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OIKODOMOS

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

WORKPACKAGE **PR EP 5**

Development of Joint Curriculum

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w o r k p a c k a g e **PR EP 5**	**Development of Joint Curriculum**
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This report describes the process and the results of work package PR EP_5 (Development of Joint Curriculum). It is the results of the data provided by the partners in the OIKODOMOS project and discussions during partner meetings as well as by the task leader. In order to enhance life-long learning as a kernel competence, the emphasis of the intended shared housing curriculum is on the collaborative design and implementation of on-line and off-line learning activities, sustainable learning strategies and an initiation in dynamic knowledge management which offer flexibility to the local conditions and constraints of each partner school. The current report formulates proposals for a dynamic and joint curriculum structure and explains the pedagogical architecture.

Introduction

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1) Existing curricula

As part of work package PR EA_2 (Implementation of Learning Program: Housing Design Studios) and the research for OIKODOMOS, the curricula of 4 universities (W&K, Sint-Lucas; Universitat Ramon LLull; Institute d'Urbanisme, Université Pierre Mendès; Slovak University of Technology) have been screened intensively for courses that are discussing and treating housing issues in general or as part of courses with focus on more specific and specialised housing themes. The data provided by the partners was the basis of a first analysis and structuring. The table in Appendix I summarises the main housing content provided by the partner schools and results from this work. The table helped the discussions on the design of a joint curriculum: the existing courses provided the project consortium with the necessary information about the content, the structure, the topics and the assessment applied during these courses.

The data is divided horizontally in 6 columns, containing respectively specific information about 1) the starting competences the students should have when starting a certain course, 2) learning outcomes and competences to be achieved at the end of the course, 3) course contents and 4) teaching methods, 5) used technology and 6) the assessment methods. Based on this screening a set of common intended learning outcomes/competences were discussed and resulted in a list of key Intended learning outcomes/competences. See further chapter 1.2. to have a view on the reduced list of agreed Intended Learning Outcomes/Competences.

A more elaborated analysis based on a negotiated taxonomy of competences (different sorts and levels of competences) and a more unambiguous pedagogical vocabulary will be based on this list and contextualized related to the specificity of each Learning Activity by means of selection and specifying.

Actually, a logic developmental trajectory (learning line/itinerary) through the common curricula became operational. It encompasses a preparatory phase, an executing phase, a reflective phase and an integration phase. The Dublin-descriptors are used: acquiring data, acquiring knowledge, understanding and its knowledge-structure, application, creative/inventive application, communication skills, learning skills and judgement, and then, in order to make it cyclic producing new data and knowledge.

In order to develop a common basis for comparing the content of the curricula the following elements were taken into account: 1.1) the starting competences the students should have when starting a certain course, 1.2) learning outcomes and competences to be achieved at the end of the course, 1.3) course contents and 1.4) teaching methods, 1.5) ICT for Teaching and learning and 1.6) the assessment methods. The basic elements of the comparison of these elements are described in the next sections.

1.1) Starting competences

Each partner school starts with students from different backgrounds and develops understanding of housing and dwelling from scratch as it cannot be expected that students have previous knowledge in this field (in fact it is not handled in secondary schools). Hence, the students form a very heterogeneous group. Only basic competences (interest in architecture, housing, arts and creative disciplines) are a prerequisite. Overall, when starting a semester, the learning outcomes of the previous semester usually becomes the starting competences for subsequent modules.

1.2) Definition of learning outcomes and competences

Students first develop an understanding of representations in 2D to 3D. Gradually they then develop insight and knowledge related to housing and dwellings, from basic forms of living and shelter to more complex projects of mass housing. Throughout the curricula the ability to analyze existing housing cases and own designs and design experiences are the backbone of design studio teaching. The design project is the pedagogical driving force in order to develop architectural knowledge and simultaneously gain insight in the multidisciplinary dimension of the design process (architectural history, building construction, housing, building law).

Because of this, a lot of work has been done in the description of outcomes that are expected from the student. This part of the curriculum design is supervised by Katalysis Ltd and more recommendations regarding these issues are proposed in report WP QPLN : "Evaluation of results and project's impact in long life learning education". In the definitions and descriptions for the joint curriculum some of the issues interweaving the different workpackages are considered.

A list of key learning outcomes and competences has been developed and is listed below in the section titled 'OIKODOMOS General Learning Outcomes' :

These categories are based on the TUNING[1]-approach.
Overall, it requires that the student can design, has knowledge about the discipline, possesses theoretical, conceptualisation and creative skills, can manage the design process, is able to learn, and can communicate adequately.

OIKODOMOS General Learning Outcomes

This is the list of learning outcomes grouped in different categories which has been negotiated and agreed upon by the teachers participating in the OIKODOMOS learning activities:

A. Design Skills

Command of the design skills, techniques; and technologies specific to own specialisation and ability to adapt and develop design skills, techniques and technologies to new types of problems and recognize problems that can be resolved by design.

1/ The student can apply design methods according to housing design issues (perception of the assignment, site, neighbourhood interconnections…).

2/ The student is able to apply design guidelines for the implementation in a housing design.

3/ The student is able to demonstrate a clear concept, functionally correct by demonstrating insight about the organization (housing in relation to other functions) for a given site or problem.

4/ The student can apply the compositional skills on the level of a basic dwelling; expression of strategic thematic development pre-scenarios of the analysed site. (Perception, urban analysis, architectural analysis).

5/ The student shows understanding of the perception of the principles of urban analysis.

6/ The student is able to create designs (architectural, urban design, planning) that satisfy aesthetic, cultural, social and technical requirements.

B. General Knowledge
Ability to ground own work into the theoretical and historical framework of design and ability to participate in the discussion about the position of design in social, cultural, political, ecological and economical contexts.

7/ The student has understanding of the most relevant urban concepts and their designs.

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[1] Tuning Educational Structures in Europe is a university driven project which aims to offer a universal approach to implement the Bologna Process at higher education institutional and subject area level. Tuning serves as a platform to develop reference points which are based on learning outcomes expressed in terms of competences For more background see: http://tuning.unideusto.org/tuningeu/,
www.jointquality.nl/content/descriptors/CompletesetDublinDescriptors.doc and
http://tuning.unideusto.org/tuningeu/index.php?option=content&task=view&id=9&Itemid=32

8/ The student is able to integrate the design knowledge; schematic and/or diagrammatical understanding and applicability of relevant architectural and environmental concepts, principles and standards.

9/ The student is able to demonstrate an awareness of the potentials of new technologies, making a proper use of them along the different stages of the design process.

10/ The student is able make a complex synthesis of cross-disciplinary approaches to the project.

C.Theoretical skills
Ability to discuss and theoretical concepts related to own design and familiarity with analytical and critical thinking in general.

11/ The student is able to demonstrate and discuss notions of composition and urban/architectural design.

12/ The student show an understanding of the different construction systems (concrete, steel frame, wood frame, etc.) and is able to integrate them properly in a design proposal.

D. Conceptualisation skills
Command of formulating and evaluation of design concepts and ability to relate design concepts to comparable tools in design related disciplines.

13/ The student is able to integrate and synthesise relevant information into a new context and solution, based on a clear concept.

14/ The student is able to define the actual issues affecting the actual design of residential architecture (following the new social structures, globalisation, materials…).

15/ The student is able to describe the social determinants of housing design (e.g. dispositions, typology, national policy and standards, …).

E. Creative and ideation skills
Advanced understanding to creativity in design, ability to direct and develop own creativity and advanced understanding of what creativity is and how to apply creative skills learned in design to other types of problems.

16/ The student is able to illustrate the importance of spatial imagination and presentation e.g.expressed by sketches, models, …).

17/ The student can discuss an alternative development scenario for the example site.

F. Management/procedural skills
Understanding of different stages in the design process and ability to plan and manage design projects. Ability to analyse and develop own design process.

18/ The student is able to critique own work and that of others.

19/ The student is able to develop a professional working basis in processes and organisation/ communication skills relevant to the designing and building practice.

G. Learning skills
Basic understanding of different ways of learning related to design studies and how they apply to own studies, including the concept of life-long learning. Insight in own weaknesses and strengths in learning.

20/ The student can demonstrate the ability to search, adapt and apply information to the problem in hand.

21/ The student is able to integrate relevant information (from introductory presentations, …) into a new context as a solution for the problems pointed out in an initially moderate complex architectural context which enhances a sustainable approach (ecological, environmental, social).

22/ The student applies appropriate judgement in a number of complex situations or unfamiliar contexts.

H. Communication skills
Ability to communicate own ideas and design processes to clients and general audience and command of efficient communication in written, oral and visual forms, including in one or more foreign languages.

23/ The student makes appropriate use of different representation techniques (verbally, textual and graphic-digital and analogue) in order to communicate the ideas (concepts and design proposals) in an effective manner.

24/ The student should be able to show (an international) team spirit and demonstrates team spirit working skills through personal contribution to a joint presentation.

25/ The student is able to produce a complete set of construction documents and required working portfolio.

26/ The student is able to demonstrate basic management skills (time management, synthesis, adaptation to the audience, …).

These learning competences have been agreed upon during the partner meetings.

1.3) Course contents

In this section, we describe on a general level the courses at the different partner universities which treat housing and/or dwelling issues. We differentiate between the design studios, theoretical courses and courses related to building technology and construction.

- Design studios

Apart from the Université Pierre Mendès, design studios are the core of the architectural and urban design education and also treat plenty of housing themes. In each institute, the design studio consists of a combination of individual and group work. Students present and discuss their projects with the teaching staff and/or with fellow students. Feedback and facilitation throughout the design process is continuously provided (usually during two sessions each week) by the teaching staffs that follows the students for a certain period of time (usually up to one semester).

When assignments deal with more complex issues and difficult programs, students work together in groups for a short period of time (e.g. a couple of weeks) or even for the full duration of the project. During this period of group work, students produce a jointly developed output which can later on be used by every single student during future design work and learning activities.

Moreover, visiting built architectural housing realisations and developing interest in architecture and design in general are important parts of the learning process. Specific problems and issues regarding housing are organised and lectured during design studio activities (e.g. ergonomics, model making, industrial standards, and typologies).

The way of introducing students to housing issues (ranging from ergonomics to mass-housing) has a very similar approach in the 3 universities who have a Bachelor program in architecture; although each school puts focus on different key-issues and in a different time frame.

In the following paragraphs the housing programs at the different institutions are summarized. More detailed information can be found in the appendix I.

Sint-Lucas School of Architecture (W&K) starts its design studio education with an initiation in presentation techniques, drawing skills, visual presentation of a project by any media necessary and the basic elements of buildings/housing (walls, windows, doors, roofs). The complexity gradually rises from a simple place to stay (including its interior elements and the surroundings) to a family house and a group of dwellings at the end of the 2nd year of the Bachelor program. In the

3rd year of the Bachelor program design studios handle social housing and mass-housing usually in relation to a public function.

During the Master studies systematically there are no housing projects as a design studio assignment, although housing issues are mostly integrated as a part of more complex assignments. A specific workshop "designing in the dark" focuses on the specific problems of projects for people with disabilities and access for all in public buildings and lifelong living forms. Public buildings and urban settings are designed during the Master program, and housing is frequently part of design exercise but is not the main generator for a concept.

The Faculty of Architecture, Slovak University of Technology (FASTU), starts its design studio education with the representation of a family house and its different components. Parallel to the developments in the design studio (from single family house to city villas to country houses and temporary dwellings) theoretical courses give input on a variety of subjects and themes (laws, building standards, building typologies). One can consider this program very similar to the curriculum from Sint-Lucas during the Bachelor studies. In the Master program students deepen the knowledge and understanding of housing by focussing on more specific themes (e.g. transformation of concepts induced by social changes, actual trends and forms of revitalisation of living environments) which are simultaneously supported by theoretical inputs.

At La Salle-Universitat Ramon LLull the approach is different and multiple: from different themes (the students' own house, a redevelopment with a change of function and structural transformations to a building) students are guided through housing and gradually the amount of dwellings increases. The first year is very similar to the program of the other institutions but the approach is different. At La Salle the emphasis is on analyzing existing housing examples which are then used as a basis for the students' own design task. The difficulty of working on different scales at the same time is introduced faster than at Sint-Lucas or FASTU. Students already work on a housing block with twelve units including the design of an interior for one of the units with a specific given program during the second year. In the 4th year of the Bachelor program students design mass housing on a specific site which is a year later than at Sint-Lucas.

- Theoretical courses

Theoretical courses on housing are related to a variety of knowledge domains (sociology, urban design, building physics). In each faculty the history of housing is treated in obligatory courses and/or elective courses. The teaching methods and evaluation methods vary and are specific.

At La Salle the analysis of housing projects and proposals (housing complex, neighbourhoods, housing sectors, residential areas, suburbs, …) is based on weekly lectures by the teaching staff and students show the ability to understand and apply the content through papers which are written (writing competence) individually or in group and are also presented (oral competence).

More in-depth courses on specific housing subjects are presented to the students at DCAAD in Bratislava as elective courses. These are classes at master level on contemporary housing regarding "actual trends and forms of the revitalisation of living environments, as well as the revitalisation causalities and typological forms of urban environment completion and to deepen the knowledge of social determinants of housing design, changes of the concepts induced by the social changes, the housing policy of social forms of dwellings, typology of social housing. Social housing – its philosophy, historical alternations, differentiation – cities versus country, national policy, standards, starting and low-cost houses, dispositions.

The Institute d'Urbanisme, Université Pierre Mendès (IUG) is organising classes related to the housing in European development programs and project funding on an urban level. IUG organises Master courses on urban design and has a very heterogenic public attending its courses. The students' backgrounds vary enormously and are not always architects/designers. This implies the need for a completely different approach and point of view. Housing at IUG is treated as subject in the courses on funding development projects, construction techniques for housing and urban design.

- Building technology

At La Salle students are spending 2 semesters on re-working their assignment of the 2nd year of the Bachelor program on an apartment building. They look at different aspects regarding structure, construction technology and technical installations and implement them on their existing design. At

FASTU and Sint-Lucas students gradually develop technical skills on housing construction during the 3rd year of the Bachelor program.

1.4) Teaching methods

Housing courses are programmed both as core courses and as elective courses in the participating institutions. The basic design knowledge and competences are part of the core of the programs, in the design studio as well in the theoretical courses. Specific subjects related to housing are part of elective courses mainly at the end of a curriculum. Design studios are organised as seminars where students get individual and group comments from the teaching staff. Regular consultations during the week provide the teaching staff insight into the evolution of a student's work. Theoretical courses are mainly organised as ex cathedra classes but site visits, assignments to be presented in small groups (e.g. case studies) and lectures are also gradually organised in smaller groups where the interaction with and between the students and the teacher is increasing and utmost important. With more mature students and smaller groups, discussions are deepening the themes.

1.5) ICT for teaching and learning

In all the partner schools, the use of technology is twofold: on the one hand students need to use digital tools to produce their work (software programs e.g. CAD software, digital imaging software, rendering software) and to communicate (e-mail, instant messaging, peer review, learning management systems (LMS) (e.g. Blackboard, Moodle)). During teaching activities it is becoming common to use digital presentation tools (beamers, video, slides, PowerPoint-presentations, ...).

Moreover, the material describing and illustrating the content of the courses are now commonly available on the internet or through a LMS. Mostly, however, there is no "active" content available, interaction is missing. The content of the courses and the learning process isn't fully supported through technology. Syllabi, slides, references are available digitally. They are mostly communicated by mail, instant messaging, internet-sites, and blogs accessed via a server which is connected with a LMS.

In the partner schools of the OIKODOMOS project only La Salle and Sint-Lucas have earlier experience in actually generating learning content digitally by using the HOUSING@21.EU repository.

A strategy was developed in order to position different forms of ICT means in terms of positioning Content Management, Learning Management, Knowledge Management ... and their corresponding technology.

The teaching learning processes implemented in the OIKODOMOS Virtual Design Studio's combine online and off-line activities, carried out collaboratively in synchronous or asynchronous ways using different ICT tools (see report WP RES "Comparative study of virtual and physical studios in architectural education").

The developed ICT platform consists of a Workspaces environment and a Case Repository environment. Each environment has a distinct technological infrastructure so that they can be used independently. Workspaces is a web-based learning environment which facilitates the collaboration among distant learners.

The Virtual Design Studio activities are based on Workspaces for Content - and Learning Management and The case repository for the content- and knowledge-management. It was decided not to focus on creating an alternative LMS (e.g. Moodle).

1.6) Assessment methods

Throughout the different years of the bachelor and master programs and in the different institutions assessment is mainly two-fold. Students are mostly assessed as individuals on the final result, though in more complex assignments the grade is composed of a weighted average based on the students' progression (process evaluation) and the final result that is presented in front of a jury or the studio staff and peers. When progressing (master program), more group work is used to be able to get a grip on difficult programs or sites. For this work each member of a student group mostly gains the same grade. The way the results are presented to fellow students

and teaching staff or jury is verbal, usually supported by mainly graphical material. Most of the theoretical courses are graded on the basis of a final exam at the end of the semester. Papers and presentations (graphically and textually) are more increasingly used from the 3rd Bachelor year on.

2) Towards a shared housing curriculum

Starting from the curricula in the different partner schools, different scenarios have been explored on how to structure and organise a joint curriculum. Problems needed to be overcome were e.g. the different timeframes used in each institution, different accreditation procedures for courses and working together on a distance. Moreover, the joint curriculum was expected to explore the potential of the digital learning platform which is especially developed for the OIKODOMOS project.

The 3 different scenarios which will be explained below, are based on previous experiences during the previous HOUSING@21.EU Erasmus Intensive Programes, international projects in which partner universities participated and the workshop organised between the university of Grenoble and Bratislava during the second semester of academic year 2007-2008 (see WP Report PR EA 2 "Experience from Pilot Studio Grenoble-Bratislava").

All three strategies have a different level of cooperation and interaction, starting with strategy 1 which is the most flexible one to the 3rd strategy which requires plenty of coordination between participating staff.

2.1) Exploring new learning itineraries

We now describe three possible strategies which exploit the digital learning environment of the project and try to exploit the specific competences available amongst staff in the consortium. Each strategy can be used on its own, but can also be combined with one of the other strategies. Hence, they offer a flexible set of strategies for the design of the joint curriculum.

1. Combining asynchronous and synchronous activities;
2. Integrated courses at different schools;
3. Design studio strategy.

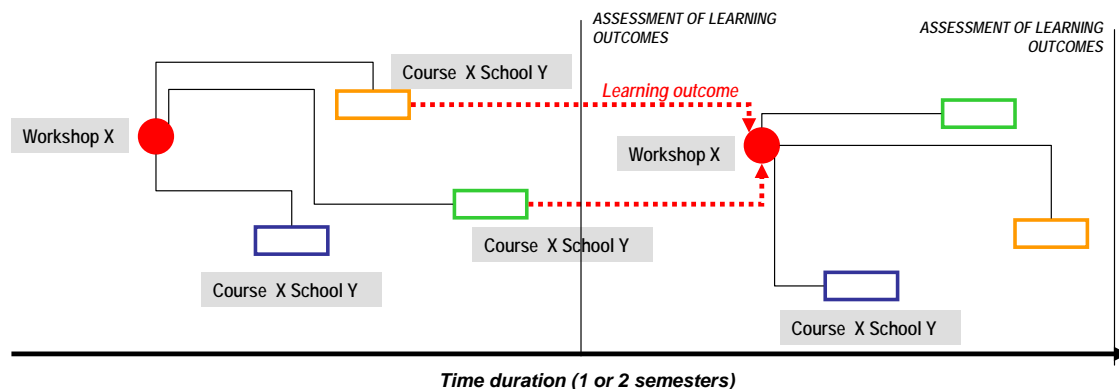1. Combining asynchronous and synchronous activities

Figure 1: Learning itinerary with combined asynchronous and synchronous activities.
Mireia Vergés, Leandro Madrazo. Arquitectura La Salle, Universitat Ramon Llull.
Hans Foncke, Jao Smet. W&K-Sint-Lucas.

This first strategy with synchronous activities in a workshop (physical and/or virtual) followed by asynchronous activities taking place on different campuses in different courses at different schools provides only few interactions between students and staff (see figure 1).

Some of the results of the workshop/start activities are required for the assignments and are further developed in the courses at the different schools.

In this strategy the workshops are used as key-learning activities where students and staff are brought together to discuss and exchange thematically knowledge about the content (assignments, sites, information, ideas, and design proposals,. They are the base and start of further learning activities and learning tasks (the difference between learning activities and –tasks is explained as part of the other workpackages). After the workshop, the content developed during the workshop are elaborated during a separate design studio or a theoretical course. During the timeframe proposed (1 or 2 semesters) the work is assessed without the help or input of the other partners (although it is possible to have some shared evaluation aspects). The local courses develop and evolve separately from each other, only a common theme is agreed on and after a period of time the partners join back together to exchange results or issues which have been studied (papers, concepts, and designs,). Interaction between students continues after the workshop through the OIKODOMOS virtual platform.

In this strategy a minimum of cooperation and exchange is done. This strategy is comparable with an IP program workshop. It has a lot of flexibility and can be easily included in existing curricula and can cope with different time schedules. It requires that courses (semesters) start in the same week.

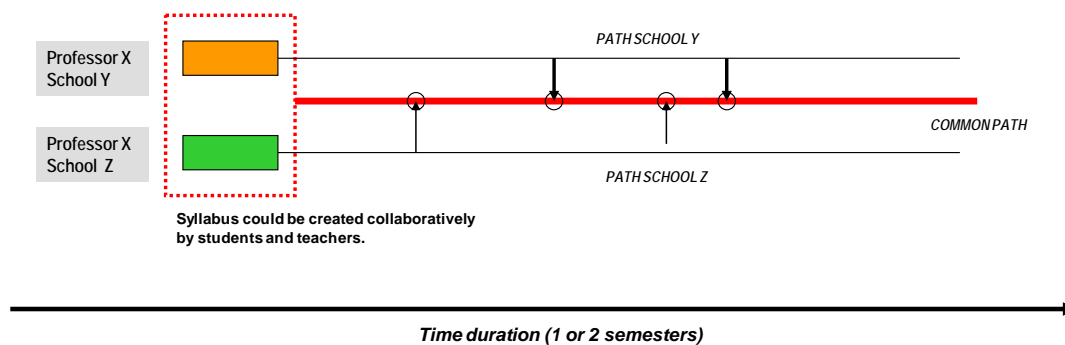## 2. Integrated courses at different schools

Figure 2: Learning itinerary with integrated courses located on different campuses.
Mireia Vergés, Leandro Madrazo. Arquitectura La Salle, Universitat Ramon Llull.
Hans Foncke, Jao Smet. W&K-Sint-Lucas.

In the second strategy teaching staff mutually combine different courses at different schools. They prepare a common syllabus, timetable, assessment criteria, and outcomes. The content of the course is jointly prepared as well as with the collaboration of students, who explore issues provided by lecturers. Every course follows its own path at each school, and outcomes are shared in order to improve on the joint course (see figure 2). At certain points the schools exchange their research with the other learners through a virtual design studio or by videoconferencing.
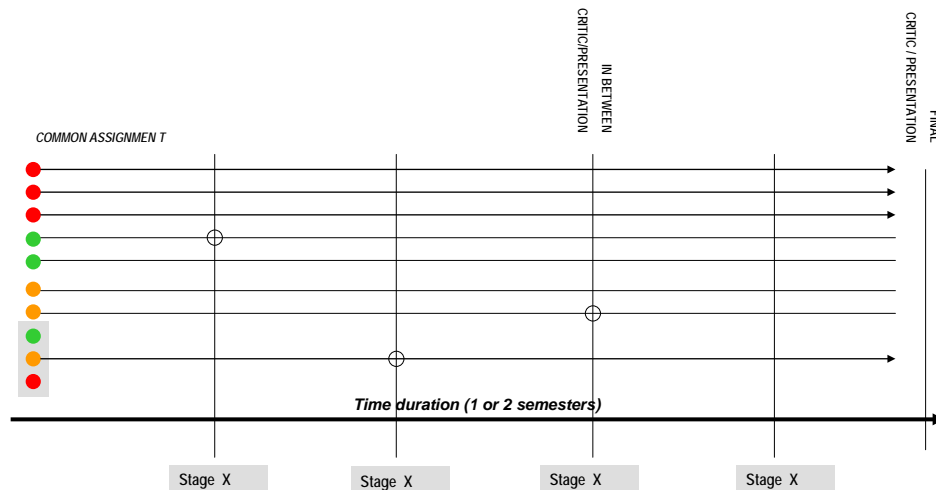
3. Design studio model

Figure 3: Learning itinerary based on a joint design studio.
Mireia Vergés, Leandro Madrazo. Arquitectura La Salle, Universitat Ramon Llull.
Hans Foncke, Jao Smet. W&K-Sint-Lucas.

This strategy is driven by a design task (project- and or problem based learning) and the development of the Intended Learning outcomes/competences through designing. The (integrative) Design Studio as a physical and virtual learning environment is the main ingredient in the curriculum in which the exchange of (availability of) resources, (different sorts of) knowledge, ideas, meaning (through dialogue), experiences, as well as expert's appraisal enhances an attitude of multi-, trans-, inter- and cross-disciplinarity. This occurs in most of the participating schools. Improving the internal exchange processes is a first order goal, improving the external exchange processes the second order goal. However the latter is the crucial goal for this project.

There are fixed landmarks along the learning process (presentations, reviews, critics) which are scheduled at the same moment (or week) in all the participating schools. Final outcomes are to be presented by learners according to fixed requirements (physical models, drawings, digital outputs). The strategy is supported by the OIKODOMOS Virtual Design Studio platform, consisting of two environments: Workspaces and Case Repository. The first one supports project- and/or problem based learning activities and the second one is a digital repository of housing case studies.

As the result of an intensive process of team-learning and -teaching, the student shall prove his/her competence by designing his/her individual design project..

In this strategy, it is also possible to have international mixed design teams working on one project (students from different universities form one design team). This creates an important international interaction, but also impacts the local climate of the design studio and requires intensive communication and collaboration between design studio staff.

Mixed groups of students work together on a specific site, topic and design assignment. This is tutored by a group of international teaching staff, both on site and online. This strategy also requires a highly similarity in timings of the academic year of the participating universities.

The challenge of the OIKODOMOS ICT platform is to improve the quality of the design studio activities by means of a Virtual Design Studio offering on the one hand a diversity of human perspectives and competences and on the other hand a diversity of learning resources in terms of a dynamic cultural dialogue underpinning a sustainable knowledge base for housing issues in Europe on different scales.

As indicated above, the partners explored each of these strategies and the local context and constraints influenced the success.

2.2) Workshops as backbone

A series of three workshops were organised. The goal of these workshops was to identify and discuss the determinants of the forms of housing in Europe. These determining factors are located at different levels: sociological, architectural, urban, technological and economical. Seminars and lectures delivered on-site and on-line, addressed critical issues that could influence the way architects conceive our way of living and plan housing.

The three workshops interlock in that the first furnishes information for the second, and the second for the third. Each workshop has its own finality and is in itself a rounded learning Activity.

The first workshop acted as an experiment which helps the partnership to explore and design an appropriate learning itinerary. Ideally it should be planned connecting to the activities that students do before and after the workshop. Workshops are seen as a part of the learning itinerary that starts with preparatory activities/tasks before the workshop and continues with further Activities/tasks when students get back in their home university again.

The workshops are seen as a catalyst in the sequence of learning activities, when teaching staff and students come together to present, discuss and further analyze the issues they have been preparing. The workshops were functioning as a point of initiation and inspiration for the design process.

The workshop(s) also were a vehicle to structurally interrogate the different qualities of the OIKODOMOS ICT Platform:

- Experiencing different forms of e-learning; Virtual Design Studio, virtual classroom, tele-teaching, blended learning, collaborative learning, supported self-learning, and distance learning
- Since a curriculum is a 'system' the anchoring of the OIKODOMOS ICT Platform with other ingredients of the system has to be discussed and explored carefully.

For the teaching staff this means: course planning, reflection and selection of adequate course content, pedagogic delivery and intended learning outcomes/competences. For the students this means: an insight in learning styles, personal development, mastery of competences, motivation. For the institution(s) this means the coordination of all these activities and actions.

The OIKODOMOS platform thus supports the above pedagogic model focusing on learning activities which are collaboratively created and dynamically developed by a group of learners.

On the other hand education is more than just the implementation of a curriculum. Any school/university has in these developments four challenges to fulfil:

- preserving existing knowledge;
- training specialist (for the profession and/or research);
- educating students and citizens;
- creating new knowledge.

Therefore a comprehensive view and an integrated understanding becomes a crucial issue.

The first workshop that took place in Ghent in October 2008 (see report WP PR EA2 "Implementation of learning programme: housing design studios") was an opportunity for experiencing collaborative learning. This workshop was seen as a moment to exchange experiences of groups of students; to exchange knowledge and to reflect on optimal integrated learning activities before future workshops. During the development of the project however, workshops were complemented with a more intense collaboration by using the virtual campus module containing tools to create and manage the different Learning Workspaces, and the elaboration of the preparatory and following learning activities, framing the Design studio learning activity.

The outputs of each workshop were collected at the end and stored in the environment of the OIKODOMOS ICT platform, the Case repository (repository of cases, knowledge elicitation, and collaborative analysis) intended as material for new course work. This is supporting a continuous knowledge creation process in the field of housing. The partnership experienced there are different possibilities to develop new learning activities/tasks:

- Taking over a topic introduced by a partner to fully develop it in the own design studio context, and use it as a course with local students in order to do critical and reflective peer-assessment, …
- Developing a topic in collaboration with another partners, for example, dedicating one week in the design studio activities to work together on a concept;
- Developing a topic in collaboration with external partners (stakeholders, local governments, …);
- Putting together mixed teams of international students during one semester, tutored by teachers from different schools but working on one project (see strategy 3 above).

Based on the principles of 'experiential learning' the exchange of experiences occurs in a systematically way: confrontation with 'experiences' through dialogue, literature, cases, reflection (reflective inquiry), development of common insight(s) and general concepts/vocabulary, application in a new situation through design and comparative inquiry resulting in aa new mixed learning experience.

The following scheme (combines the three strategies described above (especially Strategy 1 and 3) including the positioning and the role of the workshops.
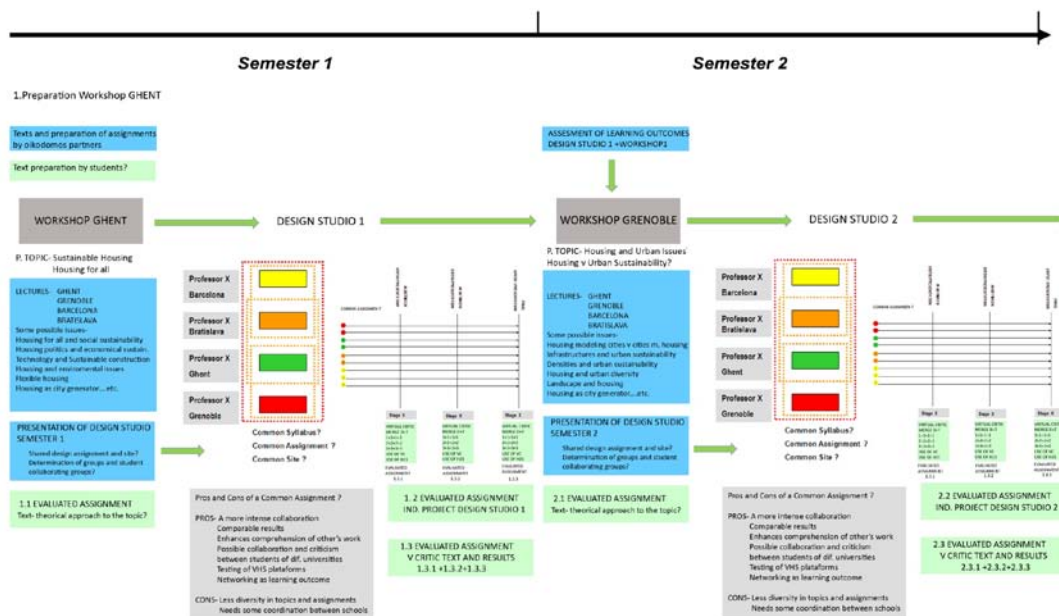

Figure 4: Combined learning itinerary.
Mireia Vergés, Leandro Madrazo. Arquitectura La Salle, Universitat Ramon Llull.

3) The joint learning structure

Hence, the architecture of a joint curriculum on housing is based on the following principles:

a/ The realisation of the learning outcomes as described in section 1.2);
b/ The combination of physical and virtual activities called 'blended learning';
c/ The implementation of open-ended learning processes structured in learning activities and – tasks;
d/ Students can carry out the tasks individually or in groups organized in multiple and flexible ways.

Every proposal for a joint learning itinerary will have to be flexible in timing and offer the possibility to include expertise and expert courses from the participating partners. The working strategy we are currently proposing is based on the above schemes; especially the latter ones; a combined learning itinerary (fig. 4). The joint housing curriculum consists of a dynamic learning module students can choose and get an ECTS validated accreditation for and is decided in consensus between the partners of the program. It consists of 2 main elements: a design studio and an assortment of thematically relevant (pieces of) courses which are at first taken from the existing curricula of the partners (and will continuously be further developed and re-arranged in collaboration). In the scheme below, the design studio is the backbone or core of such a module. A common theme and/or site is chosen in close collaboration between the partner institutions and professional external organisations in the wide field of architecture and urban design (in fact in architecture, design studio topics change every year to reflect current developments and actual debate). During a semester, theoretical input and complementary courses are offered. This happens mainly through videoconferences at specific moments and (preparatory) learning activities/tasks on the virtual campus. The content is present in the workspace environment under the element "Resources" by means of a list of deliverables in which can be seen representative learning material (texts, references, images).

The scheme in fact combines all three learning strategies into one overall flexible structure. As such it can be seen as a way of exploiting the different strategies in relation to the course content in order to create an optimal learning strategy for the students and to benefit from the expertise and competences of the teaching staff available on the different sites.

The different timetables of the academic year of each partner, which was seen as a difficulty in several of the above strategies, could be transformed into a positive element. When partners have agreed on a common site, studio work and design assignment, partners can start their local teaching and developing and elaborating the joint housing theme. When school 2 starts, the first school has already done some research and is able to summarize this for the other partners. In this case, the 2nd, 3rd and 4th school start from the information provided by the first one and the available knowledge and content regarding the topic, stored in the Learning resources module.

Apart from this, other learning resources can be found in the Case repository environment. This input and output of information and knowledge in an asynchronous way leads to more interactivity between the partners. It facilitates that schools start on a shorter period of time for a more in-depth overview to the topics provided. The workshops are then used as physical meeting moments to exchange and discuss design and research results of students. The OIKODOMOS ICT platform provides the necessary technical possibilities to achieve the goals of exchange and interaction during a semester and intense online collaboration between students and teaching staff form the different partner institutions. This consists of two environments: Workspaces and Case repository.
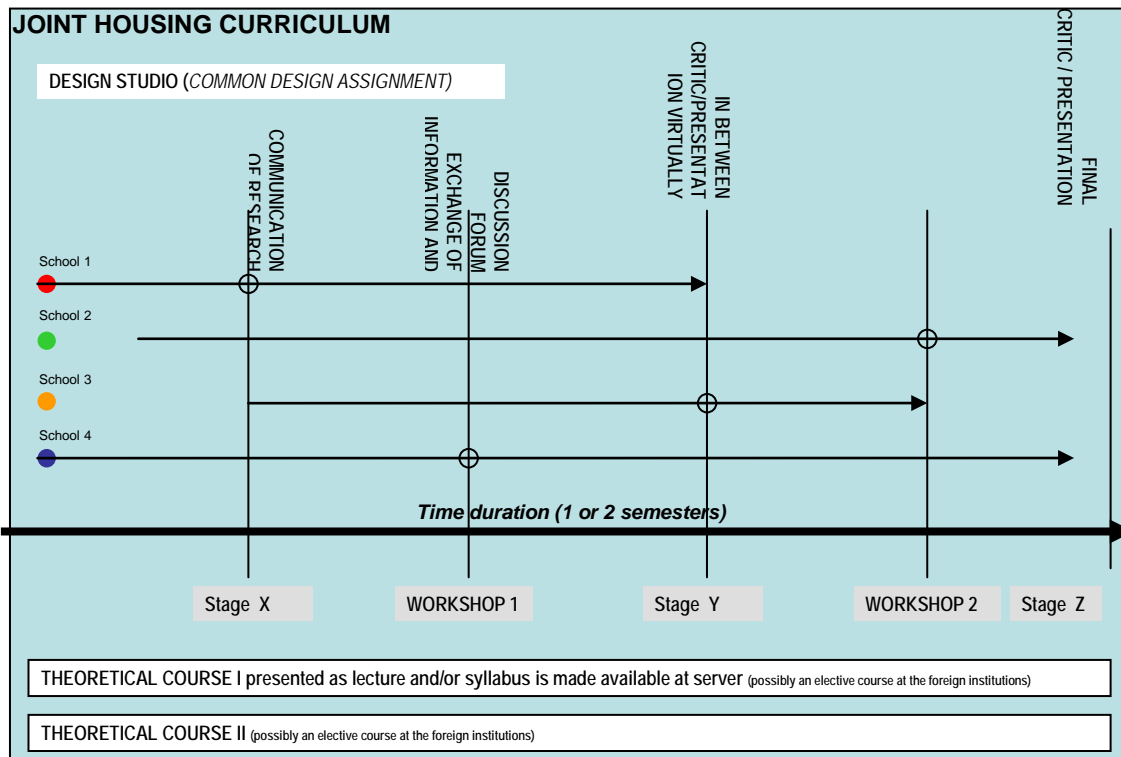
Figure 5: Proposed joint curriculum structure
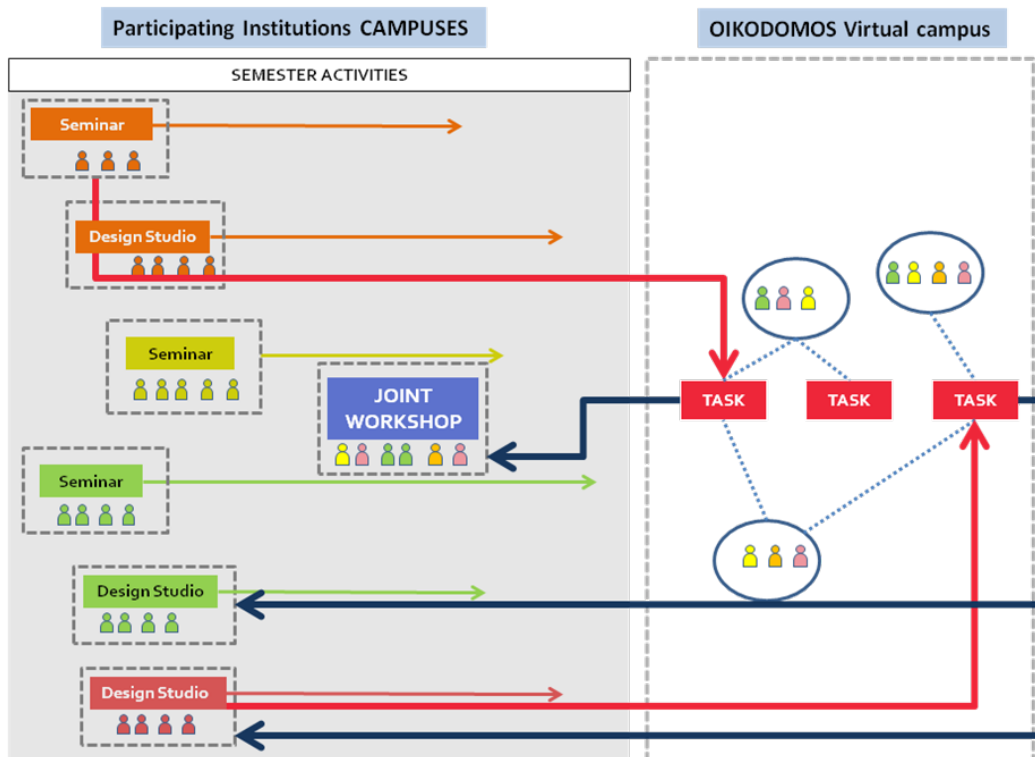**Jao Smet. W&K-Sint-Lucas.**

Figure 6: Blending off-line and on-line learning Activities.(Author Leandro Madrazo)

This means that staff can create strategies that allow partners to collaborate in learning activities on housing interwoven with the functionalities provided by a technological platform (See figures 5 and 6).

Asynchronous and synchronous activities are combined and separate housing courses are intertwined in the context of a Virtual Design Studio (VDS). The VDS platform does not imply a

complete design sequence (as a closed learning activity), but it's an open environment which can produce outputs linked to the (local) learning itinerary.

The Virtual Design Studio (VDS) is setting up a generic platform that allows distant learners to collaborate during the development of a design process.

The functionalities are :

- Representing stages of the design process;
- Internal communication (teachers, students, institution);
- Communicating with distant stakeholders (professionals, citizens, …);
- Facilitating (asynchronous collaboration.

The outputs produced by students during their learning activities will be used by student from other schools as an input to their activities. Therefore, it is important to pay attention to capturing and communicating the outputs produced; the following aspects are important here: the intelligibility of graphics and texts; synthesizing ideas; provoking interest of the reader and self-explanatory characteristics. The architecture of the joint curriculum is based on 'learning itineraries' and driven by common themes like' effective housing' (see above).

As a common insight, the design studio was a catalyst in the learning process; therefore the different workshops (Ghent-Grenoble and Bratislava) were the key learning activities in order to test the joint curriculum. These workshops were integrated into, prepared and followed by on-campus learning activities. The work carried out in the three workshops is described in WP PR EA2 "Implementation of learning programme: housing design studios".

4) An example of learning activities

We distinguish a model for designing a virtual curriculum design based on a theme for the workspace, learning activities and a sequence of learning tasks and the pedagogical role of a virtual learning platform (OIKODOMOS Workspaces) in the way it supports the learning activities.

We have defined a learning activity as each activity with the aim of helping the student to learn a particular item of knowledge, skill or attitude referring to competencies and learning outcomes. (referring to a learning outcomes definitions and the associated measuring criteria)).

Learning activities can be content-, task-, problem- or project- driven.

With regard to the last sequence of learning activities carried out around the third Joint Workshop in Bratislava,the following set of learning activities and tasks were executed ::

1/ LA 'Reflections on Housing', addressing the critical issues regarding contemporary housing, such as flexibility, industrialization, sustainability, energy efficiency, mixed-use, …
1.1./ TASK 'Critical concepts', explaining the meanings of two concepts chosen from the proposed list summarizing critical issues about contemporary housing.
1.2./ TASK 'Effective housing: what's in a name?', finding out what the term 'effective housing' can mean for architects and urban planners today.
1.3./ TASK ' Urban theoretical concepts', choosing and summarizing main references illustrating the concept of Garden City and Urban Eco-district by presenting 2 examples of existing sites or projects.

2/ LA 'Urban Analysis', analyzing the site for the urban and architectural project to be developed in the Bratislava Workshop.
2.1./ TASK 'Site Analysis', reading and interpreting the area and program of the project to be developed in the Bratislava workshop.
2.2./ TASK 'Digital Terrain Modelling', an exercise for CAD students to create Digital Terrain Model of the locality.
2.3./ TASK 'Libretto of the development', expressing the general development libretto for the locality Big Camp, based on the assignments details and own research of the problem/theme of effective housing.

3/ LA 'Urban Strategies', transforming the results of the site analysis carried out in the preparatory activities into design strategies, during the workshop in Bratislava.
3.1./ TASK 'Summarizing Site Analysis', presenting the outcomes of the site analysis carried out at each institution.
3.2./ TASK 'Site development concepts', developing a concept for a satellite area supporting the idea of self-sufficient residence, with mixed functions of living, amenities, working, sports and free time activities.
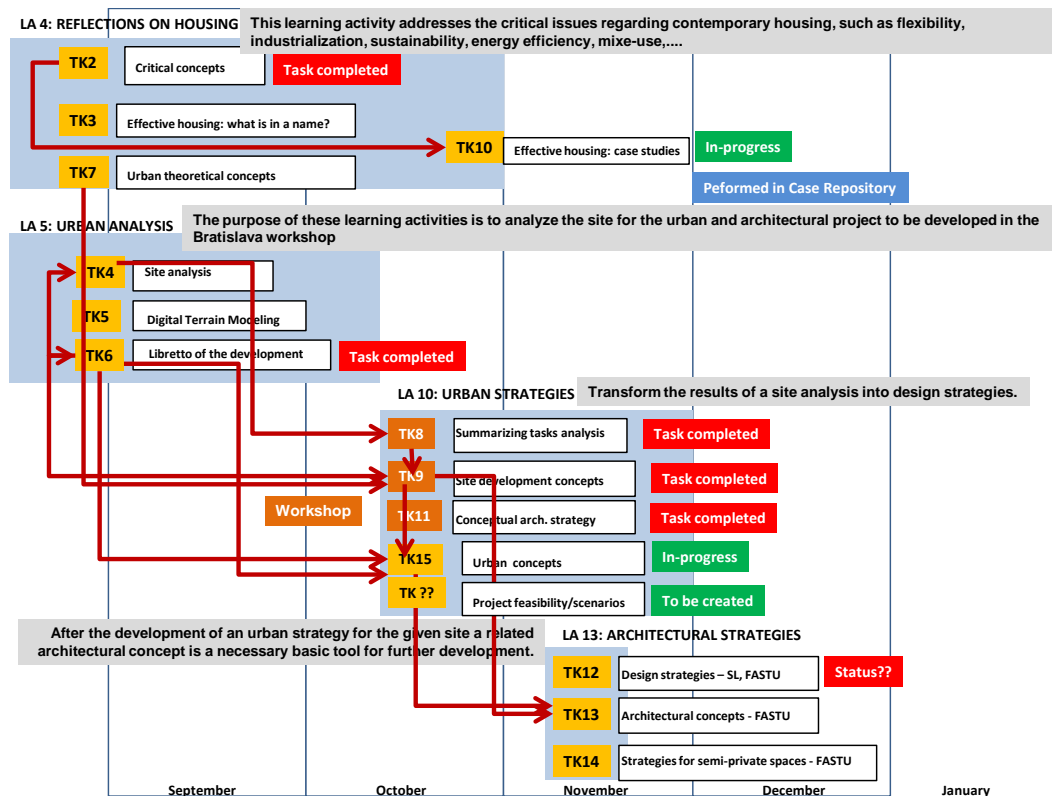

Figure 7: Examples flow of interaction between learning activities at partner schools (source: URL-La Salle).

The learning activities around each theme have taken place in the virtual environments, in design studios at the participating institutions (ie. locally), as well as in the joint workshops carried out each semester (see Figure 7). After the Joint Workshops, work continued locally in the participating institutions and collaboratively in Workspaces. In this context the 'workshops' were a learning activity in itself and thus a sort of 'Research laboratory'. As a synthesis and goal of the project we can describe the curriculum as follows:

- Firstly the OIKODOMOS-curriculum includes learning experiences that lead to the acquisition of joint competencies and learning outcomes in the domain of Housing issues (see 1.2.).
- Secondly the virtual curriculum is based on co-curricular activities for which credits are given.
- Thirdly the OIKODOMOS-Workspace supports the learning of dynamic knowledge building concurrently with disciplinary knowledge.
- And fourthly the creation of a OIKODOMOS-Workspace is student-centred, user-friendly, accessible and interactive. After all, it is about the students learning process. The main objective is co-constructing meaning about housing issues, according to the constructivist paradigm.

Therefore an open and dynamic learning environment was required; a place where learners may work together and support each other as they use a variety of tools and information resources in their pursuit of learning goals and problem-solving activities.

Three indicators are at work[2]:

> a/ the learning process: a process in which people, by undertaking learning activities, experience a relatively stable change in their behaviours.
> b/ the learning result : undertaking learning activities causes a learning result; these results can be stored in different sorts of repositories.
> c/ the learning strategy: a learning strategy is a specific combination of learning activities, which leads to a corresponding type of processing; stepwise processing (knowing), depth processing (understanding/comprehension), concrete processing (applying) and creative processing (applying in a new context, knowledge generation).

In the learning activities, by means of executing learning tasks, different types of processes were explored during the project. They were based on learning activities addressing the critical issues regarding contemporary housing, such as flexibility, industrialization, sustainability, energy efficiency, mixed-use; learning activities addressing urban analysis and strategies in which site development concepts, and urban conceptswere discussed; learning activities in which architectural strategies and concepts were designed in the context of developed urban strategies.

5) Reflection

The development of new curricula has taken a different path than initially planned. The first workshops in Ghent and Grenoble were an instrument to test these type of co-operations and possibilities. The Virtual Design Studio benefits from the first workshop taking place end of September till beginning of October 2008. Based on specific experiences gained during the workshops and its follow-up, refinements were developed during the two following workshops (Grenoble and Bratislava). This not only helped developing a joint curriculum module but also was important input in order to develop an appropriate and specific pedagogical approach.

During the first workshops in Ghent and Grenoble mainly the second strategy was applied because the design studio topics are very similar at each institution, but not fully integrated. The workshop was used as a kick-off of a semester design project and an assignment with a common theme. During the workshop specific inputs and brainstorm sessions were organised, from staff but also from professionals. At the end some first conclusions and conceptual ideas were produced. These were further developed locally and exchanged at fixed moments during the semester.

These experiences provided a good base of experience of possibilities and problems when developing an integrated strategy as described in section 4, which is a fully integrated module on housing composed of design studio work as well as more theoretical courses. The OIKODOMOS ICT Platform supports these activities in order to realise a mixed intercultural group of students and staff (see report WP EP4 "Enhancement of Web-Based Learning Environment" . It exploits at the same time the ideas of 'blended learning' to its limits.

Some shift occurred during the project period:

a/ During the first workshop there was no clear distinction between Learning activities and Learning Tasks, no clear distinctions between pre- and post learning activities/tasks and no clear relationship between preparatory activities/tasks and following activities/tasks in relationship with the 'Workshop'.
At the last workshop (Bratislava) a good integration and definition of learning activities and learning tasks related to the workshop was realized.

b/ During the last year of the project, by means of different formats, while preparing for the coming semester, we tried to communicate about local and joint learning activities and tasks in terms of 'offers' and 'demands'. This scenario turned out to be too complex and not manageable. Especially mapping 'all' Local Learning Activities was overloading and creating confusion. So at the end we have developed a more open-ended and dynamic scenario. Thus the organisation of the learning tasks is dynamic and open-ended.

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[2] Based on Pieter Jelle Beers, "Policy makers and learning from ICT-tools", Maastricht University, ICIS, June 2001.

Some afterthoughts are presented below as a statement on pros and cons of the curriculum model which we have developed in this project

A/ Pros

The dynamic and auto-generative character of the learning environment based on the visibility of shared learning resources (presentations, materials, bibliographies and learning tasks) and the visibility of student's work and the comments given by peers, andteachersis an amazing asset. The environment is open-ended. Learning activities can be planned and carried out in different and multiple ways (by one or multiple partners, on-site and/or online).

The development of cross-discipline skills, online collaborative creative teamwork, language, communication, critical thinking and wider technological skills are very positive. Generic competencies are more and more important; this project contributes to that demand.
Broaden cultural understanding and the involvement of practitioners, professionals and other stakeholders included is supplementary to the traditional pedagogic approach. Cultural differences are taken into account more explicitly.

A joint curriculum translated in learning activities has been established and students have reacted very positively. Teaching staff has been enthusiastic and was encouraged in storyboard writing, course evaluation, reporting, follow-up,

B/ Cons

A lot of the success of this learning environments and curriculum concept depends on good coordination of the learning activities and tasks and the need of a collaborative attitude towards reaching common pedagogical goals between staff. Learning tasks have to be clearly described. This requires a substantial amount of effort and communication.

In architecture and housing graphical communication is important. To be understandable by other learners there is a need for adding explanatory texts to the uploaded files (what is the role, goal, meaning, content of the image) imposing additional efforts.

Stronger consistency in the use of the environment and integration in the existing courses or modules at local level is needed. This includes timetables, course registering, crediting, and common evaluation of learning outcomes.

Guidelines or instructions with detailed information on work organization, timing, milestones, and outputs/results seem to be important and should be formally developed in future. A lack of formal communication tools to inform other partners about the learning activities to be carried out is sometimes hindering implementation.

Future developments can be described as follows:

- Development of improved self- and peer review strategies based on an online debate.
- Making better use of asynchronous support (visiting experts, good practice guide, alumni support, interactive resources, reflective diaries, collaborative writing,) and investigate qualities and good practices.
- Creation of a (dynamic) knowledge-basis based on keywords and concepts and re-use knowledge by actively using 'learning chunks'.[3]

We would like to conclude with the following citation: "The OIKODOMOS virtual platform forces participants, students as well as teachers, to update systematically all knowledge and references; the constant flux of learning materials, presentations and feedback keeps participants awake. The developed pedagogic framework allows flexibility and makes it easier for proposals to absorb within your own schedule."[4]

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[3] A learning chunk is codified, explicit knowledge about a subject matter which can be reused. A learning chunk can be retrieved form a repository and used in different learning activities. Learning chunks support self-learning. In general chunking refers to a strategy for making more efficient use of short-term memory by recoding information. Herbert Simon has used the term 'chunk' to indicate long-term memory structures that can be used as units of perception and meaning, and chunking as the learning mechanisms leading to the acquisition of these chunks. (Source: Wikipedia).

[4] Quote from Kris Scheerlinck (Barcelona- La Salle).

The dynamics and open-ended character of the pedagogical model is visualized in the diagram below. It illustrates the diversity of interactions between Learning Activities and Learning Tasks at partner schools.

6) Sources that were consulted during this part of the curriculum design

-Courses of the undergraduate program related to housing studies.
-Report: José Luis Echeverria, Leandro Madrazo, January 18th, 2008 (digital file).
-Courses of the master program at IUG, PowerPoint presentation by J. Tucny, 20th of January 2008.
-Courses at FASTU regarding housing, report by Joklova, V, 25th of February.
-Courses at Sint-Lucas Ghent (W&K), based on ECTS forms provided by the school, December 2007.
-Subject Area Group Brochure, Tuning Educational Structures in Europe.
-http://crater.salleurl.edu/corporate/intranet/arquitectura_cat.asp (in Catalan).
-http://www.architectuur.sintlucas.wenk.be/index.php?id=6 (in Dutch).
-http://www.iug-grenoble.fr/formations/presentation.htm (in French).
-http://www.fa.stuba.sk/generate_page.php?page_id=1 (in Slovak).

Appendices

Appendix I: Curriculum Survey
The curriculum survey can be found in the Excel-table in appendix.

Appendix II: Housing Concepts
A structured taxonomy of housing concepts is designed based on the experiences of the project.

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