some of these activities, students can create a three-dimensional, graphic representation of themselves, or avatar, which will represent them as players within the virtual world. Many of these activities can be presented under the form of a game, making the working and learning process much more playful and attractive.

Immersive activities can be considered to have various training purposes: applying and putting into practice certain knowledge within a simulated environment, recognising, identify and understanding complex models or processes, interacting in situations and learning environments which are rich in terms of audio, visual, symbolic, etc. stimuli, developing attitudes through personal experience, researching economic, social or political macrostructures, taking on or playing a certain role to develop activities individually or as part of a team, etc.

Application within the **context** of the **UOC**

/ **The scenarios discussed as part of this axis are essentially methodological**, since they focus on characterising a series of situations and practices **for teaching and learning**. **In fact, the repertoire of specific tools** which each scenario can include is **extremely large and open**. T**he identification of the most appropriate resources and instruments** must focus on the **requirements of each specific situation**.

/ This means **thinking of the classroom as an open and configurable area** which allows people to choose tools and resources on the basis of the learning objectives proposed, leaving a margin for both the teacher and the students to design the environment.

/ This kind of activity should always be approached from within a context of **flexibility**, both for teachers and students. That is, we need to promote the development of a learning focus which is coherent with this kind of activity, but always bearing in mind the limits and specific requirements of each disciplinary context and each personal situation. Both the collaborative proposals and, for example, the ones which involve synchronicity in time must be offered together with alternatives which give students a margin of optionality.

/ The **different forms of learning activities** and areas outlined in the two scenarios must be presented in combination and in an integrated manner, leaving room for blended proposals which allow wider and interdisciplinary learning sequences to be configured.

/ Creation of **methodologies and tools for monitoring and assessing the training activity**, adapted to collaborative methodologies and the metaphor of the world of immersion.

/ In particular, immersive learning activities require users to have a minimum level of knowledge and familiarisation, both as regards the technological environment and teaching and the methodological strategies to be employed within and through it. Therefore we need to resolve **the issue of the students' and teachers' prior skills** through workshops or other kinds of training strategy.
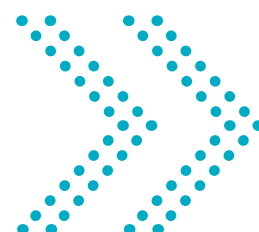
Axis 2

Teaching Materials / Content Management

Context

Right from the earliest days of the UOC, teaching materials have been one of the pillars of its educational model. Initially, and particularly during the years of greatest growth and expansion, the existence of "teaching modules" which brought together the basic content of each subject allowed us, among other things, to ensure that a basic level of quality could be maintained in its training offer as a whole. This strong initial tendency has conditioned the methodology and the process of creating training actions.

From the point of view of the content, the predominant scenario is still one of commissioning and creating teaching materials which will endow the subject with basic content. However, as a complement to this kind of material, other documentary resources have become increasingly available, such as articles, web pages, databases, journals and reference materials, as well as the use of resources which act as mediators between content and training actions, such as the Study Guides.

At present, the methodological instructions which derive from the application of the EHEA tend towards scenarios which hinge around student activity, an activity designed to provide them with certain specific skill sets. Within this context, content is defined in relation to its role in this respect.

That does not mean that content and its use as teaching materials are becoming less important in the training process. The preparation of teaching materials must continue to show that the UOC's model is a standard of quality and state of the art reference point in the wider sense. However, it is a matter of shifting the emphasis from these to student learning activities, i.e. to look at the function and sense of the materials in each specific learning situation instead of assigning them a role in themselves.

This opens the door to considering other teaching scenarios which transcend the creation of a single kind of material for each subject – no matter how much it is complemented by other resources – as the basis of its content. We are referring to scenarios which facilitate speedier and more autonomous content management through the teaching roles involved in the subject. This new way of managing content should allow us to share resources transversally, make intensive use of the multiple-type content that the internet has to offer, make habitual use of repositories of resources – both as regards exploiting and feeding them -, produce and publish newly-created content, have criteria and solutions which relate to the management of intellectual property rights and also continue to commission teaching materials or manuals, but separating the editorial process of creation and updating subjects.

Possible scenarios

Scenario 2.1. Teaching material

Use of teaching material or a manual as the source of content for a subject. This scenario is similar to the one which has dominated so far with the so-called "teaching modules", but with significant differences as regards the approach:

/ The material is not the backbone of the subject since, according to the EHEA, the backbone is student activity, as specified in the learning plan for the subject.

/ The use of material is transversal and is not linked to a specific subject. Each subject will make use of the material as it needs to and as stipulated in the learning plan.

/ The material is organised according to the structure of the subject content. It is given didactic treatment, which might include exercises, problems, cases or other kinds of activity.

Scenario 2.2. Desktop publishing of content

The agents taking part in the training action (teachers and students) produce and publish subject content. The kind of content published might include text documents, interactive manuals, guides and methodological documentation, activities, web pages and other types of resources.

Examples:

/ Activities carried out using 2.0 tools: student blogs about their learning process; teacher's notebook commenting on how the subject is currently developing (the progress of the technology, legal proceedings, economic events, etc.); the collaborative creation of documents; the preparation of dictionaries, encyclopaedias or themed repositories; web annotations or social bookmarking, etc.

/ Desktop publishing of teaching resources. The teaching staff edits and publishes teaching resources, such as activities, case histories, exercises, tutorials, Study Guides, commented references, methodological instructions, etc., both newly-created and obtained from adapting existing resources (see "Scenario 3: Repositories of teaching resources"). It would be useful to have templates and methodological instructions to help to create them.

/ Editing multimedia resources: Flash, presentations, video, audio resources, etc.

The common feature of all the scenarios described is that the content generated becomes complementary content for the corresponding subject or area of knowledge. In this sense, in the case of student-created content and to maintain sufficient academic quality, we need to include criteria to assess validity, reliability, sufficiency, etc. in all the activities relating to such creations.
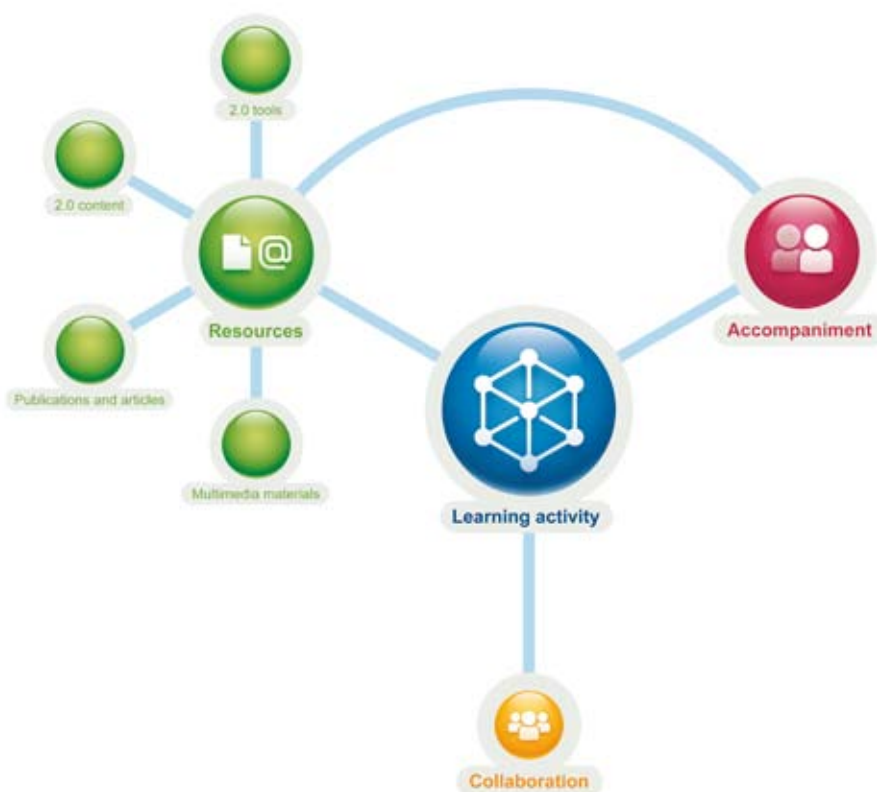
>> **Placement of the elements of the educational model in a teaching scenario based on the autonomous use of available resources**. In this activity, collaborative dynamics are very important, since the task is to scenify a real actions where the students take on different roles and relate with each other on the basis of their roles. Accompaniment, in this case, does not play an important part, beyond its normal functions of guidance, assessment, follow-up and evaluation.

Scenario 2.3. Teacher management of the resource area

Depending on the subject learning plan, the teacher searches for, selects and proposes the subject and classroom resources. These resources may change from one semester to another, depending on the centres of interest and student requirements, or the development of current affairs which relate to subject content. The mechanisms for revising and updating resources are speedy and respond to the criteria of appropriateness, quality and how current they are. A system of having users to tag and assess resources and content allows the teacher to orient the selection in line with the objectives considered.

As regards the kind of content, this can be very varied. It does not all have to have been designed originally to be used as teaching material and it may take a variety of formats:

/ Web pages

/ News on digital media

/ Videos of conferences (YouTube)

/ TV programmes

/ Investigative journalism reports

/ Radio programmes

/ Scientific articles

/ Blogs on a variety of subjects

/ Etc.

For this scenario to work, it needs a nimble documentary service, a 2.0 technological system to manage the classroom resource area (add comments, label and recommend resources, display systems based on user behaviour –tag bubbles, resources, etc.–, content maps) themed repositories of multimedia teaching resources, etc.

Scenario 2.4. Managing documentation and training resources

The teaching staff selects, edits and adapts the documentation on teaching information and student activity.

The staff has access to repositories of continuous assessment activities, exercises, teaching plans, methodology guidelines, templates, etc. The purpose of this is to be able to consult resources in order to create new ones or download existing ones to adapt the content.

The resources are duly tagged using themed, academic and methodological criteria, preferably in XML format which can be edited using adequate content managers and tools.

The teacher feeds the repository with the adapted resources or other newly-created ones.

> ## Scenario 2.5. Personal collection of content and resources
>
> Apart from the classroom resource area, teachers and students have another personal area where they can save documents and resources which are relevant to them. This personal repository can be managed and configured by each user and allows resources to be labelled, metadata to be added and the information shared with other users (list of web addresses of interest: shared bookmarks).
>
> The personal repertoire of content and resources is part of the series of 2.0 tools described in: *Axis 5: Virtual Classroom/2.0 Areas*, "Scenario 4: Construction of the personal and professional identity within an academic context".

Application within the context of the UOC

The following considerations need to be borne in mind to make the scenarios described possible, and to perform the activity normally:

/ **Flexibility in the processes for managing teaching materials** and resources linked to the creation and updating of the subject. The process of commissioning and editing teaching materials involving a publishing product needs to be separated from the process of creating the subject, since they respond to different methodological concepts. If this does not occur, subject design is conditioned by the process of commissioning the content, it becomes difficult to implement flexible forms of using the materials and manuals generated by the UOC and the material is subordinated to the natural development of the subject. This flexibility has repercussions on the content-related commissioning processes and on the enrolment fees as applied to the materials. This needs to be re-addressed.

/ **Speedy organisation and updating of classroom documentation and content**. It must be possible to manage classroom content at any time and separately from the management process schedule. Updating needs to be an ongoing process and must be adapted to the requirements of the learning process and the external context surrounding teaching at any specific moment. In this sense, **teachers need to have a greater degree of autonomy as regards managing subject and classroom content**.

/ **Availability of repositories of content and resources**. Appropriate taxonomies need to be generated for each of the areas of knowledge, with a system of metadata for identifying the resource or content, using themed, pedagogical (depending on the type of training resource) and academic (depending on their use in the training offer) criteria. Teaching staff need to be able to exploit and feed the repositories.

/ **The design of content areas applying logic and Web 2.0 elements**; display systems based on user behaviour such as bubbles highlighting the names of the most frequently used resources, etc.; systems of participations which allow users to assess, qualify or recommend resources; associating labels and comments, etc. This treatment needs to be available on the classroom resource area, the content repositories and personal collections of resources.

/ **Possibility of open viewing of content and teaching activity**. The act of learning does not always need to remain enclosed within the classroom. There are elements which must remain active beyond the duration of the training action in which they have taken place. At the same time, they must be able to be viewed openly. One example are activities which result in a wiki, or certain resources which are added to a repository. This means having a system of administration and external display criteria and a permanent physical location on which to host these resources.

/ **Development of tools and resource editing and publication systems**. This kind of tool and the technology on which they are based will depend on the type of resource and teaching methodology in each case. They may be resource templates, offline editors, image and video editors, multimedia

creation tools or content and web 2.0 tool management, etc. (see *Axis 5: Virtual Classroom/2.0 Areas*).

/ Definition of a **strategy for copyright** and intellectual property rights for content generated and used, based on teaching activity. This strategy involves establishing criteria and a rights management process, the creation of an information system and providing users involved in the subject (teachers, students and management) with the necessary competences.

/ In this technological scenario, we are considering creating different technological solutions based on multimedia content managers (CMS) to deploy photoblog, videoblog and audioblog systems which the users can manage themselves and where they have the possibility of syndicating content. As regards the unified representation of several of the elements which configure methodological scenarios we also believe that Silverlight is the technology which will help us deal with these multimedia developments.
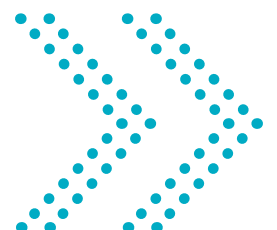
Axis 3

Textual / Multimedia Content

Context

Text has always been and will surely continue to be one of the great media for creating and accessing content. Understood in a wider sense, it is possible that expression in text has a lot to do with the natural way in which we humans conceive of, organise and express our knowledge. However, there is no reason to establish a clear dividing line between text and other forms of generating and offering content. ICTs clearly open up the possibility of crossing these lines and progressing towards combined formulae using various media. If we look at the development of the internet, we can see how text pages are developing more and more towards integration and complementariness with other formats such as video, photo galleries, audio files, Flash films, etc. – we need only to see the current state of electronic newspapers to see where it is all going. At the same time, non-text formats are consolidating and adapting their Online presence by generating their own language and forms of expression. One example of this is podcasting, TV channels on the internet, repositories like YouTube or other initiatives which combine the creation of multimedia content with participative work.

From the perspective of online training, we must offer students content which is tuned in to the for-mats, languages and display systems which currently dominate the internet. It is not only a question of motivation or market attractiveness but is also related to acquiring the competences required to make intensive use of ICTs, both during the learning process and in later professional contexts.

In this axis, when we refer to boosting multimedia content in the UOC, we are referring as much to the production of our own material and resources as to taking more advantage of other content already on the internet through various documentary management strategies or agreements with other institutions, depending on the type of resource.

Finally, we cannot leave aside the high degree of flexibility provided by current technology as regards viewing and distributing content. We are referring particularly to the possibility of separating the content from its display, thanks to XML format. This allows us, on the one hand, to combine content from various sources and in miscellaneous formats within a single resource (texts, videos, graphics, audio files, links to 2.0 resources, etc.) allowing media to come together through syndication. On the other hand, it allows us to consider creating content establishing various output formats and distribution devices right from the very start.

Possible scenarios

Scenario 3.1. External multimedia content

Use of external multimedia content for training purposes. This can be open content, available on the internet through searches, or products belonging to other institutions such as publishing houses, radio and TV channels, etc.

These resources are not necessarily created for educational purposes. Among other things, they may be content of a journalistic nature or for distribution, podcasts, games or simulations in Java or Flash, radio programmes, YouTube themed channels, etc.

They become educational when contextualised in a training action or when used as part of a learning activity. Whatever the case, they have the advantage of being able to work with content generated and used in real contexts, connecting subjects with the working world.

Scenario 3.2. Multimedia content produced in-house

Use of multimedia content produced by the UOC. This can cover several types of materials and resources: interactive teaching materials, tutorials, manuals, case histories, simulators, videos, speeches, Flash animations, etc.

Unlike the previous scenario, these are multimedia content thought up and designed as educational resources. This means that they require a process of pedagogic and multimedia design by an interdisciplinary team of teachers and professionals specialising in the creation and development of this kind of content.

As regards the process of commissioning and producing them, this will follow the same model as "Scenario 4.1: Teaching material in *Axis 2: Teaching materials/Content management*. It requires, then, a publishing process and a design and production process.

Scenario 3.3. Multimedia desktop publishing

Use of tools for publishing and creating multimedia content. Students publish multimedia content as part of their training activity: video creation (recordings, editing, etc.), audio content creation (podcasting), production of interactive multimedia resources (Flash), etc.

The teaching staff uses the same tools for correcting activities, creating examples or producing new resources (speeches, video recordings, etc.), etc.

Production follows the same model as "Scenario 2: Desktop publishing and content publication" in *Axis 2: Teaching materials/Content management*.

Scenario 3.4. Creation of multiformatted content

Learning materials can be accessed in several formats, depending on the device with which they are accessed or how the user wishes to access them, e.g.:

/   The student browses the web pages which cover the material, views the multimedia resources they contain and access the external links that interest them.

/   The student selects specific chapters and sections of the material for reflective reading. A .pdf file is generated automatically with the content of choice, perfectly laid out, page-numbered and processed in an adequate manner for the printed format.

/   The student is looking at a week in which they will be travelling a lot and decides to download the material in .mp3 format and listen to it on a mobile device. The corresponding .mp3 files are generated dynamically. The result is the spoken version of the material with the intonations and figures which correspond to this kind of language (intonations, pauses, different voices, clarifications, music, etc.).

/   The student accesses the material for an audiovisual communication subject through the Media Center. They read the small text sequences which present the subject's videographic content. They also access the web version by clicking on a link.

Requirements:

/   Dynamic generation of formats: .pdf, .mp3.

/ Marking the specific content for each format, with the corresponding specifications for display. For example, there are text figures which appear on the printed format and do not appear in the web format. Instead, the user accesses an animation or an interactive table; the Media Center only contains introductory summaries and links to access the web format with the browser; the audio format reads the text of the content clearly but inserts certain figures such as music, clarifications, etc.

/ Development of specific style books for each format which take the language of each medium and the corresponding didactic treatment into account.

Application within the context of the UOC

The following considerations need to be borne in mind to make the scenarios described possible and to perform the activity normally:

/ The establishment of agreements and alliances with multimedia content suppliers: radio and television stations and other media, publishing houses, etc.

/ Knowledge of open-source software multimedia publishing tools and, if necessary, the development of improvements and adaptations within the context of the UOC.

/ Having specifications and technological developments for editing multiformat materials.

/ Having a multimedia style book upon which multimedia materials and the resources generated on a single medium (text, audio, video, etc.) are based.

/ Developing a voice synthesiser to add to the materials.

/ Making it possible to write and give verbal expression to mathematical formulae.
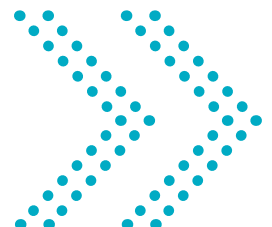
Axis 4

Synchronous / Asynchronous Communication

Context

Right from its earliest days, the UOC's distance learning model has been based on asynchronicity. The reason for this has been to offer the students maximum flexibility of access to training, without it being necessary at any time to coincide in space and time.

In spite of this, there are reasons for which one could cease to consider this to be the only criterion when it comes to thinking of using synchronicity both in teaching and in other areas of UOC activity. On the one hand, there have been significant changes over recent years both in technology and social habits over the internet. We are referring to the increase in bandwidth and the generalisation of synchronous communication tools for social and professional purposes (chatrooms and voice-over-IP which have developed to the point of including voice and video).

We believe that this growth in possibilities with regard to the type of tools available which offer high quality service means that we can modify criteria when it comes to choosing either synchronous or asynchronous modes in distance learning and to have this as the most adequate way of evaluating tools to facilitate the kind of learning process that we wish to generate.

These days we can refer to various studies which prove that synchronous communication processes can help achieve certain communicative or work-related ends, such as taking decisions, negotiating or establishing criteria and bases for a shared understanding. This kind of purpose is fundamental and can be generalised to cover any teamwork situation, a methodological focus to be encouraged, both as regards the directives of the Bologna agreement and within a distance learning university like the UOC.

On the other hand, there are certain areas of knowledge in which the application and development of synchronicity would bring about significant improvements as regards the possibilities of distance learning, much lower than attendance-based methods if only asynchronous teaching activities can be carried out. We are referring, of course, to learning languages.

Within this context, we need to ask ourselves what is expected of an online educational model within the current context of the information society, as regards the use of ICTs and what role synchronicity plays in specific training and management scenarios.

This does not mean relegating asynchronous scenarios to the back burner, but getting them to coexist and choosing one kind or another, depending on the objectives of the communication. In this sense, we also need to think about developing asynchronous communication scenarios to make them more flexible and configurable. At the same time, we need to give them functionalities for managing information and which will allow us to optimise the learning process and facilitate monitoring and assessment.

Possible scenarios

Scenario 4.1. Real-time communication areas for informal use

This considers the inclusion of an instant messaging tool with the classroom which will be accessible ad hoc and added to each communication area (teacher's noticeboard, debates, forums, workgroups, list of students) to be able to identify who is online at a specific point in time and smoothly alternate the use of tools as required.

This tool can be used freely, spontaneously and is available to any classroom user. For example, it can be used for the teacher to tutor the student, or for the occasional conversation between students about subject-related organisational issues.

Specifications: text chatrooms, voice chatrooms, webcam chatrooms, file attachment, recording of conversations.

Technological scenario: this kind of tool needs to work on a double basis, on the one hand integrated within access to the Virtual Campus and on the other externally, i.e. the creation of a network of users limited to Campus users, classmates or studymates, so that they can set up a session without necessarily having to go through the Virtual Campus.

This tool needs to work in parallel with the ones that we can find under development at present, so that there is no need to reinvent the wheel. The model which is closest to the technological scenario we are considering is the one profiled by applications like Google's GTalk and Skype.

We need to bear in mind that these tools are what are known as desktop tools, i.e. a client needs to be installed on the user's computer. This model would continue to be used, since configuration based on remote connection with a central client would encourage people to load the application and would mean that it would be underused by those used to other tools of this kind.

A second possible scenario would be to take advantage of pre-existing tools on the market, so as to create a specific connection "environment" for UOC users. This control of privileges would be subject to the uoc.edu domains, which means that the concept of "private chatrooms" could be applied on a large scale, where the "UOC chatroom" would become the specific area for interaction. This option has the advantage that the user would not have to install a new programme if they already have it installed, but could use a system which, in many cases, is already known to them.

Scenario 4.2. Real-time communication areas for teamwork

This proposes the addition of a multi-user chatroom tool within the classroom which will allow real-time conversations between several participants.

We should be able to create this tool and associate it to groupwork areas, allowing conversations to be recorded as evidence of the students' work and learning processes.

The use of this tool would be more directly associated than the previous one to the development of learning activities involving interactive or collaborative processes between students.

Other possible uses would be, for example, conversations between groups of students and the subject teacher for tutoring the development of a team job, a project, etc., between counsellors for the same subject, etc.

Specifications: text chatrooms, voice chatrooms, webcam chatrooms, file attachment, recording of conversations, user profiles, role allocation, etc.

Technological scenario: along the same lines as the previous scenario, but in this case we would need to establish an environment in which the concept of a "shared desktop" takes on greater importance, where a group of users can act in real-time on a shared desktop which would act like a "virtual blackboard" on which all the users in a workgroup are identified with a different-coloured cursor so that people can see who is doing what at any one time. Different users editing a document in real-time is a reality and can become a true, real-time, collaborative environment. Documents generated and/or modified in each session are stored on a shared file directory so that all the users in the group can download the documents. One of the users needs to be set up as the administrator or person responsible for the work session and will be in charge of opening the area and saving or deleting the working files.

We need to bear in mind that the current trend towards voice-over-IP (VoIP) is the environment on which we need to develop applications for establishing communication between users, either via audio or video streaming. Voice-streaming systems must become more and more important

and, apart from considering using them in such specific areas as voice e-mail message storage for sending or hearing a pre-recorded message from another user, we also need to lean more towards the "verbalisation" of the onscreen content as a possibility. In this case, we are referring to voice recognition systems through which we can give orders to the computer on the one hand to execute specific processes as one can do nowadays and, on the other, to move around Campuses using voice alone and hearing what content is available. One model that we would like to reflect upon is the VoxWeb application which allows the content on a web page to be verbalised and voice browsing using the different options which appear onscreen.

Scenario 4.3. Development of asynchronous communication areas

This scenario adds a series of configurable, asynchronous communication tools for different utilities. Although they all share the same technological basis, depending on configuration, we might find ourselves facing forums or discussion areas or noticeboards (designed more for posting notices than for actual interaction).

The **options for configuring** the discussion tools should allow us to decide the parameters for the desired type of interaction depending on user profile (e.g. student and counsellor) or based on the ad hoc allocation of roles for a specific activity (who can take part, who can start a new thread, who can edit or delete the contributions once they have been made, who can re-organise the contributions by discussion thread, etc.).

The development of such areas necessarily requires them to have **information management functionalities**. We are referring, among other things, to the addition of search engines, tagging contributions (identifying the ones read, those unread, those modified, type of authorship, etc.), systems for "packaging" contributions which allow specific content to be exported, functionalities for organising the contributions in accordance with a themed structure, alternative displays depending on the type of organisation (by thread, chronological order, tags or category of content, etc.).

Another set of functionalities is directly related to providing **support to the learning process and joint knowledge-building**. In this case, we are referring to applications which provide support for preparing a specific kind of contribution (e.g. preparing summaries, formulating problems, expressing agreement or disagreement, etc.) based on criteria which can be defined by the teacher, through tagging or categorisation systems.

This **tagging system** allows the contributions to be filtered for reading (both by students and the teacher) and faster assessment of the kind of contribution made. As such, it makes it easy to follow discussions and assess the quality of each individual contribution. In fact, the tagging system can also be used to qualify or recommend contributions, so that the student can obtain constant feedback, either from classmates or the teacher (see "Scenario 7.1." *Axis 8. Assessment of learning/ Assessment of competences*).

These asynchronous discussion areas can also include **applications for viewing and analysing the interrelation between the contributions** made based on various criteria such as content or authors (see reference to the analysis of social networks in "Scenario 7.4" of *Assessment of Learning/Assessment of competences*).

Finally, the **personal inbox** is another of the elements which needs to be developed. As a basic tool of communication within the teaching and learning process, it needs to be the one most closely linked to the classroom area (or vice-versa) and most integrated with the rest of the available work and communication tools, so that it is possible, for example, to receive notices of updates to wikis, blogs or new messages posted to forums, etc. (via RSS systems). In turn, it needs to be given the basic functionalities that e-mail managers on the internet, such as gmail.com, currently offer. We are referring, for example, to the list of contacts (personal, with the main institutional contacts added), a quick system for selecting individual and group recipients, creation of distribution lists, etc.

Specifications: text or image forum; text noticeboard, with images and voice; recording and "packaging" of conversations, systems for tagging and assessing contributions, etc.

Technological scenario: in this scenario we have a series of tools which could be integrated within a single platform, in the manner of Google Apps. In this way, it would be easier to integrate all the services, take the maximum advantage of the performance of a search tool which is currently underperforming and at the same time provide the feeling that this is a technological rather than an individualised set of tools. This means that the user learning curve will be much higher. Subscriptions to services needs to be a reality, e.g. the configuration of different RSS channels in which the user can follow all the news or entries in each subarea from his reader (be it a web service or a local application). This choice must be 100% user-configurable and needs to be seen as an option rather than an obligation.

The concept described above of categorising or tagging the different content must necessarily be one of the elements to be able to organise discussion threads, participations in forums and e-mail messages, avoiding hierarchical and, in many cases, fruitless directory structures.

e-mail, in particular, must be mobile, i.e. the user must be able to check it without having to go through the Campus, and from different mobile devices, such as a PDA, a phone or a smartphone. The ability to check, send, tag and delete messages must be synchronisable with the same e-mail application on the Campus. To be able to check e-mail offline (download e-mail without deleting the messages from the server), it would be a good idea to establish IMAP e-mail accounts and establish user account policies to determine disk quota per user and/or the maximum size of files attached to each message. This lightens the load of the e-mail server and makes e-mail easy to check without having to depend constantly on a permanent internet connection.

The inclusion of a delegated, real-time notification system is also considered to be a very useful functionality (providing the user is connected to the internet), for example for new e-mail messages, new entries on active forums or noticeboards in which the user is participating. These days, the system of flagging is a primitive functionality, considering the possibilities available to us. A clear example of this kind of functionality is the one offered by Gmail notifier, a tiny desktop application which notifies us of incoming mail in real-time.

Within the environment of identifying users connected to a working area, such as a classroom, it would be a good idea to activate a system for identifying user "situations" beyond whether or not they are online at a specific point in time. This option could be extended so that the user can determine (within a limited series of options) their status. A user could be online but not necessarily in front of the computer at all times. Based on the determination of the user's activity, the Campus could establish a specific status, e.g. if they do not click anywhere in the Campus during a specific period of time, the system might indicate that they are online but "away". This kind of notification is useful for other users and can be found in applications such as MSN Messenger, Skype or GTalk. The user must also be able to determine what they want their status to be at all times.

Parallel to this kind of status, a system of notifications as to what a user is doing at a specific time during the day could also be included. This is applying the philosophy of short, personalised status messages such as the ones we can find in applications such as MSN Messenger, GTalk or, more specifically, Twitter.

In the area of forum tools, we have bbPress, an excellent integration solution which interacts with blogs on the Wordpress publication platform. bbPress, as a CMS created for managing forums directly, could be a good solution for making discussion threads accessible from the outside and to package content. The amount of pre-existing connectors and templates, the ability to create new, customised ones and the fact that the application is easy to use means that it is a strong option for forum publication.

Application within the context of the UOC

The use of these scenarios within the context of the UOC involves bearing in mind a series of variables, depending on whether we are talking about synchronous or asynchronous scenarios.

/ These tools must be able to **work separately or be associated with specific work areas** (e.g. for groups) so that we can generate as many as necessary and decide who has and does not have privileges of access, edition, etc.

/ In the case of real-time, multiuser discussion areas, it would be a good idea to develop **material to provide guidance on how to lead/moderate** to achieve maximum performance in terms of learning.

/ The functionalities expressly designed to support the learning process and knowledge-building also need to be accompanied by a manual or tutorial which will explain the various uses they have and how to take the most advantage of them.

/ The synchronous communication areas open the door to a new dimension of training which has a direct repercussion on the teacher's role, but also on that of the student and the processes of social interaction between students, be these formal or informal. This new dimension has a direct impact on the learning process, multiplying the type of social practice situations which can be generated and, therefore, the opportunities for building knowledge.

/ The operation of synchronous communication scenarios necessarily involves **flexible timetables**, both as regards student and counsellor availability. In the case of the teaching staff, it has an impact on the extension of dedication which must be assessed and taken into account, since it is associated with the need to redefine the profile of the collaborating teacher. This is something which their job may or may not require, but will affect the payment or compensation that they receive from the institution.

/ The offer of learning activities in synchronous scenarios means particularly bearing in mind **whether or not they are compulsory**, so that they do not condition the student's ability to follow the teaching and affect their availability.

/ As regards the type of tools, we think it is a positive thing for them to emulate or be close to the **benchmarks known to most internet users**, such as Messenger, Skype, Gmail, etc. (if we do not decide to integrate these same tools directly). The justification is that these are tools of proven usability and with which most users are already familiar.
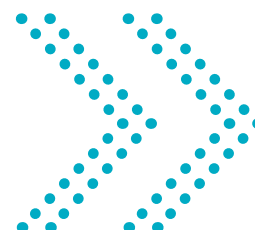
Axis 5

Virtual Classroom / 2.0 Areas

Context

The appearance of the Web 2.0 has meant a development of educational scenarios, based on the idea of socialising the resources and tools available on the internet. This idea is supported by, and structured on, the development and spread of the use of tools relating to the creation of social networks and learning communities (working on a social network or networking, or social scheduling), tools for social and intelligent organisation or management of information and tools which make it easy to create content, read it and distribute it among internet users.

The use of this kind of instrument and the educational possibilities associated with them is absolutely coherent with a pedagogical focus which considers the process of teaching and learning as a social and interactive activity, in which knowledge is built within the context of participation in a specific learning community.

The requirements of the EHEA also follow the same lines of encouraging the student to play an active role in the configuration of their training itinerary and the development of competences which will allow them to become more and more autonomous within the different social learning contexts in which they are participating.

So the pedagogical value of the tools grouped together under the philosophy of the Web 2.0 within a higher distance learning institution like the UOC cannot be obviated. Firstly because this philosophy can help us to redefine educational practices in a direction which is more coherent with the demands of present-day society and secondly because it is a privileged meeting point, a point for exchanging and generating knowledge for more and more users.

Configuring educational scenarios on the basis of the 2.0 philosophy within the UOC's context of training means, therefore, not only adding some of the tools deriving from this conception with a more widely-recognised educational potential to the Campus and classrooms, but also starting to conceive the training action from a more open, dynamic and social perspective, that is, like something which can be configured on the basis of the participants' own constructive activity.

In this sense, the scenarios we present below propose, on the one hand, the use of new instruments and resources available on the internet for designing and developing learning activities, such as wikis, blogs, content management systems, community or social network managers, tools for creating and exchanging information in different formats and other applications. This means, in some cases, direct integration of some of these tools into the classrooms, whereas in others it might involve the specific development, within the classroom, of functionalities which emulate the operation of some of the tools mentioned and adapt them to the structural and conceptual requirements of the Campus.

Essentially, however, it is a matter of opening up the classroom to a series of open-access resources, so that the training action makes sense and is configured on the basis of the objectives proposed and the participants' activities, rather than according to the tools and resources directly accessible on the classroom's technological platform.

Possible scenarios

Scenario 5.1. Collaborative learning and social knowledge-building

This is a scenario which covers a whole range of teamwork situations, oriented, on the one hand, to generating collaborative learning processes (linked to learning strategies based on problems or projects, collaborative research, etc.) and collective knowledge-building, focusing on the shared preparation of the discourse for building and the progressive improvement of knowledge objectives.

This scenario includes a series of tools to be used in combination or separately. Apart from the classic **discussion tools** like forums and chatrooms, it includes other instruments capable of providing **specific support for collective work processes**, such as wikis and blogs, systems for the share management of different kinds of content and in different formats (repositories or shared databases), or systems for people to organise their own teamwork (such as planners, calendars, etc.)[3].

In general, this kind of process requires students to be distributed in work groups which can function more or less separately. The scenario therefore needs to consider having a tool integrated with the classroom which will allow **groups to be created and managed** so that the counsellor can create different working areas for each groups and allocate specifically-selected tools (selected either by the counsellor or the members of the group).

The integration of this tool within the classroom area must allow the counsellor to manage the various work teams in relation to the general dynamics of the classroom and the rest of the tools involved.

Apart from the resources which are more directly linked to the performance of learning activities, a scenario of this kind also needs to include areas for work teams to socialise, i.e. for them to exchange and communicate informal content as a complement and support for the areas for the development of more formal processes (see "Scenario 1.3." *Axis 4. Synchronous/Asynchronous Communication*).

Technological scenario: the use of these applications must be based on a fundamental premise for establishing the most adequate models for each solution: interoperability between applications. In this sense, regardless of the technology used at any one time, and for each response to the needs detected, content from different sources can be re-used to create new materials. It is also important to emphasise that solutions which require totally different configurations or ones outside the institution's own technological strategy lines are not scalable or sustainable. A series of qualitative parameters need to be established for the applications to be studied in each case to see what the best technological solution is. In this way, we can determine which are the best "standard" UOC solutions for each requirement, avoiding using a wide variety of programmes for executing similar or the same tasks.

Linked to this and depending on the technology used for each kind of initiative, content can be exchanged or collaborations entered into with other institutions for creating common repositories.

One of the key elements is expected to be that these applications can be used outside the scope of the Campus and be fully accessible from the internet. In this way, we could have collaborations between different users and collectives who are not necessarily linked to the UOC. A good technological solution, from the point of view of perimeter security, must be established to make the applications secure. As regards control, user profiles and roles must be administered carefully and be maintained to determine when they expire on a case-by-case basis.

Scenario 5.2. Areas for work and coordination of teams of teachers

This scenario refers to having configurable areas for work and for coordinating teams of teachers, where the term "teams of teachers" is taken in a wide sense to mean groups of counsellors, tutors or teaching staff, or integrated teams linked to a the same subject, course of studies or activity in which these different profiles might be involved.

These are spaces which are needed to **cover the requirement for coordinating the different professional profiles involved in the design, planning and assessment of subjects and studies in accordance with the guidelines established by Bologna**, and in the conception and development of

research and innovation processes. According to these, student training itineraries must be considered from an integral perspective and this means resizing all the stages of a training process from an interdisciplinary perspective, rather than from the bias of each subject.

This scenario also covers the need to create more informal work communities but which, at the same time, are important as catalysers for the teaching staff's professional development processes.

The series of tools included in this scenario does not differ substantially from the previous one. What fundamentally characterises each of the two scenarios is the purpose of the work processes for which they are designed. If the former focuses on developing teaching and learning processes, the latter is dedicated to the exchange of resources and knowledge on concrete themes, the coordination of planning processes or the joint creation of materials, etc.

So, apart from different kinds of **communication tools**, this scenario places special emphasis on **tools for the generation and shared management of content**: wikis, repositories, social list of addresses of interest, blogs, social networks, systems of assessment and participation, etc.

Technological scenario: with regard to social bookmarking, we must mention the fact that it is easy to integrate this in any environment such as the Campus and the current private and bespoke system of personal bookmarks can easily be replaced. The possibility of feeding the bookmarks with various user-generated contributions turns them into a far-reaching and hugely-useful social tool, both for private and teaching use. The option of configuring different types of use for social bookmarks makes them a very powerful, transversal (if required) tool which can be exported to other repositories. If we think that all the content generated by the UOC's social collective can be classified on the basis of its tagging, we can easily establish relationships between tools and content with common links. In this sense, model tools like Delicious, Magnolia, Digg, Diigo, Blinklist, Mister Wong, etc. are clear examples of social bookmarking in a generic environment. We must also highlight the appearance of new, specific mashups which allow a specific system for UOC studies to be created as part of this scenario. Here we find benchmark academic social bookmarkers like CiteUlike, Connotea or Postgenomics.
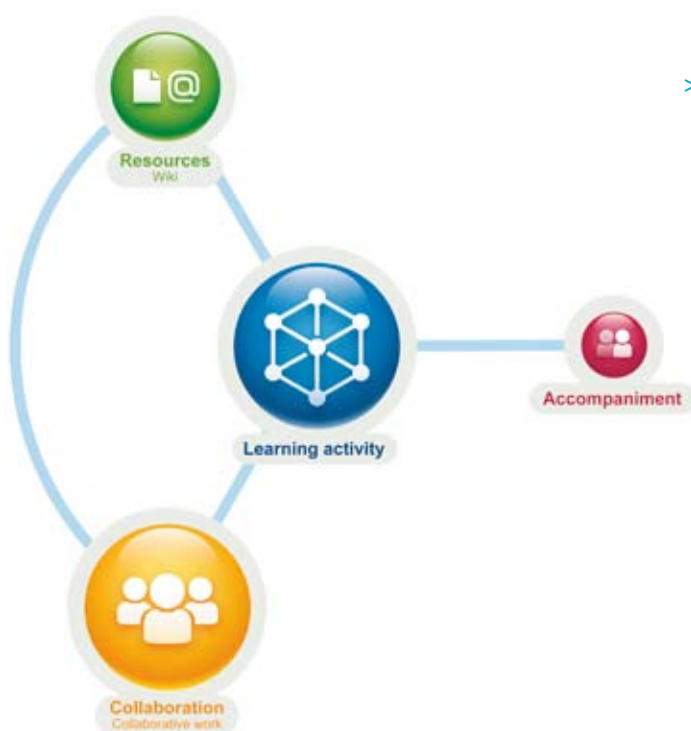
>> **Placement of the elements of the educational model in a teaching scenario which focuses on collaborative work**. This activity consists of a group of students preparing a document using a wiki as resource. However, the main objective of the activity is not the obtainment of the document but the generation of collaborative dynamics and the self-management of how the work is organised. In this case, the relevant element is, then, collaboration and the resource is an element of support. The role played by accompaniment is simply one of follow-up with communication between the students taking centre-stage.

Scenario 5.3. Reflection and management of the learning process itself

This scenario considers the availability of a series of resources and tools which facilitate reflection and the management of the learning process itself, mainly from an individual perspective.

There are some especially interesting tools available for generating this kind of process, such as the blog. The student can use it as an area in which to add information, data, reflections, ideas, doubts, etc. about the work process within a subject or a series of subjects, so drafting the content becomes in itself a tool for learning, allowing them to bring all their metacognitive competences into play. The **creation and maintenance of a personal blog as a tool for self-regulation** may become a learning activity which can be assessed or more or less guided by the counsellor. As a scenario it can be particularly useful in contexts of academic practices, like a diary of reflections; or for establishing field diaries as part of research work (e.g. the dissertation, masters degree project, doctorial thesis, etc.).

The **learning dossier (e-portfolio)** is another necessary tool in this scenario. Here the student provides evidence of their learning process, either within the context of a subject or transversally to their training process (see *Axis 8: Assessment of learning/Assessment of competences*). Such evidence can also be accompanied by personal reflections where the student conducts a self-assessment of their progress in relation to the development of specific competences.

Technological scenario: in order to configure a blog tool, we must make a system available to users which is well-known to most of them, that is, a system of widely-accepted blogs from a social point of view, either because they are easy to use, or the functionalities they offer or their multi-user configuration. Of the tools already in existence, the best one for the scenario considered is, without a doubt *Wordpress* MU, the same multi-user platform that uses *wordpress.com* to host thousands of blogs all over the world. It will allow us to offer as many blogs as needed in a centralised fashion. This particular platform allows us to create and operate thousands of blogs on our network at the same time. We need a specific action plan to configure it. One of the keys to this is determining how far users can administer the blogs themselves without compromising either the stability or the security of the applications servers.

Scenario 5.4. Construction of the personal and professional identity within an academic context

The last scenario we will consider within this axis shares many of the aspects of the previous one, in particular the technological support necessary. The fundamental difference between the two is that in this case it is not a scenario directly linked to developing the learning process and assessing it, but an area in which the users (in this case both students and teachers) can add the knowledge they acquire in formal, non-formal and informal contexts, configuring their personal project throughout their entire academic life, from both a training and professional perspective.

This idea of integrating knowledge built up in different training contexts reminds us of the idea of lifelong learning, in the widest sense of the term, as an area in which the subject takes command of their own training itinerary, shaping it and making sense of it in relation to other dimensions in their life (professional, personal, centres of interest, commitment to society, aspirations, etc.). It is an instrument which goes beyond merely academic purposes and allows the student's training

experience within the institution to be linked to other elements which will help them to construct an identity full of content not only over the length but also the width of their life.

In this respect, all the tools oriented towards the construction and expression of a person's own identity on the internet are particularly interesting. It is not only an issue of creating and building, but also of displaying and sharing resources, reflections, original creations, analyses, work, etc.

In this sense, the most appropriate tools are, to a great extent, those mentioned in scenario 5.3: blog, content manager, file area, e-portfolio, social networking tools (similar to Facebook, for example), etc. so that the user can decide which of this content they want to publish openly on the internet and which they do not.

Technological scenario: within this context, we are considering using a modular profile tool to create social networks so that different utilities can be added as the Campus users' academic life grows. The benchmarks we would consider here are Facebook, MySpace or Xing. The creation of a social network where users can create their own profile (personal, academic, professional) as a platform for promotion and exchange. The ideal scenario would be to work with an interoperable model so that it can be integrated easily with a public application such as Facebook. We do not consider the creation of a new, totally different tool to the one already created and under constant development to be either viable or sustainable. The standards with which these environments are being developed should be analysed to make them similar to the UOC tool ones. The integration of social networks within the Campus involves it being directly interrelated with parts of the classroom from which resident content and information can be displayed in a totally transparent fashion and based on user privileges. We are not considering a tool which is 100% for private use. A minimum amount of information needs to be public and later each person can determine their level of involvement in the UOC network.

Application within the context of the UOC

/ As we said when introducing this axis, it is important to **think of the classroom as an open, configurable area** which allows us to choose whether we want to use immediately-accessible resources/tools or whether we will add other instruments/applications available on the internet, depending on our objectives.

/ We need to find technological and methodological solutions which will allow us to **harmonise the combined use of the tools offered in the classroom** as a structured package of resources for more general training purposes within the context of the UOC and **other tools available on the internet** which will allow us to explore miscellaneous and specific learning scenarios, as well as the professional development of the teaching staff.

/ The scenarios being considered in this axis have an **essentially-methodological dimension**. That is, rather than technology, the thing that shapes each scenario is the kind of practice and activities considered there. This means that the **repertoire of specific tools which each scenario can include is extremely large and open**. Identifying the most appropriate resources and instruments for each purpose is something to be done on the basis of real experiences with innovation and search processes which give rise to best practices, from which each of teaching scenarios and their practical applications can be consolidated.

/ Each of the scenarios needs to be considered from two different dimensions: one which hinges around the design and management of the areas and tools available to the counsellor and one for users (generally students) to make use of these areas, which also includes a certain margin for configura-

tion (in this case, more limited) to encourage the self-management of the learning process itself, either individually or as part of a team. That is, in some way **it is not only the teacher who is in control of the tools being used in the classroom**, but all the participants. That is why a single tool does not necessarily have to be accessible for all classroom users, but can be exclusive to a work group or even a single user (for example, a blog or the e-portfolio).

/ Beyond the specific scenarios proposed, it is important to consider the informal dimension of learning within the Campus (and also outside the classrooms), encouraging the creation of areas for communication/exchange among all the users, which go beyond the structure of the platform itself and open up to the internet (forums, shared resource areas, etc.)
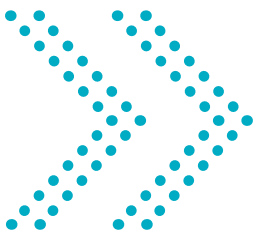
Axis 6

Web /
Virtual Worlds

Context

Generally speaking, both the classrooms and the Virtual Campus provide access to online training through web pages. Although they are dynamic and interactive interfaces with a certain depth in terms of informational architecture and provide access not only to informative content but also to a large number of tools and services, they are still based on the internet's predominant metaphor: the web page.

In this axis, we introduce another, different metaphor for access, browsing and relating to people and objects: that of the virtual world or immersion environment. The common feature of all such environments is browsing in a simulated, 3D world where the users acquire a physical presence and can move around, create or manipulate objects and relate with other users. The most usual examples of virtual worlds are *Second Life*, *Active Worlds*, or *Entropia Universe*.

Possible scenarios

Scenario 6.1. Performance of occasional activities

These are specific activities, carried out entirely within the virtual world but which do not modify either the structure or the methodology of the training action which is taking place on the virtual classroom platform, e.g.

/ Guided tours around natural or architectural environments.

/ Exercises with 3D simulators (driving vehicles, filming or taking photographs, handling objects, etc.).

/ Conversation sessions in areas with a voice chatroom for learning languages.

/ Etc.

Scenario 6.2. Performance of blended activities

These are activities which occur in part within a virtual world and in part in areas and with tools in the virtual classroom, e.g.

/ A *Role Playing* activity in which part of the action takes place asynchronously in the classroom forum where, in turn, synchronous meetings are simulated in a room created within the virtual world which simulates, for example, a company's offices.

/ A complex simulation where the student must interact synchronously in different situations but where they must previously have prepared information (e.g. sales, interviews, multi-sided negotiations, legal activities, etc.).

/ Etc.

In these cases, the actions carried out in one environment or another will affect each other mutually, and the rhythm of the action will be close to that of a real action, where synchronicity and asynchronicity are constantly crossing over.

Placement of the elements of the educational model in a teaching scenario where the learning activity develops within an immersion world. In this activity, collaborative dynamics are also very important, since the task is to scenify real action where the students take on different roles and relate to each other on the basis of these roles. In this case, accompaniment does not play an important part, beyond its usual function of providing guidance, assessment, follow-up and evaluation.

Scenario 6.3. Total immersion of teaching in the virtual world

All the training action takes place within the virtual world. This means that we need to create the areas and tools necessary for it to develop fully: classrooms, work and discussion areas, libraries or resource centres, internet cafés from which to access the internet, games areas and places to relate socially, blackboards for the students, trays or mailboxes in which to receive information or instructions on the activities, offices for tutoring, etc.

One necessary aspect is that the area must be connected to a great extent with the exterior (towards the institutional platform, the internet in general and the virtual world to which it belongs, e.g. towards all the other resources on SL, if necessary).

This kind of connectivity should allow us to combine various visual solutions, depending on the degree of integration. For example, the projection of videos from a *YouTube* channel to a plasma screen TV, in case of high integration; or a window of the browser opening to display web pages, in case of low integration.

Technological scenario: for all three of the scenarios considered, we could lean towards developing two paths of action. One would be the process of immersion in a virtual world where the 3D technology is managed by simulator/videogame architecture supported by the Ogre3D graphics rendering engine, the ODE library by real-time interactive simulation rendering, OpenAL technology by 3D positional and multi-channel audio rendering and CeGUI technology by the creation, management and graphic user interfaces (GUI).

One more thing: we believe it is important to commit to Silverlight technology for representing enriched applications based on standard XAML language (*eXtensible Application Markup Language*), so that attractive and fully-interactive graphic applications can be developed with the ability to be multi-platform and easily carried over to different multi-device application environments, beyond the concept of web pages.

Application within the context of the UOC

To develop the UOC educational model within this axis, as for the educational use of virtual worlds within a context of virtual learning in general, we propose bearing the following considerations in mind:

/ Commitment to a **sufficiently-stable and sustainable technological solution** to guarantee ongoing use and a wide horizon for development. This means that the chosen solution (or solutions) must be supported by a large community of users and developers.

/ Development of a **technological engine for speedy and economical edition of teaching resources and a high level of interaction by students and teaching staff** (that includes the possibility of creating new objects, tools, areas, equipment and avatars). In other words, its use cannot be limited to a single 3D area in which to move around.

/ **Integration of the virtual world within the predominant metaphor of the virtual learning platform and the internet** in general. The activities and/or areas resolved with the immersion world cannot constitute an isolated environment, cut off from the rest of training activity. From here one must be able to interact and access external tools and information (internet, other classroom areas, digital content on various formats, etc.) and vice-versa.

/ Creation of **methodologies and tools for monitoring and assessing the training activity**, adapted to the metaphor of the immersion world. At the same time, it is important for the records generated to be added automatically to the monitoring and assessment applications on the platform.

/ Browsing and interaction with the environment requires a minimum level of knowledge and familiarisation from the users. Therefore we need to resolve the **issue of the students' and teachers' prior skills** through workshops or other kinds of training activities.

/ Technologically, we must bear in mind one fundamental aspect when gradually implementing this kind of environment, and that is that the development of the **minimum requirements for user equipment** also has to have a specific rate of progress. To deploy 3D solutions, we need equipments with a 3D accelerator graphics card with a minimum of 256Mb of RAM which is not shared with the pre-existing memory on the computer. These minimums should help us to reflect on gradual implementation, as proposed in the methodological scenarios, so as not to undermine the huge possibilities that these approaches have, but without this being an insurmountable barrier to thinking about their full potential. As regards the server, we must remember that the two key factors are, on the one hand, the server's ability for the synchronous representation of the actions carried out by the users in different environments and, on the other, bandwidth (communications area) to be able to manage the traffic generated by these individual and/or group interactions.
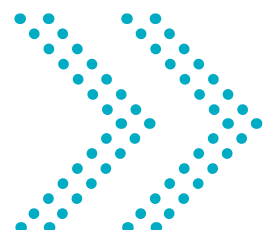
Axis 7

Computers / Other Devices

Context

The computer is the electronic device through which students are granted full access to the UOC's training offer. Recently, the mobile phone has been added, although only to provide support for occasional functions, such as checking marks.

The current technological context opens the door to considering a wider and more generalised use of other devices, both for gaining access to institutional information, querying or performing academic processes or participation in the learning process. We are referring to devices capable of storing and displaying multimedia data, connecting to the internet in a non-localised fashion and using the basic working programmes, among other functions. Not all devices provide all these opportunities, since they are designed to be used in different ways for a variety of situations.

The following scenarios are included to illustrate some of these uses and situations, indicating which devices could be used as the most appropriate media (MP3 or MP4 players, iPods, Media Centers, personal organisers (PDA's), mobile phones, games consoles etc.)[4]. Let's take a look at them.

Possible scenarios

Scenario 7.1. Access to non-localised multimedia content

Students access multimedia content downloaded onto their mobile devices. They can do this in situations which involve travelling or temporary locations: public transport, a bar or restaurant, waiting rooms, walking along the street, etc.

Devices:

/ MP3 player (audio).

/ MP4 player (audio and small-format videos).

/ iPod (audio, long videos, podcasts and audio books).

/ Etc.

See Axis 3: *Text/Multimedia Content* ("*Scenario 4. Creating multiformat content*").

Scenario 7.2. Localised access to multimedia and audiovisual content

Users access information about the university and audiovisual and multimedia content on courses and subjects. They do so through a remote control and viewing the content on the television.

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4. Considering the enormous versatility of the PC as a device, we have obviated in most of the scenarios, except for its use as a Media Center. What we are attempting to do here is to highlight the capabilities and uses of other devices.

Devices:

/ Media Center + TV (multimedia content; TV programmes, films, videos, radio programmes, image galleries, etc.; web access via the browser window).

/ Personal computer with Windows Media Center operating system (idem).

/ Games consoles (access to the internet, videos, audio, image galleries).

See *Axis 3: Text/Multimedia Content* ("*Scenario 4. Creating multiformat content*").

Scenario 7.3. Browsing, communication and access to documents

The users surf the Net, access their usual areas and communication channels (the portal, the Virtual Campus, the classroom, e-mail, forums and discussions, etc.); they also open and modify work documents (presentations, texts, spreadsheets, etc.) as far as the device's ergonomic features allow.

Access takes place in locations with Wi-Fi connection.

Devices:

/ State-of-the-art mobile phones with Windows Mobile operating systems or Google applications (internet browsing, e-mail access, receipt of SMS messages, opening, changing and storing work documents, etc.).

/ Personal organisers: PDA's (idem, except for calls and receipt of SMS messages).

/ Portable games consoles, such as Nintendo DS (internet access and TDT).

Scenario 7.4. Simulation, games and immersion environments

The user accesses learning activities within an immersion environment (simulations, 3D recreations, etc.).

Devices:

/ Games consoles (access to games and immersion environments, local and remote interaction with other users).

Application within the context of the UOC

The following considerations need to be borne in mind to make the scenarios described possible, and to perform the activity normally:

/ Having general technological specifications for creating or adapting content for the different devices.

/   Defining uses and resources (teaching, informative and communicative) for the various devices based on a specific style book for each medium.

/   Implementing communication and distribution strategies regarding the possibilities available to UOC users.

/   As a technological scenario for deploying the methodological contexts considered, we need to act on an open platform of applications for mobile devices. This platform needs to have an open operating system which includes the development of graphic interfaces and the applications which the devices support. As a reference point, based on such characteristics, we are referring to the Google platform for mobiles, known as *Android*. Our technological commitment to an open platform, against more widely-extended platforms like Windows Mobile or Symbian is based fundamentally on the ability to create the applications needed, thanks to its SDK.
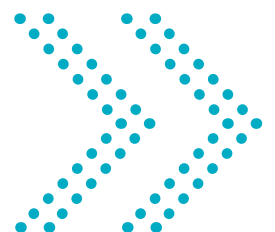
Axis 8

Assessment of Learning / Assessment of competences

Context

The process of adaptation to the European Higher Education Area requires the implementation of a model of teaching and learning and assessment of competences. This model is based on the idea of a continuous assessment of training as a system for providing the student with information on their development throughout the entire learning process, so that they can self-regulate the situation and optimise the work performed as far as possible. It is a question of generating mechanisms and strategies for permanent exchanges between teacher and student, providing mutual information about the latter's progress in the development of the competences proposed, for the purpose of introducing or modifying the facilitators at play.

Within the context of the UOC, continuous assessment has been its consolidated practice for several years now, although the relative value afforded to it in proportion to the overall mark has increased over time. The current trend is to give it fundamental specific weight, until it becomes the axis around which the students' training and accreditative process as a whole can hinge.

Assessment of competences involves a change of focus as regards the object and extent of the as-sessment. On the one hand, what is being assessed is not the knowledge linked to a specific part of the content, but the students' overall capability to develop a series of tasks linked to professional life within a specific area of knowledge. This perspective has implications at different levels. On the one hand, it requires the learning activities proposed for the students to be oriented towards work and the assessment of the degree of achievement of a series of competences. On the other hand, it forces us to stop using the subject as the only context of reference for the work and the assessment of these competences, and to change to considering the student's training itinerary as a whole. It means considering assessment from a more transversal and interdisciplinary dimension, and overcoming the strictly marks-based, traditional role, limited to the context of a subject.

This axis, therefore, incorporates initiatives oriented towards the counsellors intensifying and speeding up ongoing monitoring of the students' learning process, as well as encouraging the use of alternative strategies for assessment which help the students take responsibility for achieving individual and group competences, such as self-assessment and peer assessment.

Possible scenarios

Scenario 8.1. Ongoing monitoring of learning activities

This scenario discusses a series of strategies and instruments included in the tools normally used in the virtual classroom, oriented towards facilitating ongoing monitoring of the students' learning process.

Firstly, it is a matter of enhancing communication channels between the counsellor and the students (and even the tutors, too) so as to provide mutual feedback as to how the work is developing as the activities are performed.

Initially, it means **optimising the use of available communication tools**, which refers us to *Axis 4: Synchronous/Asynchronous Communication*. Secondly, it means having a series of **mechanisms for counsellors to obtain information, more or less automatically and on an ongoing basis, about the task performed by the students**. This is directly related to the **improvement of the PAC manage-**

ment system (system of partial releases, establishment of deadlines, recording of releases, simultaneous recovery of files), but also to making the **administration of the information generated during the process of teaching and learning more efficient**, e.g. with the use of tools such as forums, wikis, blogs, etc., to make it easier to obtain information which can be assessed. **Access to metrics or the student's historic activity in the classroom** (consultation of materials, frequency and times of connection, use of specific tools, etc.) might also be a useful tool to get timely, general, orientative information on the individual or collective students' behaviour in the subject.

This scenario also considers **specific mechanisms to make it easy for the counsellor to return information to the student** after monitoring or assessing the process performed. Here we are referring, for example, to systems of annotation and/or correction which are visible to the students; an application in which each student's partial marks are centralised, from whence the end mark can be obtained automatically at any time during the process, etc.

Scenario 8.2. Self-assessment and peer assessment

This scenario refers to a series of strategies and mechanisms oriented towards the creation of alternative channels of assessment in which it is the students themselves and not the teacher directly who control the assessment.

Based on the idea of involving and getting the students committed to their own learning process, it is a matter of making them a part of the ongoing assessment of the process, so that they will become aware of where they are lacking and see possible ways for improvement. This includes both self-assessment and peer assessment systems. In the first case, we are referring to making tools available to the students which will help them perform self-corrective or configurable exercises for the automatic correction of activities, for example, self-assessment questionnaires.

This scenario would also include functionalities which facilitate both the criteria and the mechanism for performing assessments, either of their own work or that of others. For example, systems for assessing documents published in a common area, content edited in a wiki, contributions made in a forum, etc, with tagging or marking of content according to pre-established criteria, etc. Making the use of signatures systematic might be an interesting option for occasional activities.
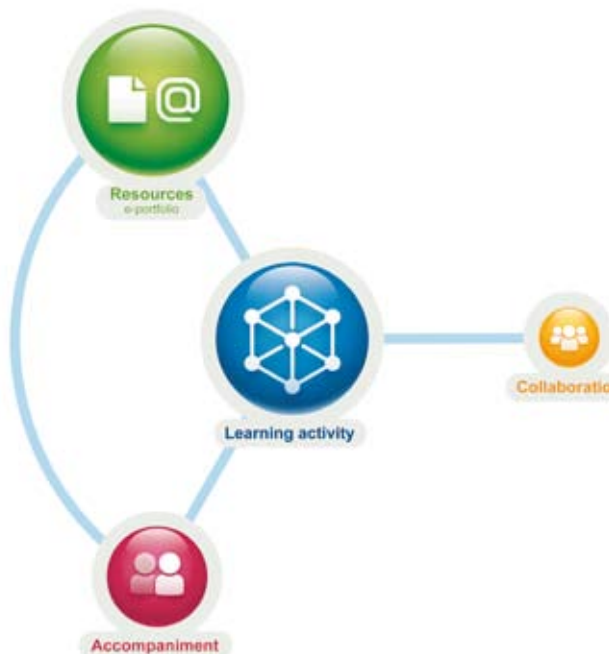
>> **Placement of the elements of the educational model within a teaching scenario which focuses on the self-assessment of competences with an e-portfolio tool**. This is a self-assessment activity where the student provides evidence and reflections about the taks performed duthe teacher conducts a follow-up and returns comments about the elements published, helping the student re-orient and optimise the process as far as possible. In this case, the social or collaborative component plays a supporting role.

Scenario 8.3. (Transversal) Assessment of competences

This scenario includes a series of measures to help assess how far the students have achieved certain competences, beyond the context of the subject itself.

The scenario includes a **schedule/agenda which is transversal to several subjects**. This tool allows us to establish deadlines for performing the different learning activities involved in the work on certain competences and includes a system which notifies the end of the deadlines. Both the students and the counsellors for the different subjects for which they have enrolled each semester must be able to manage it, so that it is available for the students' personal use and for the teachers to add the tasks and deadlines still pending in relation to the subject itself (and can also access information on all the other subjects).

Transfolio[5] is another of the tools required in this scenario. It is an area expressly dreamed up where the student can manage and accumulate proof, of different kinds and in different formats, of what they have learned which can be accompanied by personal reflections about it all. This evidence will act as a testimony to their work and the achievement of competences, both within a specific subject and over the student's entire training itinerary. At the same time, transfolio becomes a training instrument in itself, since it encourages delving further into the content and strategies worked on through metacognitive processes.

In this way, we can trace and perform a graphic follow-up of the training itinerary configured for each student throughout the entire study process, as well as for the series of competences achieved and those still pending. The student can decide which content to publish and make assessable and which they wish to keep solely for their own personal use. With this instrument, the counsellor can assess which tasks and proof developed or generated within other subjects show the work or achievement of shared competences.

Finally, this scenario considers the **possibility of counsellors and teachers accessing each student's full academic file**, specifying the work and degree of achievement of competences (based on the mark obtained) throughout the student's entire training itinerary.

Scenario 8.4. Assessment of the processes of joint knowledge-building

This scenario shares part of the tools discussed in scenario 7.2, but focuses on the systems for assessing joint or collaborative knowledge-building processes, and of the resulting knowledge products.

This scenario includes systems for the graphic representation of social networks (sociogram) associated with the use of tools for the discussion and creation of discourse such as forums and wikis, etc.

It also includes tools for tagging and annotating content to facilitate organising it into categories, accessing it and the quantitative and qualitative analysis of the information generated as a result of collaborative/interactive processes, which, in turn, provide indicators of the quality of such processes in terms of progress in advancing the social construction of knowledge.

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[5] We are referring to the tool conceptualised in the Systemic assessment of transversal competences through the electronic transfolio (e-transfolio), directed by Elena Barberà of the Psychology and Educational Sciences department.

Application within the context of the UOC

The assessment model proposed with this axis means reconsidering a large number of the processes associated with teaching, coordination and management, in the same way as of the roles played by the main persons involved.

/ To start with, all the elements involved in the assessment process need to be considered with a sufficient degree of flexibility as to allow them to be **adapted to the specific features of each programme and subject**, considering various formulae which respond to the characteristics of each specific context. So, for example, we need to set up subjects which can be worked on either as a chain or in parallel form and which share part of the assessment activities, even though they are approached from different disciplinary perspectives.

/ This idea of transversality of the strategies and activities for assessment between subjects should also be understood from a longitudinal perspective, that is, as a **system which allows what the student learns in the course of their training to be linked together and turned into a coherent whole**. We must bear in mind that the achievement of each competence can hardly be restricted to the context of a single subject, so we must consider all the subjects which work this competence in the course of the training in question.

/ This flexibility needs to be reflected in the offer of a **repertoire of training and assessment options which will allow the student to configure their learning process based on the chosen training itinerary**, both within the context of a single subject and in the course of all their studies (for example, through selection and the series of learning activities to be carried out, the assessment strategy to be followed, etc.).

/ Giving the student the autonomy to configure the training itinerary means recognising them as the main player and the primary person responsible for the learning process. Involving and getting the students committed at this level means promoting strategies for them to be aware of their progress. This means **turning over part of the control of the assessment process to them, so that they can self-regulate their actions** at the same time as they develop strategies and assimilate the criteria necessary to assess their own work and that of their classmates.

/ The development of the teaching tasks associated with the proposed scenarios, in particularly as regards monitoring the learning process on an ongoing basis and the constant return of information to the students involves a **considerable increase in the dedication required of the counsellor, which means that we need to consider reducing the number of students per classroom**. At the same time, however, we need to **re-define the function of the counsellor** and adapt the kind of commitment required from them to the salary they receive.

/ **Another of the figures we need to revise within the concept of this axis is the tutor**. They play a fundamental role in guiding the student towards designing their own training itinerary and in developing a continuous assessment plan which is guaranteed to succeed, as well as specialised assessment within the context of building a professional project.

/ Re-dimensioning the assessment model transversally and longitudinally to become a way of assessing competences means **considering teaching coordination processes**, both as regards the design of subjects and their assessment proposal, and their development. This coordination needs to involve the entire teaching team, including the teaching staff responsible and the collaborating teaching staff, i.e. counsellors and tutors.

/ Finally, the series of scenarios proposed in this axis lead towards what might be considered a **change of paradigm, specifically a new conception of the object, the purpose and the means of assessment**. In each subject we need to identify what can be assessed and what cannot, how much weight to give to the information generated with the performance of each learning activity and where or not it is relevant. On the other hand, we need to contemplate alternative strategies to the traditional ones to assess the diversity of learning processes which may arise, for example, from a perspective of collaborative knowledge-building.
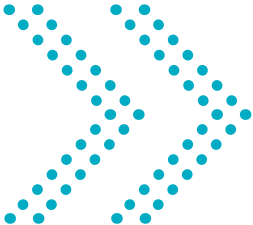
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