



OIKODOMOS: a virtual campus to promote the study of dwelling in contemporary Europe

Progress Report

Public Part

Project information

Project acronym: OIKODOMOS
Project title: A virtual campus to promote the study of dwelling in contemporary Europe
Project number: 134370-LLP-1-2007-1-ES-ERASMUS-EVC
Sub-programme or KA: Erasmus Virtual Campus
Project website: www.oikodomos.org

Reporting period: From 1/10/07
To 30/09/08

Report version: 1
Date of preparation: 9/08

Beneficiary organisation: Universitat Ramon Llull

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This project has been funded with support from the European Commission.

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Executive Summary

The goal of OIKODOMOS (<http://www.oikodomos.org>), a Greek word for "the builder of a house", is to create a virtual campus to promote the study of housing at a European scale, integrating on-line and on-site activities (blended learning). With this purpose, we are developing new methods to study housing in a multidisciplinary way, interweaving different courses and seminars, digital repositories and on-line learning environments, cases analysis and project workshops taking place at the participating institutions. Community representatives and local authorities in the participating countries are expected to participate in the project's activities.

OIKODOMOS is developing a pedagogic model for a housing studies curriculum which encompasses courses with different subject matters (theory, design, urban planning), carried out in synchronous and asynchronous ways, combining on-line and off-line activities. The goal is to set up innovative learning models with the support of ICT, which enable interdisciplinary education in the field of housing. We expect that the interweaving of these three domains –content, pedagogy and technology– will result in a virtual campus in which ICT is used to transform and improve learning, in content, method and scope.

The OIKODOMOS Virtual Campus is based on the intertwining of three components: architectural content, pedagogy methodology and ICT. This approach was successfully implemented in a previous Erasmus Intensive Programme, HOUSING@21.EU (<http://www.housing21eu.net>). The experience gained with the intensive programmes, has been a motivation to develop a larger and more structured virtual campus to study housing on a European scale.

The learning platform supported by this virtual campus will integrate on-line and off-line learning activities encompassing:

1. Innovative pedagogic methods, which interweave on-line resources with traditional classroom activities to study housing from a multidisciplinary perspective: seminars and studio projects, digital repositories and cases of study, along with joint design workshops, carried out physically and virtually, in a collaborative manner
2. Multi-national and multi-professional activities planned in conjunction with community representatives and local authorities, to study the problems of housing and to propose solutions to it
3. Bologna compatible courses (ECTS credited) aimed to support the creation of future European Master's programs, which combine physical and virtual mobility of teachers and students.

We are developing a technological platform, generic and scalable, that could be maintained collaboratively, and be adapted to the special needs of different partners. The OIKODOMOS technological platform—which is currently under development—, consists of two repositories: a project repository, to store housing projects created in the Virtual Design Studios; and a case repository, to store case studies documented and analyzed in courses and seminars. The unique approach of this project is that it attempts to integrate digital repositories with learning activities, in order to create innovative learning spaces.

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1. Project Objectives

- The creation and wide dissemination of a common knowledge space with shared learning methods and joint courses, widely disseminated). To our knowledge, there are not such learning spaces supported by ICT- like the one we are proposing- to study housing on a European scale.

Based on the previous experience of the HOUSING@21.EU programme, we are now developing a more comprehensive learning environment, which would enable project partners to carry out collaboratively the design and implementation of learning activities, on-line and off-line, synchronously and a-synchronously, in order to build a housing curriculum which can be developed in a virtual campus.

The unique approach of this project is that it attempts to integrate digital repositories with learning activities, in order to create innovative learning spaces. It is expected, that after the project is completed, there will be an operative technological platform, as well as a compendium of learning strategies –tested and validated– which can give rise to a sustainable, replicable learning model to be developed further with the participation of more institutions.

Creating a common knowledge space is a challenge from at least two points of view, in so far as: 1. There are different learning cultures represented by the participating schools: architecture has different accents in different places and this is translated into different teaching approaches. 2. There exist varying level of integration of technologies in teaching and learning among the partners.

- A multidimensional study of housing at a European scale involves not only to students and professors from higher education institutions, but also citizens and professionals, social and professional organizations. Learning activities will promote the participation of citizens and practitioners in the environmental and architectural analysis (visual and spatial analysis of the living environment), in the documentation of case studies (examples of traditional as well as innovative housing forms), and in design workshops (as critics or consultants). Project-based learning activities will be designed to overcome the academic limits (regular courses), with the objective to reinforce the continuum of formal, non-formal and informal learning. Also, the virtual campus will bind together online and offline activities, contributing to the development of a joint European Masters curriculum.

One of the challenges posed by the Lifelong Learning Programme is to support the education of non-academic learners. Designing effective education models which take advantage of ICT to reach learners outside Universities can be a highly demanding task, depending on the subject-matter and leaning objectives. In the case of this project, the subject-matter is housing studies, which can embrace a variety of issues (urban, sociological, technological, and architectural); some of them are better suited to lifelong learning than others. For instance, to make more sustainable houses and cities, it is necessary to count with the participation of citizens. Lifelong learning could support citizen education on this issue.

- The subject-matter of this project -studying housing on a European scale- will contribute to the mutual understanding among European countries, increasing reciprocal knowledge about their specific forms of dwelling (housing forms, urban forms, occupation of the territory, environmental protection, relationships between built forms and social forms, prevalence of tradition). Participatory methods in urban design and in housing design will be reinforced and integrated in the learning activities to promote the active involvement of citizens. Through a better understanding of conditions of housing and the impact on social interaction, the project will have a long term impact on the understanding of social cohesion in Europe. This is especially relevant in the light of the recent and dramatic social problems also related to housing conditions (e. g. banlieu, suburbs and urban sprawling, segregation based on class or race, etc.).

A Pilot Virtual Design Studio was organized by the schools of Grenoble and Bratislava, in the period January-May 2008. The activity of this pilot studio, which involved students from both universities (IUG and FASTU) with French and Slovak practitioners, allowed the evaluation of compatibility with existing learning programme and testing of the ICT tool's asynchronous/synchronous communication protocols. Professionals and local authorities participated in the studio to supervise and tutor students. Links with local authorities interested in this process have been established.

The first workshop organized in Ghent in September-October 2008 will act as a generator for ideas and concepts related to actual European issues regarding housing. Participating students carry out learning activities at their home institutions as a preparation for the workshop. The workshop itself is seen as a catalyst of this preparatory work and as a generator of concepts on housing with a focus on the latest debates in the field. The case study and design work will be continued after the workshop at the home institutions' design studios that run in parallel with each other. The interweaving of mixed forms of learning and teaching (on-line and off-line, design studios and theory courses) will help to develop a unique curriculum supported by a learning environment adapted to it.

- The main advantage of this virtual campus is to provide a chance for virtual mobility, i.e., to virtually visit diverse housing solutions through the Internet, thus making (virtual) mobility accessible to a larger population, partially overcoming economical constraints.

Also, participatory methods will be open to people of all ages. Space perception of disabled people (blind or deaf persons) will be considered for specific housing and urban environment designs, as a result of the experiences acquired by some of the partners on previous studies on this issue. Some of the partners (Sint-Lucas, Brussels, FASTU-Bratislava) have already carried out research with space perception with visually impaired end-users, and they will bring their experience to the project. An understanding of housing and dwelling necessarily implies the participation of mixed-age learning groups which will reflect on their living conditions and needs.

FASTU has carried out a survey of the pedagogic aspects of the perception of architectural design to visually impaired end-users based on palpable lines detection of architectural shapes. The next step is to investigate similar perception of 2.5 dimensional relieves of architectural structures by tender-eyed or blind people, together with the methodology of creation of a digital library of the cultural heritage and 3D printing. Some of these outcomes might help impaired users to participate during design and testing of the virtual campus learning activities.

- The existing web-based learning platform www.housing21eu.net, which was developed during the previous three-year intensive programme, will be further developed and enhanced.

This platform will be transformed into a repository of open educational resources, compliant with established metadata standards, and interoperable with other platforms and LMS. The existing repository of cases of study, already containing over 300 case studies documented and analyzed by students will be accessible to all. Other institutions will be able to design and to carry out their own learning activities using the contents of the learning material repository, contributing in turn to broaden it with new content.

Additional technologies will be added to the existing platform, to support the implementation of virtual design studios, and to enhance communication among learners. This way, the existing learning platform will develop into a laboratory not only about housing, but also about pedagogic methods in architectural education. This research is particularly important since virtual campuses have not really been developed nor much used in architectural education, a discipline which is still largely bound to face-to-face activities. In this respect, this project will

act as a trigger to promote the integration of ICT in architectural education, on a European scale.

During the first year of the project, all of the content of the existing web-based learning platform <http://www.housing21eu.net> has been thoroughly upgraded, and it is now ready to be used by other institutions, subjected to appropriate copyright agreements (e.g. Creative Commons).

A concept for a new platform for the OIKODOMOS virtual campus has been envisioned and it is being programmed by three teams. A joint curriculum is being developed in conjunction with the functionalities of the new platform. Programming a full-fledged technological platform, and the associated learning methodologies, represents one of the major challenges of this project.

- The experience reported by students and staff participating in the previous three-year Intensive Programmes, along with the evaluation studies conducted so far, has been extremely positive, and this has given us the motivation to progress further with developing this pedagogic experience.

In the first place, this new program will therefore aim at structuring, extending and disseminating such good practices in three ways: (1) enhancing the current online platform integrating user's comments and feedback, with specific focus on usability; (2) expanding its features in order to allow more collaborative and interactive activities, implementing Web 2.0 features; (3) implementing metadata standards in order to provide interoperability opportunities and therefore export facilities for other LMS, thus allowing the reuse of digital content.

In the second place, based on the new features of the platform described above, the partners will promote the collaborative teaching and learning methods developed in the program, fostering the integration of ICT in blended learning, with emphasis on collaborative activities, social creation of content (by students, using collaborative design methodologies), and virtual design studios.

In short, the good practices derived from the Intensive Programme, both concerning the platform and the methods, will be systematised, evaluated and disseminated among higher education institutions in Europe.

A usability study has been carried out for the HOUSING@21.EU platform (see PR EP 1 Report). The outcomes have helped to conceptualize the interfaces and functionalities of the new case repository.

After the success of social web applications (blogs, wikis, photo/video sharing, RSS feeds) a considerable amount of work is being dedicated nowadays by the academic community to exploring the pedagogic potential of social software. Different issues are being discussed: new pedagogies (new role for teachers, new skills to acquire); new ways to deliver content (collaborative construction through wikis); property rights (who owns information contained in public wiki); evaluation methods (how to evaluate an image posted in a photo sharing page, a contribution to a blog or wiki). However, we do not see social software as a central focus of the learning platform, but as a set of resources which can be used in conjunction with the functionalities provided by the platform especially developed for the project.

As a matter of fact, the widespread use of digital technologies –especially among the young people– is to be taken into account in this project, given the advanced digital literacy of a large part of its target population. For this reason, the OIKODOMOS learning platform which is being developed is adopting the “language” of web 2.0 applications in order to create tools that meet their expectations in terms of functionalities and interaction. On the other hand, in the design of the new platform it is also necessary to consider the less digitally literate users, creating applications for them which are simple and usable.

2. Project Approach

2.1 Virtual Campus definition

In the glossary of the Life Long Learning Programme 2007-2013, a virtual campus is defined in the following terms: “Cooperation between higher education institutions in the field of e-learning, regarding: design of joint curricula development by several universities, including agreements for the evaluation, validation and recognition of acquired competences, subject to national procedures; large-scale experiments of virtual mobility in addition to physical mobility and development of innovative dual mode curricula, based on both traditional and on-line learning methods. This broad definition involves many issues from partnerships between traditional and/or distance universities and HEI with a view to offering joint certifications (for undergraduate and/or postgraduate levels) and cooperation with learning support services. This might also include collaborative activities in strategic areas of education or research through cooperation involving researchers, academics, students, management, administrative and technical personnel. 'Virtual campuses' should not be confused with e-learning platforms.”

This project addresses the following issues encompassed in the previous definition:

- design of joint curricula development of several universities, including agreements for the evaluation, validation and recognition of acquired competences, subject to national procedures.

OIKODOMOS is developing a pedagogic model for a housing studies curriculum which integrates courses with different subject matters (theory, design, urban planning), carried out in synchronous and asynchronous ways, combining on-line and off-line activities.

- large-scale experiments of virtual mobility in addition to physical mobility and development of innovative dual mode curricula, based on both traditional and on-line learning methods.

OIKODOMOS is designing and implementing learning activities with the participation of students and staff from the participating institutions, with two purposes: 1. to identify critical issues in the design and implementation of courses in order to design later a generic learning structure based on the experience of these courses 2. to implement and test innovative learning activities, such as learning itineraries combining courses, seminars and design studios, taking place both at the participating institutions and in the ICT-based learning spaces.

2.2 Virtual Campus concepts and benchmarking: the BENVIC project

In 1997, Van Dusen defined a virtual campus with these words: “The virtual campus is a metaphor for the electronic teaching, learning, and research environment created by the convergence of several relatively new technologies, including but not restricted to, the Internet, World Wide Web, computer-mediated communication, video conferencing, multimedia, groupware, video-on-demand, desktop publishing, intelligent tutoring systems, and virtual reality.”¹ In this definition, the focus is placed mostly on the technology that allows creating a “virtual” learning space.

In the BENVIC project (www.benvic.odl.org/) carried out in 1999-2000 dedicated to analyze virtual campuses implemented at five European universities, a virtual campus is defined in the following terms:

¹ Van Dusen, G.C. (1997) The Virtual Campus: Technology and Reform in Higher Education, ASHE-Eric Higher Education Report, 25/5, Washington D.C.: The George Washington University.

“The concept of a Virtual Campus refers to a specific format of distance education and on-line learning in which students, teaching staff and even university administrative and technical staff mainly 'meet' or communicate through technical links.”

In this definition, the focus is placed on distance learning, considering the virtual campus as a surrogate of the traditional university, which facilitates communication between members of the university community (teachers, students, staff).

A variety of interpretations about of the notion of Virtual Campus, its structure and goals, can be found in the reports produced by the BENVIC project (BENVIC, Case study descriptions report), among them:

- “The Virtual Campus has to be understood as a dynamic entity that permits the creation of a community dedicated to training and education”.
- “Universities are not self-contained institutions, but rather open and dynamic links in their educational, regional and international environments. Virtual campuses also make these relations possible”.
- “The Virtual Campus is made up of a series of functions that reproduces the structure of a traditional university.”
- “Through the Virtual Campus students can access on-line educational materials, library resources, general academic and cultural information, enquire about student management services, and interact with professors or other students through predefined communication channels such as forums of debate, activity spaces, etc.”
- “The idea of the virtual university emanates from experiences of flexible learning environments and the increasing use of computers in education, business and everyday life. There is an obvious need and demand among students of all ages to develop new learning environments”.
- “The Virtual Campus is one of many methods of teaching and learning within the university and the current issue is identifying and defining where this approach is most appropriate within the overall activities of the university.”
- “The function of Open and Flexible Distance Education may become more and more important for universities in the future: forecasts expect that continuous education for professional updating and upgrading as well as first diploma studies will increasingly be followed by the non traditional audiences of mature students (adults).”

BENVIC distinguished three levels of activities (BENVIC Benchmarking system. Methodological report, p. 6):

- virtual classes: teaching and learning in a virtual environment for campus based students or/and distance learners
- virtual campus: including virtual classes, but also research communication and collaboration as well as scientific services to the society at large - e.g. contract research and consultancy for companies and governmental bodies
- virtual university: including student registration, student and staff administration, and eventually examination and accreditation.

According to this classification, a virtual campus is placed in between a distant university (e.g. an Open University) and an e-learning activity (e.g. a lecture delivered though video).

One of the outcomes of the BENVIC project is a benchmarking system which provides a common language and criteria for the evaluation of virtual campuses. This system (BENVIC Benchmarking system. Methodological report, p. 7) encompasses:

- context: the promoting organisations, the motivation that led to the development of a virtual campus, etc.

- structure: the technology, but also the physical and administrative infrastructure, the network of related teaching/learning centres, the learning resources available.
- services to the students: access to learning, but also support, guidance, certification, informal communication possibilities, etc.
- evaluation devices: evaluating learning, but also to monitor and evaluate the whole “virtual campus” system.

2.3 OIKODOMOS Virtual Campus

The start-phase of the OIKODOMOS Virtual Campus is born out of the interweaving of content, pedagogic methods and ICT tools, in the domain of housing studies. Our goal is to set up innovative learning models with the support of ICT, which enable interdisciplinary education in the field of housing². We expect that the interweaving of these three domains – content, pedagogy and technology– will result in a virtual campus in which ICT is used to transform and improve learning, in content, method and scope.

More specifically, the distinctive traits of OIKODOMOS are:

- Focusing on the learning activities in a specific area of study, in order to design of a joint curriculum which integrates on-line activities and off-line courses, involving physical and virtual mobility.
- Developing a learning platform suited to the pedagogic goals. This platform is composed of two ad-hoc environments: a case repository and a Virtual Design Studio environment. The pedagogic purpose of these environments is to support a constructivist model of education. Rather than simply providing access to information resources, these environments promote a collaborative learning process.
- Interweaving learning activities with a technological platform specifically created for this project. Our goal is to design learning activities which are interwoven with the functionalities of the technological platform in order to create new models of education.
- Contributing to the objectives of the European Higher Education Area (EHEA), promoting a student-centred model of education, and providing mechanisms for assessment and accreditation for the learning activities carried out in the Virtual Campus.

This approach has been successfully tested during the Erasmus Intensive Programme HOUSING@21.EU, carried out in the period 2003-2006 (<http://www.isoc.siu.no/isocii.nsf/projectlist/29467>). In that programme, learning activities were designed in conjunction with the functionalities of a case repository of housing projects, specifically created for the project. Seminars taken place at the participating institutions were interwoven with on-line activities: describing and analyzing a housing case of study, with text and images; constructing a vocabulary of critical terms in collaboration; establishing relations between cases; discussing a project in the forums. Along with these activities, a two-week workshop took place each one of the three years of the programme, in which students and staff investigated new forms of housing, focusing both on the architectural and the urban level.

² “The choice of appropriate pedagogical models and approaches underpinning virtual campuses is of great importance since it has a big impact on the educational experience of the students, in which problems in this area can affect issues relating to student retention and negative attitudes towards e-learning and a lack of active participation.” A. Cartelli et al., (2008) Identifying and Promoting Best Practice in Virtual Campuses and E-Learning, Proceedings of the ED MEDIA conference, Vienna.

The work that was done in HOUSING@21.EU is now being expanded in the OIKODOMOS project: more schools are involved in the activities; more faculty members and students are participating; a replicable comprehensive curriculum is being designed; criteria for evaluation and accreditation are being developed; and a new and more generic technological platform is being implemented.

2.3.1 OIKODOMOS JOINT CURRICULUM

The design of a housing studies curriculum is based on the inventory and comparative study of courses in this area of study in the partner universities. The subsequent analysis has been summarised in order to have an overview of the different learning activities related to housing in the different schools. The consortium has discussed this overview in their meetings. The next step is to establish a common sequence of learning activities, courses and workshops in order to achieve optimum learning results.

Three models of pedagogical cooperation have been identified and will be implemented in the design of the joint curriculum:

1. Integrating asynchronous and synchronous activities
2. Intertwining courses taking place different schools
3. Developing design studios collaboratively, on-line and off-line. In order to have a maximal impact, the consortium is currently investigating local constraints and contexts at each school, before deciding on a joint curriculum.

Organisational issues are being addressed, in order to ensure that innovative educational experiences are properly backed by administrative procedures (registering in courses, assessment and qualification). Addressing properly organisational issues is considered a key issue for the success of virtual campuses.³

2.3.2 OIKODOMOS TECHNOLOGICAL PLATFORM

The web-based platform that supported the activities of HOUSING@21.EU provided the necessary functionalities to administer the courses, to follow the progress of student work, and to facilitate communication between learners (students and faculty). However, as the evaluation reports conducted within this project have shown, even though the concept of the learning platform is still a valid one, this needs to be improved and updated. Therefore, the platform is being rebuilt from scratch in order to become a flexible and scalable environment, which can be used by other institutions.

The OIKODOMOS platform which is now under development combines ad-hoc learning environments with existing technologies, namely, Learning Management Systems (mostly Moodle) and social web tools (wikis, blogs, photo and video sharing). It is composed of two distinct environments, linked through on-line repositories: a case study environment, which enables learners to document and analyze housing projects; and Virtual Design Studio environment, which supports design studio activities carried out on a distant learning basis.

In conclusion, the Virtual Campus that is being developed in the OIKODOMOS project does not necessarily reproduce the structure of an existing university, but it aims to create a new learning space born out of interweaving learning with technology. These activities are no substitutes for those which can be offered at the university (lectures, design studio critiques) but aim at creating new learning models which make sense together with the technology. For instance, documenting and analyzing collaboratively a case study with the participation of scholars and students from different universities, with teachers from different disciplines, and with the participation of professionals, adult learners and citizens; or, making visible the

³ See in this regard, A. Cartelli et al., (2008) Identifying and Promoting Best Practice in Virtual Campuses and E-Learning, Proceedings of the ED MEDIA conference, Vienna.

design process through interfaces which allow third parties (professionals, citizens) to understand and intervene in housing design and planning.

3. Project Outcomes & Results

The expected outcomes of the project are: an innovative pedagogic methodology integrating on-line activities with the curricula at each partner institution, implemented, tested and validated; critical analysis of e-learning methods and tools applied in architectural education (virtual design studios, repositories of cases of study); educational open resources stemming from the learning activities conforming to standards; innovative housing proposals embracing architectural, urban and environmental scale, developed collaboratively by the participating institutions in conjunction with social and professional organizations; evaluation reports of the methods and tools employed and the results obtained; reports of good and bad practices and recommendations for other partners to join the virtual campus.

In the first year of the project, we have completed the evaluation and assessment of the learning environment and the pedagogic methodology applied in the previous Erasmus Intensive Programme HOUSING@21.EU (<http://www.housing21eu.net>). A case repository was designed and implemented for this project, which allowed students and faculty from five European schools of architecture, to carry out learning activities centred on the analysis and documentation of housing cases of study, combined with off-line housing workshops. The objective of the evaluation of the previous learning environment has been to provide insights that would help in the design of the OIKODOMOS virtual campus. Basically, our strategy was to build on the previous experience to advance in the development of technology enhanced learning in architectural housing education.

The following is a summary of the evaluation of the HOUSING@21.EU learning environment, and the recommendations that result from them.

3.1 Assessment of web-based learning environment

An evaluation of the web-based platform HOUSING@21.EU was conducted as a usability study (Oikodomos EP1 Report, 2008)⁴. The aim was to detect most of the problems, obstacles and breakdowns for the user when interacting with the web application. Usability has been defined as “the effectiveness, efficiency and satisfaction with which specified users can achieve specified goals in particular environments” (ISO 9241-11). For e-learning environments and applications, usability is a necessary (although not sufficient, as discussed above) condition for effective online learning. Usability is the property of a mediated learning environment which supports the users as transparently as possible in the accomplishment of their learning goals. Examples of the problems which users might encounter include: easily locating and accessing the needed content; orienting oneself in the maze of different paths and nested pages of a structured website; avoiding being overloaded by the information clustered in a page; and being able to use effectively the navigation architecture.

The usability study was developed following the MiLE methodology,⁵ in its e-learning adapted version. This method has already been extensively and successfully used in a variety of web application domains (e.g. educational institutions, cultural-heritage, public education, and e-government), and that has been used and tailored for e-learning web applications. The goal of the process is to provide course developers and instructional designers with a structured “kit” of guidelines and practical suggestions for a cost-effective usability evaluation of their online application. MiLE works through the definition of a custom usability framework, consisting of user profiles, usability variables and scenarios with tasks.

⁴ Reports mentioned in this text can be accessed at the Project website www.oikodomos.org

⁵ Triacca, L., Bolchini, D., Botturi, L. & Inversini, A. (2004). MiLE: Systematic Usability Evaluation for E-learning Web Applications. AACE Journal, 12 (4).

This usability framework was constructed for HOUSING@21.EU and then used to train the project staff to collect data at their own locations.

The study was carried out with 17 students from Barcelona, Bratislava and Lugano, and the results allowed the identification of both systematic breakdowns, that is issues that affect the overall application, and local problems. MiLE generates both quantitative outputs (rankings of issues) and qualitative ones (user comments).

The results indicate that users perceive the HOUSING@21.EU as a generally good application. Problems identified were mainly in the predictability of user interactions and in the order of layout. The former included uploading pictures, lack of communication (e.g., the lack of error messages) or bugs in the program which stopped the system (e.g., due to overload). More important design problems concerned the use of pop-up windows and the search interface.

3.2 Assessment of pedagogic methodology

The assessment (Oikodomos EP2 Report, 2008) reported on the approaches to learning and teaching used in conjunction with the HOUSING@21.EU environment, the user's perception of these approaches and the general usability of the platform. The retrospective nature of this evaluation was based on a combination of the analysis of end of year reports from HOUSING@21.EU combined with questionnaires completed by staff and students, and interviews with staff.

Questionnaires based on previous work used 4 point Likert (A-D) scales plus a 'don't know' category, open comment boxes and requested brief demographic information.

The main conclusions were:

- The case study repository and associated tools were found to provide a useful body of information with the potential to support interesting educational discussions between students and their tutors. Usability of tools and the response time of the system were impediments to full integration of the environment within some schools institutional programmes.
- The five institutions involved in the project, each took a different approach to using HOUSING@21.EU within their teaching, and different approaches to the allocation of credits for the students work in their regular courses and in conjunction with the design workshops. These inconsistencies need to be resolved if significant progress on collaborative development and provision of courses are to make progress.
- One of the great success of the design workshops was the mutual understanding gained from working in mixed nationality / cultural groups.

3.2.1 Recommendations from the evaluation

The recommendations to be taken into account in the new OIKODOMOS virtual campus are:

- Pedagogic:

HOUSING@21.EU was designed to support a constructivist model of education, and this has been proven to be effective, and appreciated by the students. The future OIKODOMOS platform should maintain the underlying design philosophy but refine the organization and access to resources, and integrate the discussion facilities to be more fluidly accessible from the other resources. More details on the technical requirements for these changes will be given below.

To move towards collaborative provision of courses partners need to:

- Be more consistent in their use of the environment across the partnership, to facilitate collaborative interactions of students in advance of, and during and after the design workshops.
- Develop consistent documentation for courses and modules which are to be made available across the partnership. To be in line with the Bologna Process recommendations this means specification of competencies and learning outcomes, and ensuring that these are mapped through content, learning and teaching methods, to assessment approaches. Consistency will be fundamental to any collaborative developments of courses and materials. This includes fully documenting and explaining the educational justification for allocation of credits for students work.

- Technical:

Recommendations are based on maintaining the functional design of the underlying structure and tools, but enhancing usability and integration:

- Redesign to allow access and use of a range of Web2.0 resources (see below), and make use of the extra functionality within its own structure.
- Provide facilities for multi-language user interface.
- Redesign the menu structure to enhance ease of use and conform to accessibility guidelines.
- Provide better integration of discussion facilities with working windows.
- Blend the Case Study and Design Workshop working environments to allow transparent and integrated access to a working/development and main repositories.
- Create facilities for different levels of user / access rights to the environment.

- General Usability recommendations:

- Include keyword category set(s) for classification of resources, but provide processes for suggestion and selection of additional keywords.
- Provide facilities for multi-language user interface.

3.3 Digital repositories as open educational resources

One of the objectives of the project is to facilitate access to quality learning resources, which can be integrated in learning activities in the field of housing studies. For this reason, we have undertaken the task to upgrade the repository created during the previous Erasmus Intensive Programme HOUSING@21.EU (<http://www.housing21eu.net>), so that it can be used by learners at higher education institutions across Europe.

In the first year of the OIKODOMOS project we have completed a thorough revision of the content of the case repository HOUSING@21.EU, which contains 300 case studies collected in the three-year period of activities (2004-2006). After evaluating the content, we came to the conclusion that it would be necessary to carry out a complete editing of the repository, in order to make it available to other institutions. Irrelevant information (cases, texts, images) has been removed. All texts have been edited to ensure their intelligibility. Also, the vocabulary of concepts associated to cases underwent a thorough revision, to guarantee its consistency and avoid redundancies.

After the content of the repository has been upgraded to the necessary level of quality, it can now be used by other learners. A strategy to promote this repository among higher education institutions in Europe is to be developed and implemented in the coming months.

At this point, the work done within OIKODOMOS could serve as input to another research project dealing with architectural repositories, the project MACE, Metadata for Architectural

Contents in Europe (www.mace-project.eu). The goal of this project is to provide integrated access to contents (text, graphics, images, pictures, films, hypertexts) which are dispersed and loosely connected to each other: “Interconnecting these distributed contents and providing federated search and access will not only tremendously increase the usefulness and completeness of each of these repositories, but also provide a unique pan-European information network for architectural contents.” In order to achieve this connectivity, the MACE strategy is enriching the integrated content sources with metadata in a common standard or a set of standards.

Contacts with the MACE team have already been established, in order to collaborate in the integration of metadata in the new OIKODOMOS repository.

3.4 Evaluation of available technological resources

The decision to build a customized learning environment is a critical one, since it implies to dedicate a good amount of resources to design and programming this new learning environment in a short period of time which then will have to be maintained. Therefore, before committing ourselves to create a new platform, it was necessary to identify and analyze available resources.

These are the tools we have identified and tested, divided in categories:

- Learning Management systems: Moodle, Sakai, Blackboard;
- Pedagogic design: LAMS, Wikis, Forums;
- Distant work: EVO, Skype, Flashmeeting, Vawkr;
- Architectural Repositories: archINFORM, Great Buildings Collection, Archiplanet, Housing Prototypes;
- Media sharing: Google Earth, Youtube, FlickrR, Panoramio.

After evaluating these tools, we concluded that the OIKODOMOS technological platform could not be built exclusively upon existing technologies. Even though an LMS like Moodle provides a ready-to-use comprehensive environment to manage courses, it is not the learning environment we needed since it focuses mostly on the administrative side of learning. Instead, we needed an environment centred on the learning activities: documenting an architectural work, which can be easily explained and visualized with graphics and texts; and developing a design collaboratively on-line. We decided, therefore, to create a learning environment structured to suit the needs of the learning activities and learning outcomes, which would be connected to an LMS for course administration.

Other existing tools, like social software and on-line architectural repositories, will be used as 'Open Educational Resources' (OER) to support specific learning activities, and will be integrated in the OIKODOMOS platform.

3.5 OIKODOMOS technological platform

The concept for the new OIKODOMOS platform has been elaborated and is now being developed and implemented (Figure 1). This platform consists of two repositories: a project repository, to store housing projects created in the Virtual Design Studios; and a case repository, to store case studies documented and analyzed in courses and seminars.

There will be a central database hosted in one server for each one of the two environments. To interact with the database it will be necessary to create a working space. The working space is configurable and can be opened at any place/any time. A working space has two meanings:

1. to create and configure a course which will interact with the database (number of students, teachers, duration);
2. To carry out pedagogic activities (creating cases, adding keywords, making groups) during a specified time.

Any number of working spaces can be configured to develop learning activities which interact with each repository. For instance, a number of schools (architecture, urban planning) arrange to develop a joint Virtual Design Studio. They can query the Case Study Repository to find for relevant examples that can be used as reference. The design is carried out in an ad hoc VDS environment, which is being programmed. Outcomes of the VDS are stored in the repository, after being validated by teachers and campus administrators.

Similarly, a number of schools can decide to carry out seminars on housing studies and will be able to configure a working environment for that purpose. Each institution can develop the work at their own pace, and/or synchronize their activities with other institutions. The content of the repository can be used to make comparative analysis, morphological studies, and the like, which can be discussed in the classroom, and/or on-line. After the courses are completed, the content produced is stored in the repository, once teachers and virtual campus administrators perform the necessary quality checking.

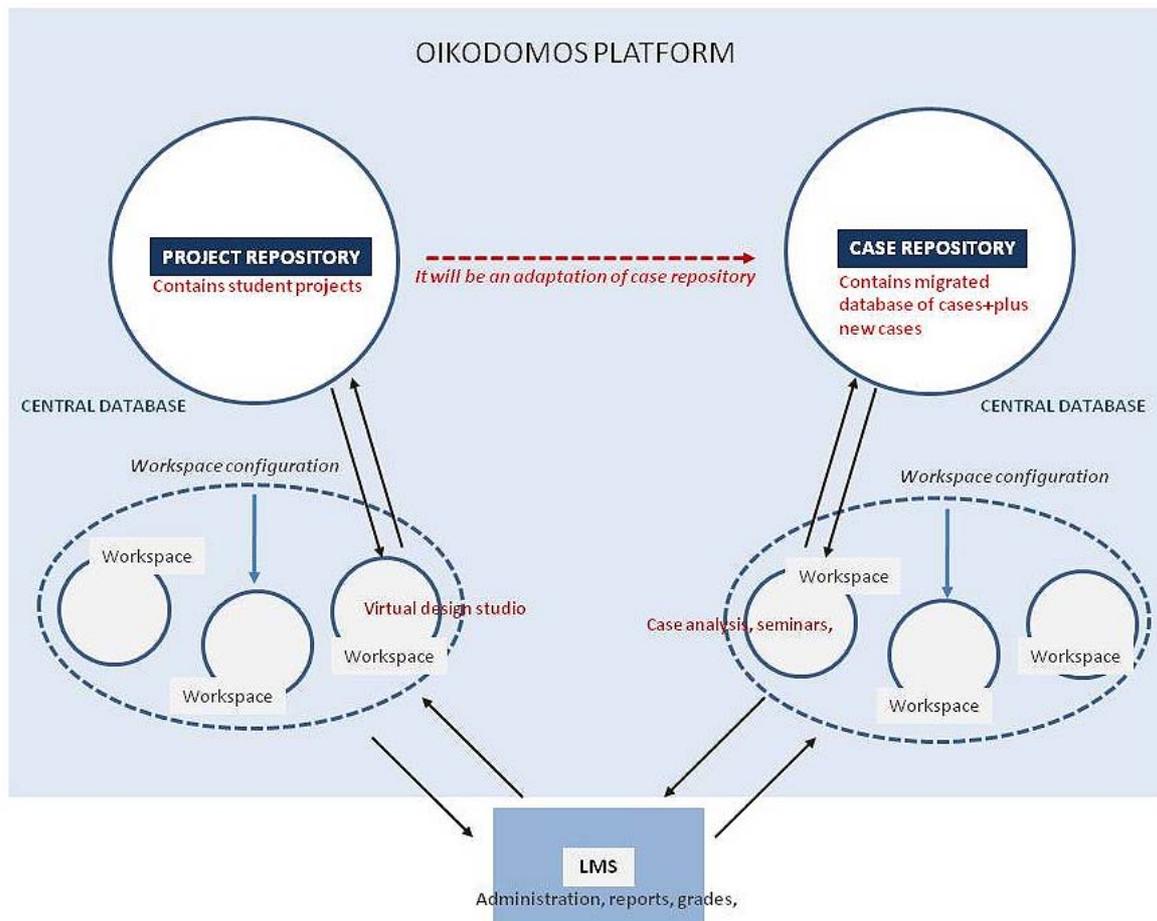


Figure 1. OIKODOMOS Technological Platform

Both environments are being programmed from scratch, and, altogether, they should be one of the main results of this project. The content of the existing repository will be transported to the new one. A new data structure has been created for the new repository, which allows the use of fixed tags (ontologies) and free tags (folksonomies).

Interoperability issues are being addressed, to ensure that working spaces can be connected with existing Learning Management Systems, mainly with Moodle. This way, administrative tasks (registering students, giving grades, producing reports, setting timetables) will be done in Moodle, while the more specific learning activities (commenting a case study, associating keywords to it, relating items from the repository) will be done in the learning environment supported by the project and case repositories.

This platform does not exclude the use of open resources available on the Internet, such as blogs, wikis, image and video repositories. Indexing techniques will be used to allow putting together information stemming from different sources, inside and outside the repository.

3.5.1 Case Repository

Additional functionalities have been designed to facilitate learning activities related to the repository content, with the objective to promote constructivist learning methodologies interwoven with the technology. In this regard, searching in a repository can be considered as a learning acquisition process, as opposed to pure information retrieval, carried out as a dialogue between learner and repository. Following the recommendations of the usability study, interfaces are being designed to make navigation through complex information spaces a knowledge acquisition and construction activity.

There are two different learning outcomes to evaluate in the work done with the repository:

1. the activities taking place in interaction with the repository content (e.g. commenting a case, analyzing a case);
2. The actual inputs introduced in the repository (e.g. a keyword definition, a case description).

3.5.2 Virtual Design Studio

The goal of the work being done on the VDS environment is to set up a generic platform, which allows distant learners to collaborate during the development of a design process, in architecture and urban planning.

It is necessary to have a sound conceptualization of the design process in the context of a virtual design studio in order to proceed with the design of the system. This conceptualization of the design process has to be generic and adaptable to specific needs of different users, at any time/any place.

The functionalities of a VDS environment can be summarized as:

- Representing stages of the design process, in an asynchronous way;
- Communicating with distant stakeholders (professionals, citizens, students, and teachers) who can provide inputs for the design process;
- Facilitating synchronously collaboration (discussing a scheme in whiteboard, attending a lecture in video conference,...).

In order to make the design process visible and intelligible, it is suggested to use a timeline interface to depict the sequence of activities developed along a design process.

The VDS environment which is being developed is a Moodle (Modular Object-Oriented Dynamic Learning Environment) adaptation and will be accessible in the first stage to project partners (students, teachers). Adjustable settings of actual studio design assignments should enable the participation of other target participants (local authorities and citizens engaged to the process of studio design by solved locality) by simple providing them key access to the design process. The aim is to create an environment with a centralized access to tools that

support distant collaboration. This VDS environment will support the design of distant project elaborated simultaneously by students and partners from other target groups located in different European regions. This working process supported by the VDS will enhance the quality of collaborative group work and make possible synchronous contributions to the common digital workspace by means of integrated ICT tools. VDS may integrate different types of users and target groups because its adaptability to their different user's constraints.

3.6 Joint Design Curriculum

One of the challenges raised by this Virtual Campus is to come up with some strategies that allow partners to collaborate in learning activities interwoven with the functionalities provided by the technological platform that is being developed. Conceptualizing a design process means to divide the design in stages, making the design process visible and therefore intelligible so that it can be evaluated, commented by students, teachers, and critics.

Three possible models are being considered, in isolation or interrelated:

1. Combining asynchronous and synchronous activities;
2. Intertwining separate courses taken place at different schools;
3. Design studio model.

A joint curriculum based on learning itineraries is made up of discrete learning activities carried out synchronously/asynchronously at different times and places. According to this model, an activity in the learning itinerary could be developed in a VDS environment and be continued further outside of it (e.g. in a design studio). This means that the VDS platform should not be thought of to carry out a complete design sequence, as a closed learning activity. Rather, it should be thought of as an open environment which can produce discrete learning outputs linked to the learning itinerary.

3.7 Implementation of learning activities

Learning activities to be implemented within the project are divided into two major groups: virtual design studios, and case study analysis. Activities are being carried out in different ways: individually, at each institution; collaboratively, between partners; jointly, during the project workshops.

Next, the learning activities which have already been implemented during the first year of the project are described.

3.7.1 Virtual Design Studios: Pilot Study Bratislava-Ghent, February-May 2008

A Pilot Studio has been organised as a virtual distant collaborative group work (February-April 2008), followed by a real on-site project workshop (May 2008). Two groups of French and Slovak students worked together on three selected sites, chosen in collaboration with Bratislava local authorities. Students were confronted with the task to develop strategies for housing urban development in the Bratislava metropolitan region, as well as in cross-border development urban zone between Slovakia, Austria and Hungary. The details of the assignments are located at <http://webtek-02.upmf-grenoble.fr>

The studio has been integrated in existing learning curricula in Grenoble (1st year of Master studies) and Bratislava (final year of Bachelor studies).

In the course of their distant collaboration, students performed the following activities:

- Students had to search for the information about the sites at long distance, on the Internet, Google Map, Google Earth, etc.;

- Students had the opportunity to create informal groups at long distance by solving common design issues;
- Online long distance presentation – lecture of the localities have been accomplished from FA STU Bratislava to IUG Grenoble, with online inquiries of students, using EVO, Skype and Sametime Unite tools;
- During the design works three online distant presentations have been performed from IUG Grenoble to FA STU Bratislava, with online comments from Bratislava teachers to Grenoble students, using EVO, Skype and Sametime Unite tools (Figure 2).



Figure 2. Students, using EVO, Skype and Sametime Unite tools.

The outcomes derived from this VDS implementation are:

- Students and teachers worked together in a multicultural environment;
- Assignments had close connections with the requirements of practice;
- Students had to present their works in a foreign language (English) and had to defend their opinions before mixed public (students, professors, representatives of the Mayors Office);
- Participants of Pilot Study have been encouraged to exploit the tools of ICT to more extent than in a usual design studio;
- By including foreign students and faculty members, the Pilot studio has contributed to furnish a European view of urban development issues.

The difficulties encountered in the realization of this VDS are:

- Differences in level of education (Master Study versus Bachelor Study), differences in course orientation (spatial and strategy planning versus urban and architectural design), differences in studio relevance (large design studio versus small design studio);

- Restrictions in the use of computer tools. A prescription was given to all FASTU students in the subject “Small Design Studio – Urban Zone” for designing without using CAD tools;
- Differences in timetables. The on-site workshop has taken place during the week of delivering the final summer term credits at FASTU. This had a negative impact on the attendance of students, which could have been larger had the workshop been carried out earlier.

3.7.2 Undergraduate Housing Seminar: Arquitectura La Salle, February-May 2008

A seminar dedicated to the analysis of housing projects in different European countries, and from different periods, was conducted at Arquitectura La Salle. Five exchange students, from France and Belgium, participated in the seminar.

The seminar followed the model already developed during the previous HOUSING@21.EU. This time, however, there were no parallel courses at other universities, so interaction between groups working distantly was not possible.

In the first four weeks of the seminar, students and teachers exposed in the classroom relevant issues dealing with contemporary housing at a European scale using power point presentations. Then, students chose some of the previously discussed topics to make a short essay.

After the collective exploratory stage, each student proposed three cases to be analyzed individually. The selection included a variety of cases, from different locations and times.

From the point of view of pedagogic design, the seminar offered us the opportunity to explore alternative forms of representation of building cases which were not sufficiently considered in the previous programme (Figures 3-4). In particular, analytical representations which –unlike the more descriptive ones, like plans or photographs directly taken from publications– provided more insights about a student’s understanding of the object of study. Diagrams, photomontages, 3d models and video compositions were used to represent buildings.

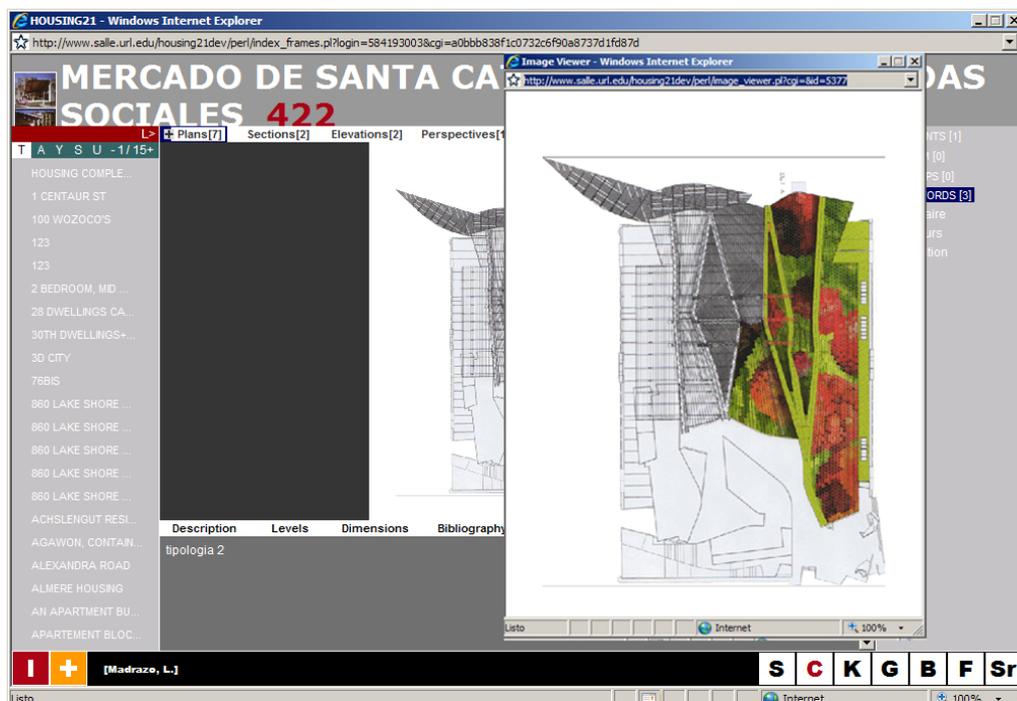


Figure 3. Analytical representations of social housing at Santa Caterina market, Barcelona. Student Virginie Blanchard, Arquitectura La Salle, 2008.



Figure 4. Analytical representations of social housing at Santa Caterina market, Barcelona. Student Virginie Blanchard, Arquitectura La Salle, 2008.

3.7.3 Postgraduate Housing Seminar: Arquitectura La Salle, March-June 2008

A Ph.D. seminar dedicated to analyze contemporary housing issues was conducted at Arquitectura La Salle. A group of seven students, from Spain, Italy, and Portugal, under the supervision of three tutors, investigated some relevant factors influencing contemporary forms of housing, including:

- Existential, dwelling as essence for being, housing and building;
- Domestic, the contraposition between private sphere and public space;
- Anthropological, the relationship between individual and spatial expression; models for living; spaces of the imagination;
- Social, family re-structuring, family models; home as a space for working; multi-generational living;
- Architectural, typologies, flexible housing;
- Technological, industrialization, sustainability, energy efficient housing;
- Economical, housing as investment and as commodity; social housing and housing market;
- Urban, dense/diffuse cities; urban sprawl; sustainable communities.

This seminar was an opportunity to try out pedagogic methodologies using forums and wikis. First, a forum was set up for students to synthesize their findings and to make them available to other learners. For that purpose, an access to the forum was provided from the OIKODOMOS web page (<http://www.salle.url.edu/arc/oikodomos/forum>). Following the activities on the forum, a shared document was started using Google .docs. This document provided an opportunity to experiment with collective writing. Students were placing statements that other students should continue or relate to their own contributions.

After a tutor edited the collective text, the content was transferred to a wiki (<http://sites.google.com/site/phdseminarcontemporaryhousing>). This way, the findings of

the seminar can be accessed and further developed by other learners. This wiki is being used now by students taking part in the workshop at Ghent.

3.7.4 WORKSHOP 1: Ghent, September 29th - October 3rd 2008

A series of three workshops will be organised in 2008 and 2009 as part of the learning activities of the Oikodomos virtual campus project. The first workshop will take place at the Hogeschool voor Wetenschap & Kunst, School of Architecture, Campus Sint-Lucas, in Ghent, Belgium, the second at the Université Pierre Mendès, Institut d'Urbanisme, in Grenoble, France and the last at the Slovak University of Technology, Faculty of Architecture, in Bratislava, Slovakia. These workshops will be integrated into, prepared and followed by on-campus learning activities.

The goal of these workshops is to identify and discuss the determinants of the forms of housing in Europe. These determining factors are located at different levels, from sociological, architectural, urban, technological and economical. Seminars and lectures delivered on-site and on-line, will address critical issues that could influence the way architects conceive our way of living and plan housing. Design studios will be dedicated to analysing and proposing innovative housing solutions. These learning activities are designed to engage.

Through these workshops, the meetings at the participating Institutions and the on-going work on the virtual studios, students and faculty will learn to combine physical and virtual mobility. Students and faculty will interact with local stakeholders – professional developers, public housing organizations, representatives of tenant organizations and of the city administration, etc. – to discuss housing proposals. Local practitioners will participate in the design studios as tutors and critics. They are instrumental in introducing the professional point of view and in passing on their intimate knowledge of the housing issues specific to the region. In this way they will be helping the participants in understanding and in further developing the multi-cultural character of housing today.

The workshops form a chain of interlocking learning experiences that focuses on the status questions of housing in Europe, and probes into the development of housing concepts. Each workshop focuses on one stage of the design process and is organised as think tank delving into the future of housing in Europe. The workshop forms a focal point for the on-going research into housing at the participating institutions.

The first workshop to take place at the Hogeschool voor Wetenschap & Kunst, School of Architecture, Campus Sint-Lucas, Ghent, Belgium will be dedicated to the topic “Lifelong dwelling: one side of sustainability” (Figure 5).

The aim of the first workshop is to formulate, from a European perspective, the characteristics of contemporary housing, attending to social demands, functional requirements, spatial qualities, construction methods, and urban models, among others. This survey, elaborated during the workshop, will form the basis for continued development during courses and seminars in the home institutions. The three workshops interlock in that the first furnishes information for the second, and the second for the third. Each workshop has its own outcomes and is in itself a rounded learning activity. The workshops are scheduled thus that each one concentrates on a different stage of the design process. The first workshop concentrates on the pre-design stage of information gathering and analysis. Along this process – collaborating with peers and teaching staff from different institutions of higher education – the students will develop their capacity to work in multinational teams and experience the multi-cultural character of housing in Europe.

The aim of lifelong dwelling is to design a built environment adapted to young and old, to the inhabitants in their youth and later on in their old age. The aim is to develop the architectural and urban conditions that support inhabitants throughout the different stages of their life. Lifelong architecture is supportive, not restrictive.

This workshop will focus on developing housing (in new or existing structures, communal and individual housing) that is sustainable at different levels and degrees: Lifelong living as structural element for new housing for young people (affordable and accessible for all); redefinition and redesign of existing houses and housing blocks for young people, elderly and people requiring help.

These items will be developed in design studios that contribute to the conceptual thinking regarding housing in Europe. The theme of the workshop will be introduced through lectures, visits of interesting sites, small design experiments, and graphical analysis of examples and through theoretical papers. The workshop can stand on its own but can also form a steppingstone towards a more comprehensive design project.

A variety of topics which will be touched upon: housing modelling cities versus cities modelling housing; liquid lives and flexible housing; the spatial impact of an aging society; technological aspects of housing rehabilitation; ecological aspects of the reuse of existing structures; the development of new spatial organisations for new social structures; as well as strategies for improving the quality of social housing.

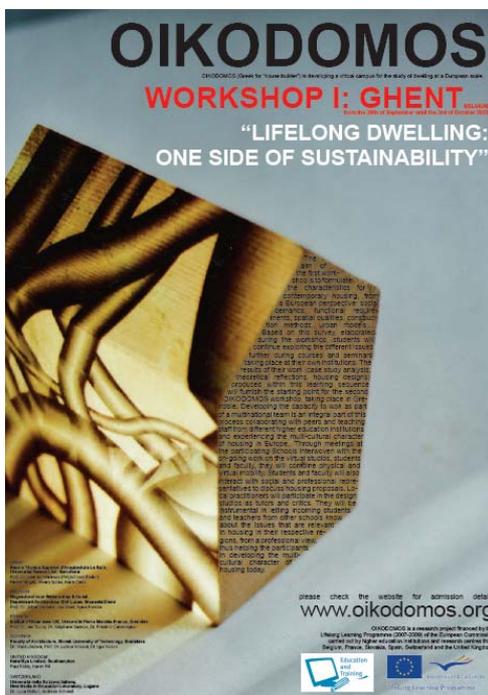


Figure 5. Poster of the OIKODOMOS Workshop at Ghent, 29.9.08-4.10.08

3.8 Promotion

Promotion activities need to be strongly related to the learning activities developed in the project. In this regard, the Pilot Study Bratislava-Grenoble (Figures 6-8) has provided a good occasion to disseminate the project goals to a variety of target groups (scholars, administration, and media). As the number of learning activities increases during the second year of the project, we expect a larger impact, particularly in the academic community.



Figure 6. Poster of Pilot Virtual Design Studio, presenting students’ project and atmosphere



Figure 7. Students projects exhibition in Bratislava



Figure 8. Virtual Design Studio projects presented at Mobat Symposium Grenoble.

The project website was ready from the start of the project (Figure 9). At the moment, it provides basic information of the project’s activities and outcomes, and links to related work (European projects, conferences, learning repositories). Later on, it will be redesigned and transformed into a project portal which will provide access to learning resources, so that other institutions will be able to participate in the design and implementation of the OIKODOMOS virtual campus learning activities. A flyer describing the project objectives has been produced and it will be distributed among academics and other target groups (Figure 10).

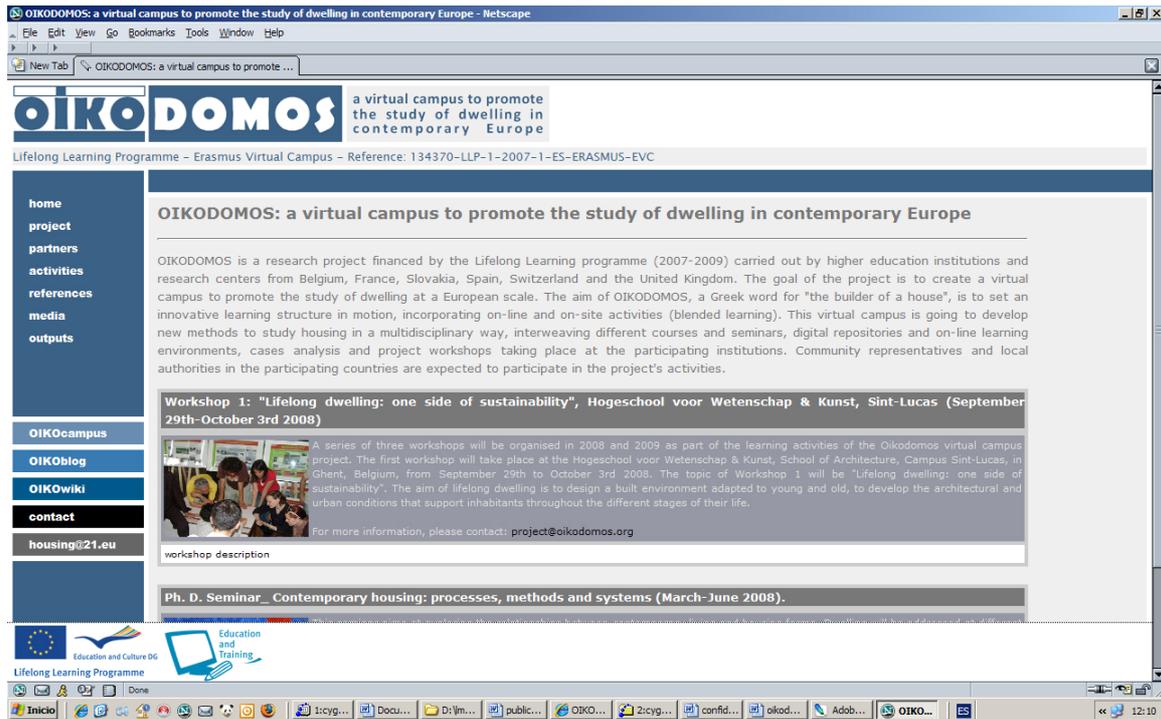


Figure 9. Webpage of the OIKODOMOS Project www.oikodomos.org

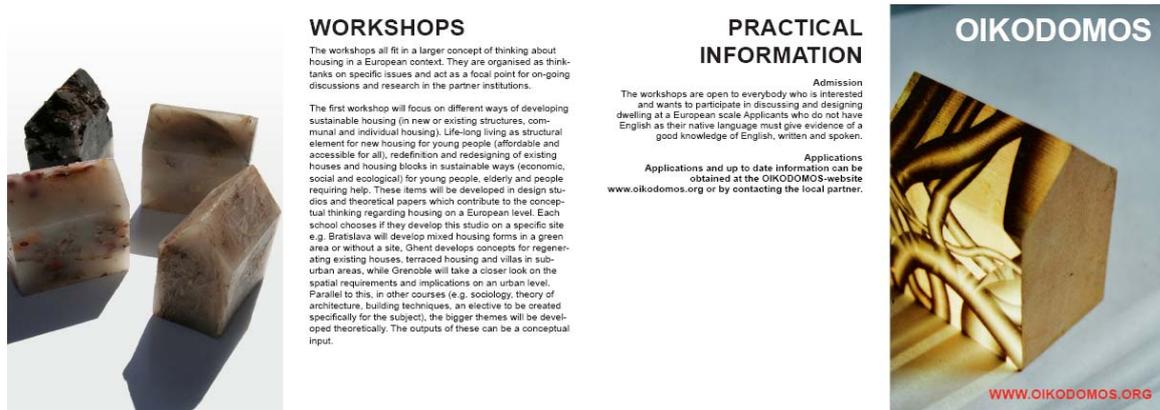


Figure 10. Flyer of the OIKODOMOS project

4. Partnerships

-Escola Tècnica Superior d'Arquitectura La Salle, Universitat Ramon Llull, Barcelona, Spain

Prof. Dr. Leandro Madrazo (Project coordinator), Mireia Vergés, Álvaro Sicilia, Adrià Carro

The research group ARC Enginyeria i Arquitectura La Salle (<http://www.salle.url.edu/arc>) is coordinating the project. The group has already acquired an expertise coordinating the three-year Erasmus Intensive Programme HOUSING@21.EU, the precedent of this project. The group is bringing the experience acquired in the previous programme to the OIKODOMOS project. From the point of view of pedagogic research, the role of the coordinator is to keep a holistic view of the project, ensuring that the key components of the virtual campus –content, pedagogy, technology– are interwoven, so that the project goals are achieved.

ARC Enginyeria i Arquitectura La Salle is applying its know-how in design and programming web-based learning environments to lead the development of the case repository environment. This repository is a follow-up of the one created for the HOUSING@21.EU programme, which was created by the group. ARC is also developing ad hoc tools which are necessary for the programme development: web sites, shared documents, and file sharing system, among others.

The group has led the task to upgrade the content of the HOUSING@21.EU, which has been successfully completed.

Members of the group are actively involved in the design of the joint curriculum, as well as in the publications of the programme.

-Hogeschool voor Wetenschap & Kunst, Department Architectuur Sint-Lucas, Brussels/Ghent, Belgium

Prof. Dr. Johan Verbeke, Jao Smet, Hans Foncke

The School of Architecture Sint-Lucas participates in all the activities of the project and contributes from its own rich design environment and competencies in the field of housing and architecture. Moreover, it has participated and coordinated many international relevant projects –such as META-University programmes, Erasmus and curriculum development programmes, and Alpha project– from which the current project can benefit.

Sint-Lucas is leading the design and implementation of the design curriculum and the implementation of the learning activities. During the first half of the project, a working group led by the School has studied the housing courses in the curricula of the participating Schools and developed initial proposals for a joint curriculum structure. The School has taken over the task of organizing and hosting the first workshop of the programme.

The School is applying its know-how in order to improve on the quality of the case repository HOUSING@21.EU. Sint-Lucas staff is actively involved in the upgrade of the content of the repository HOUSING@21.EU, which has been successfully completed. They are also in charge of the publications of the programme, including the flyer which has been already produced.

-Institut d'Urbanisme IUG, Université Pierre Mendès, Grenoble, France

Prof. Dr. Jan Tucny, Dr. Stéphane Sadoux, Mathieu Panel

Institut d'Urbanisme de Grenoble IUG is participating on the learning programme preparation and implementation (joint curricula, Virtual studio, workshops, seminars). As the only planning school in the consortium, IUG opens the teaching programme to a transversal dimension of urban context. Actively involved in national and European academic networks, IUG supports the dissemination process and transfer of project outcomes to academic partners through APERAU(French Urban Planning Schools Association) and AESOP (Association of European Schools of Planning).

IUG experiences the sharing of ICT learning principles with other European member schools and will test the compatibility with common standards on EU teaching programmes on Urban and Spatial planning. Strong involvement of IUG members in cooperation with professional bodies allows IUG to associate national and regional representatives to the dissemination activities. The first example of this process was tested during the Pilot Virtual Design Studio Oikodomos, in spring 2008, associating professionals and representatives of Local Authorities on studio group work.

Integrated as a Faculty in Grenoble University UPMF, IUG is also testing the common learning curriculum integration into the study programmes of a public university. The Grenoble University ICT and Multimedia Platform -a regional e-learning resource provider- work together in the implementation and maintenance of the web environments used in the learning activities.

-Faculty of Architecture, Slovak University of Technology, Bratislava, Slovakia

Prof. Dr. Viera Joklova, Prof. Dr. Lubica Vítková, Prof. Dr. Igor Kôscô

Faculty of Architecture STU Bratislava as an educational partner is participating in all educational activities of the OIKODOMOS virtual campus (contribution to the design of joint curricula in architectural and urban planning level, present and distant form of lectures, seminars and studios in the topic of sustainable housing). Along with these activities, it is providing support for promotional and dissemination activities of the project. FASTU has acquired a considerable experience in distant learning in design studios and is carrying out research, with educational and practical applications of virtual design studios. The team is developing the virtual design studio environment for the virtual campus.

-KataliSys Limited, Portsmouth, United Kingdom

Mr. Paul Riddy, Mrs. Karen Fill

KataliSys is a small consultancy company, concerned with high quality publication, project management, and eLearning development / evaluation projects. KataliSys staff have considerable experience of the design and use of technology based applications for education and of employing these skills in the evaluation of e-learning applications. Staff also acts as consultants in pedagogical design, including designing and delivering programmes for the associated staff development.

KataliSys have carried out a retrospective evaluation of the learning and teaching process in HOUSING@21.EU, and the application and effectiveness of the technology in its delivery. Katalisys

will be carrying out a similar evaluation within OIKODOMOS, providing feedback after each workshop on the educational aspects of process and delivery, and collating data to report on the overall effectiveness of the learning and teaching process. KataliSys has also provided pedagogical input, including information on approaches to design for learning and engaging in

discussion with the partners on ways to achieve a common understanding and shared implementation of their contribution to courses/modules.

-Università della Svizzera Italiana, Lugano, Switzerland

Dr. Luca Botturi, Andreas Schmeil

The NewMinE Lab of the University of Lugano has collaborated in the design of the assessment of the HOUSING@21.EU project, and has carried out the usability study. Together with La Salle-URL, it has contributed to the design of the OIKODOMOS technological platform and to the development of its specifications. Also with La Salle-URL, the NewMinE lab is currently developing some modules in the case repository, including enhancements based on Web2.0 paradigms. University of Lugano is also collaborating in the dissemination of the project.

5. Plans for the Future

During the second year, work will progress simultaneously along different threads:

- Technological platform. The Virtual Design Studio and Case Repository environments are to be completed by the end of the year. Then, work will start to integrate them in order to create the OIKODOMOS technological platform.
- Joint curriculum. The learning structure envisioned in the first year of the programme will be implemented during the academic year 2008-09, through a variety of learning activities taking place both on and off-line, encompassing joint workshops, intertwined courses, sequences of learning modules and design studios.
- Pedagogic evaluation and assessment. Along with the newly implemented learning activities, shared administrative and evaluation procedures (course registering, crediting, evaluation of competences and learning outcomes) will be set up.
- Promotion and dissemination actions will increase as learning activities are implemented. This will engage target groups outside academics (adult learners, professionals, local authorities).

Altogether, the work developing along these four lines will result in a validated, replicable learning structure for a Virtual Campus dedicated to housing studies in Europe. With this purpose, we are developing a technological platform, generic and scalable, that could be maintained collaboratively, and be adapted to the special needs of different partners. Once the technological platform is completed, the current project website <http://www.oikodomos.org> will be transformed into a portal providing resources to other institutions interested in following the pedagogic model tested in this programme.

The joint design curriculum which is being developed could be the base for a more stable collaboration between partners, for example, leading to joint degrees within a European Master Programme.

6. Contribution to EU policies

- Lifelong Learning Programme

The project addresses the eight key competences for Lifelong Learning described in the European Reference Framework (ec.europa.eu/dgs/education_culture/publ/pdf/ll-learning/keycomp_en.pdf), in the following way:

1. Communication in the mother tongue

Communication in the mother tongue is the ability to express and interpret thoughts, feelings and facts in both oral and written form (listening, speaking, reading and writing), and to interact linguistically in an appropriate way in the full range of societal and cultural contexts — education and training, work, home and leisure.

A diversity of learning scenarios, enable learners to develop written and oral communication skills, in a variety of situations. Design critiques offer an opportunity to students to demonstrate their ability to convey their ideas to a variety of audiences: professional critics, citizens, and peers. Similarly, public presentations of case studies require from the student the ability to synthesize the main features of a case, using the appropriate vocabulary to name architectural elements and spatial qualities and housing concepts.

2. Communication in foreign languages

Communication in foreign languages broadly shares the main skill dimensions of communication in the mother tongue: it is based on the ability to understand, express and interpret thoughts, feelings and facts in both oral and written form (listening, speaking, reading and writing) in an appropriate range of societal contexts — work, home, leisure, education and training — according to one's wants or needs. Communication in foreign languages also calls for skills such as mediation and intercultural understanding. An individual's level of proficiency will vary between the four dimensions, different languages and according to their background, environment and needs/interests.

English is the common language used in most activities of the programme. Students participating in workshops organized as part of the programme's activities have the opportunity to practice English in all contexts, social and academic. Proficiency in written expression is fundamental to carry out on-line work, like describing and documenting a case of study, describing it with the appropriate words, and engaging in forum discussions.

3. Mathematical competence and basic competences in science and technology

A. Mathematical competence is the ability to use addition, subtraction, multiplication, division and ratios in mental and written computation to solve a range of problems in everyday situations. The emphasis is on process and activity, as well as knowledge. Mathematical competence involves - to different degrees - the ability and willingness to use mathematical modes of thought (logical and spatial thinking) and presentation (formulas, models, constructs, graphs/charts).

B. Scientific competence refers to the ability and willingness to use the body of knowledge and methodology employed to explain the natural world, in order to identify questions and to draw evidence-based conclusions. Competence in technology is viewed as the application of that knowledge and methodology in response to perceived human wants or needs. Both areas of this competence involve an understanding of the changes caused by human activity and responsibility as an individual citizen.

Learners participating in this project are encouraged to carry out their work with method and rigor. They learn to discern valuable data from superficial information, as they search for reference cases in books and in on-line resources. Working with case repositories and virtual design studio environments, they exploit the possibility that ICT offer to structure knowledge differently.

4. Digital competence

Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.

A variety of digital tools are used in the programme's activities, including multimedia authoring tools (power point, image and video editing, CAD program, animation software) and web-publishing (web pages, .PDF documents). Collaborative activities are developed using shared documents, and project repositories. Communication is supported by a variety of tools: email, video conferencing, and intranet.

5. Learning to learn

'Learning to learn' is the ability to pursue and persist in learning. Individuals should be able to organise their own learning, including through effective management of time and information, both individually and in groups. Competence includes awareness of one's learning process and needs, identifying available opportunities, and the ability to handle obstacles in order to learn successfully. It means gaining, processing and assimilating new knowledge and skills as well as seeking and making use of guidance. Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of contexts – at home, at work, in education and training. Motivation and confidence are crucial to an individual's competence.

The learning activities that are being designed and tested place the student at the centre of the learning. The role of teachers in this context is to act as pedagogic designers and tutors, more than being lecturers. These activities are designed to encourage students to investigate subject-matters in an independent manner, working individually and in collaboration.

6. Interpersonal, intercultural and social competences, civic competence

These competences cover all forms of behaviour that equip individuals to participate in an effective and constructive way in social and working life, and particularly in increasingly diverse societies, and to resolve conflict where necessary. Civic competence equips individuals to fully participate in civic life, based on knowledge of social and political concepts and structures and a commitment to active and democratic participation.

The subject matter of this program –housing studies– necessarily requires from participants a special awareness of the social consequences of architectural design and planning. The goal of the learning activities that are being designed in this programme is not just to develop the design skills per se, but to make students aware of the complexity of issues –social, economic– that the design of the built environment convey.

7. Entrepreneurship

Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to

achieve objectives. This supports everyone in day to day life at home and in society, employees in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by entrepreneurs establishing social or commercial activity.

This quality is inherent to the architect and planner professions, and it is already assumed by most students and faculty that society will expect from them to take a leading role in the definition of relevant issues and in the proposal of appropriate solutions, with regard to the built environment.

8. Cultural expression

Definition: Appreciation of the importance of the creative expression of ideas, experiences and emotions in a range of media, including music, performing arts, literature, and the visual arts.

Creativity is inherent to the architect and planner professions. Traditionally, contact with the different arts has provided architectural students with insights that find their way into the design studio. This capacity to relate architecture with other art forms is developed in courses included in the curricula of the participating schools.

- European Space for Higher Education

The project contributes to achieve the goals established in the Bologna declaration ([http://www.bologna-bergen2005.no/Docs/00 Main doc/990719BOLOGNA_DECLARATION.PDF](http://www.bologna-bergen2005.no/Docs/00_Main_doc/990719BOLOGNA_DECLARATION.PDF)):

- Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system.

The ultimate purpose of the OIKODOMOS Virtual Campus is to create a shared curriculum on housing studies, which can be carried out jointly and collaboratively by European schools of architecture and urban planning.

- Adoption of a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.

Participating institutions are already operating, or about to operate, on the basis of two-cycle model. Nevertheless, the learning activities that are being designed purposely span across different cycles, from undergraduate to graduate and postgraduate, with the intention to promote the transfer of knowledge across cycles.

- Establishment of a system of credits - such as in the ECTS system – as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned.

Learning activities developed in the programme are ECTS credited. The work carried out within project workshops is credited in two different ways: as an independent subject, or as work being done within other courses.

- Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to:

- for students, access to study and training opportunities and to related services
- for teachers, researchers and administrative staff, recognition and valorisation of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.

Virtual and physical mobility are promoted by the activities developed within the programme. The three workshops planned in the programme, in Ghent, Grenoble and Bratislava, would allow around 40-50 students and 15-20 teachers to travel to other schools. Virtual mobility is being implemented in conjunction with these learning activities. Before and after the workshops, students develop task using a variety of on-line resources.

- Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies.

Setting awarding criteria for evaluating activities carried out in the Virtual Campus is one of the main objectives of the programme. This requires from partners to reach a common understanding regarding definitions of competences and learning outcomes.

- Promotion of the necessary European dimensions in higher education, particularly with regards to curricular development, interinstitutional co-operation, mobility schemes and integrated programmes of study, training and research.

Housing is being addressed at a European scale, encouraging learners to carry out comparative studies of living conditions and housing forms at different European countries. Design assignments, as the one proposed in the Pilot Study Design Studio, engage students in the search for solutions to urban and architectural issues arisen in other countries.

