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Jim Roche

Dublin Institute of Technology, jimroche6@gmail.com

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Enhancing a Housing Technical Design Studio with a Collaborative On-line Learning Space

Jim Roche
Dublin School of Architecture
Dublin Institute of Technology
Bolton Street, Dublin 1, Ireland.
jim.roche@dit.ie

Leandro Madrazo
School of Architecture La Salle
Ramon Llull University
Barcelona, Spain.
madrazo@salleurl.edu

Abstract
This paper presents the experience in participating in a collaborative learning environment involving different academic programs from various schools of architecture and urban planning within the framework of the OIKONET project. A collaborative project for new urban, environmental and architectural solutions for three social housing blocks built in Dublin in the 1950’s has been designed and implemented on-site and in a web-based learning environment following a blended-learning philosophy. Teachers from other schools have evaluated the student work presented in this environment. This blended-learning approach has contributed to enhancing the educational space of the on-site design studio. Students had to learn the skills to communicate their work in this blended-learning environment in an effective manner.

Keywords: Housing studies, learning design, blended-learning

1 Introduction
OIKONET – a global multidisciplinary network on housing research and learning – is a three year Erasmus Network project co-financed by the European Union dedicated to promoting pedagogic innovation in the field of housing studies (www.oikonet.org). Thirty-four organizations in Europe and worldwide are part of this network, including higher education institutions, research groups, local authorities, community groups and international organisations. OIKONET’s aim is to foster the exchange of knowledge, methodologies and good practices among research groups and higher education institutions that are part of the network. The activities carried out in the project enable partners to interlink research activities with the collaborative design of learning, and to embed learning processes in social, cultural and economic environments. Collaborative learning activities are designed around housing issues at specific locations that encompass multiple housing dimensions (participation, access to home, refurbishment, energy efficiency, digital fabrication) and stakeholders (architects, citizens, social organizations, local authorities). These learning activities bring together the academic programs of the participating schools that encompass various types of courses (seminars, design studios) and promote interaction between students and teachers with
researchers and community members. This multidisciplinary and participative learning approach of OIKONET is based on the application of a diversity of digital tools – open and proprietary – that are used to design the learning, to implement the activities and to disseminate the results.

1.1 OIKONET: the OIKODOMOS global network

OIKONET is the follow-up of the OIKODOMOS Virtual Campus project, which was also developed under the auspices of the Life Long Learning Programme from 2007 to 2009 and from 2010 to 2011 (www.oikodomos.org). OIKODOMOS Virtual Campus is an inclusive learning space (Punie, 2007) that integrates different schools (architecture, urban planning), subject matters (housing design, urban planning, energy efficiency, sustainability), courses (design studios, seminars), academic levels (bachelor, masters) and learners (students, citizens). It adopted a blended-learning approach (Garrison & Kanuka, 2004) to integrating disciplines and courses from various higher education institutions (mostly architecture and urban planning). The design and implementation of the collaborative learning activities was carried out in web-based learning environments specifically developed for the virtual campus. Around 1000 students and 100 teachers from 15 higher education institutions in Europe participated in the learning activities carried out in the three years that the program was operative (Madrazo et al. 2012).

Continuing further along this line of work on pedagogic innovation in the field of housing studies, the objective of OIKONET – the OIKODOMOS Network – is to enhance the previous virtual campus to transform it into a platform of collaboration to study contemporary housing from a multidisciplinary and global perspective which encompasses the multiple dimensions which condition the dwelling in today’s societies: architectural, urban, environmental, economic, cultural and social. The consolidated OIKODOMOS Virtual Campus will grow into a network by:

1. incorporating other disciplines to the study of contemporary housing, such as economics, social studies and historical preservation;
2. enhancing partners’ profiles to include social and community organizations;
3. addressing the global dimension of housing research, incorporating non-European countries;
4. expanding the OIKODOMOS Virtual Campus to a larger number of institutions, inside and outside Europe and
5. enhancing the existing digital platform with new environments which will support the network's activities.

OIKONET intertwines three distinct areas of activity each one organized as a sub-network within the network (Fig. 1):

1. research on housing studies from a multidisciplinary and global approach;
2. participatory actions to engage the community in the definition, solution and evaluation of housing related problems, and
3. pedagogical activities which bring together different stakeholders and disciplines.
The purpose of the OIKONET network is to establish links among:

- Institutions, European and non-European, representing different disciplines concerned with housing studies;
- Themes of study on contemporary housing proposed and debated by the project partners;
- Learning activities, designed in collaboration and carried out following a blended learning approach; and
- Learners, from different institutions, inside and outside academia, constructing knowledge in collaboration through participatory processes in the various learning activities.

In particular, the objectives of the OIKONET network are:

- to collaboratively design learning activities around problems addressing different dimensions of housing. Through these learning activities, it is planned that the different courses (seminars, workshops, design studios), disciplines (architecture, urban planning, sociology) and stakeholders (academics, professionals, local representatives, citizens) will become closely interlinked;
- to overcome the boundaries between on-site and on-line learning spaces by integrating the sequences of learning activities carried out in seminars and courses as well as in the OIKODOMOS digital platform;
- to establish procedures to facilitate the long-term collaboration of higher education institutions concerned with the study of contemporary housing;
- to consolidate and expand the OIKODOMOS digital platform to support the collaborative learning design, facilitate access to learning resources, to facilitate collaborative design processes in the field of housing studies;
- to contribute to the solution of contemporary housing problems, collaborating with local institutions, social organizations and citizens’ organizations to engage citizens in the processes of defining and solving problems concerning dwelling and the living environment.
2 Collaborative Learning Environment

OIKODOMOS Workspaces is a web-based learning environment which facilitates the design and implementation of learning spaces which interlink with other activities carried out at various institutions in design studios, workshops, seminars and courses (Madrazo, 2012). A learning space is designed and implemented by a group of tutors who decide to collaborate in the design and implementation of some shared learning activities around a particular theme over a specific period of time. These learning activities are made up of tasks, which can be either one-off or grouped in sequences. A sequence of tasks can be constrained to a single learning activity, or they may cut across different ones (Fig. 2). This learning structure is sufficiently flexible and neutral as to support different kinds of activities – from the collaborative development of an architectural or urban project to course assignments – which can be done by students working individually or in groups, as well as by schools working independently (the platform can be used to support a course limited to the school program) or in collaboration with other institutions.

![Figure 2. Structure of learning activities and tasks](image)

3 Learning Space “Urban Housing Regeneration”

During the winter semester 2015/16, at the School of Architecture of the Dublin Institute of Technology (DIT) we designed a learning space for 4th Year Architectural Technology students for a project on the redevelopment of the area of Constitution Hill, in Dublin. The project involved collaboration between the DIT Architectural Technology students and staff, Dublin City Council (DCC) Housing and Architect Officials, four professional architects and some residents of the blocks. Working in four groups of five students for ten weeks, in a simulation of architectural practice, the student groups undertook a realistic design, planning and technical academic exercise following consultations with the DCC officials and residents and regular weekly briefings by each group’s assigned professional architect.

The site, on the northwest fringe of Dublin’s inner city, abuts an adjacent bus depot, is near a former railway station building and is close to the new DIT Grangegorman campus. The new light railway will run along its northern edge. There are three five-storey blocks of apartments (Figure 3) with the typical arrangement of ground floor single storey units and 4 floors of maisonettes with deck access above. There are 89 residential units in the blocks at present and one unit currently used as a crèche facility. The blocks are generally structurally sound but the apartments do not meet the standards that new buildings would provide in terms of floor...
space, room sizes, private open space, accessibility, fire safety, energy performance and building fabric standards.

Figure 3. Constitution Hill area with the three blocks on the left

### 3.1. Pedagogic Process

The learning activities aimed to simulate real world architectural practice and involved several reviews with housing and other experts. While being a particular technically and professionally focused academic exercise the aim of the project was also that the students, with their designated architects, engage with the urgent need of housing provision for demographic change, address environmental concerns and energy conservation - both at the urban and building level - explore adaptive reuse and rehabilitation of existing building stock and propose a strategy to revitalize the area.

The stages of the project went from briefing by the DSA staff followed by a site visit with DCC housing officials and residents, then a short design process with the assigned professional architects through to completion of regulatory audit and documents and a final presentation to DCC officials.

Figure 4. Visiting the site with DCC officials and residents

### 3.2. Learning Structure

The activities carried out on-line in the OIKODOMOS Workspace *Urban Housing Regeneration* were structured in three tasks: site analysis, developed design and overview of the process. The tasks were completed by the DIT students and uploaded to the Workspace. This required students to be aware of the communication space they were using and to acquire the necessary skills to transmit effectively their ideas (Neto & al. 2012). Students were given a short intensive course in In Design, a desktop publishing software programme, and issued with a template to arrange an A1 group poster to explain their project. Students uploaded their projects, which were then reviewed and commented on by teachers from other schools of the OIKONET network, which later informed the students’ approach to subsequent tasks.
The three tasks that were undertaken are described in detail next.

**Task 1 - Site analysis, environmental response and sketch design proposals**

Each group was asked to compose a poster of their work and write a short reflective text on their meetings with the residents, DCC officials and their first meetings with their assigned architect, identifying 3-5 important issues that they were intending to address that would improve the residents’ living conditions.
Task 2 - Developed design investigation, regulations audit and planning drawings

Task 2 involved the students in designing another poster to demonstrate their development of the designs and their auditing and application of regulatory requirements into planning and fire safety certificate drawings. Each group’s poster had to provide a specific set of drawings, a schedule of accommodation and a short reflective text on how and why the scheme developed the way it did, what the challenges were, the advantages and disadvantages of decisions made, how compliance with code impacted on the design and how the overall solution is beneficial to the regeneration of this neighbourhood.

![Image of poster]

Figure 6. Submission of Task 2, commented by teachers from different OIKONET partner schools

Task 3 - An overview of the whole process.

Task 3 required the students to compose one large poster and write a reflective text that synthesized the entire process and their experience of it and upload these to the workspace. The text was required to critically reflect on the entire process especially on working with the architects and to comment on the feedback from DCC officials and DSA staff at their final presentation. They were asked to identify what worked well and what they would have improved on or done differently. It was expected that their final poster would address some of the comments made by OIKONET teachers on the previous two tasks.
Figure 7. Submission of Task 3; one of the group’s final posters

Figure 8. Submission of Task 3, commented by teachers from different OIKONET partners

4 Conclusions

The students’ experience with this blended learning space had mixed results but improved significantly over the period as can be evidenced from the quality of the posters uploaded and the commentary and responses in particular for the final task. Students responded slowly to the initial task, not helped by their weakness in graphic formatting skills and their low knowledge of the publishing software. A combination of graphic design seminars and the comments from OIKONET colleagues focused the minds for Task 2, which showed marked improvement. Yet, there were some difficulties where the challenging pitfalls of group work became manifest.

Through their participation in these collaborative learning activities, Architectural Technology students were challenged on the importance of visual and written communication in clarifying their intentions and those of their assigned architect. They developed critical skills in visual communication using a particular formatting programme and completed good quality posters. The results of the final task demonstrated the true value of the collaborative experience, both the in-studio and on-line ones, when all the student groups exuded confidence in their final visual and oral presentations to the DCC housing officials and staff.

Figure 9. Presentation of students’ work to DIT staff and DCC housing officials

Much of the early commentary from OIKONET partners focused on urban and architectural critiques. While this was not the primary focus of the technology students’ project the
students’ appreciated the comments, learned from the critique and responded reasonably well. There was not time to address all design issues however.

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Figure 10. The full commentary by Oikonet teachers and responses by students to one of the groups uploads for Task 3

The blended-learning space has enabled teachers from six different schools involved in the OIKONET network to get to know the assignments and outcomes of DIT students and to evaluate them and engage in a critical discussion with them. These teachers have brought additional insights, which have enriched the learning process for the DIT students. In addition, students in this case, had to develop communication and presentation skills in a particular medium and to communicate both the design intent, the detail design, regulatory approval and technical detailing processes to other teachers with whom they did not have direct contact.

Like with all collaborative projects agreed in a physical place and specific time but conducted in on-line spaces at a different time, not all OIKONET colleagues were available to comment when it was expected. However, enough did to make it meaningful for the students. The final commentaries for Task 3 for example included detailed critiques on three of the posters from Nicolai Steinø from Aalborg University focusing primarily on the graphic quality of the posters which, even though coming after the event, was much appreciated by the students and very useful to their learning.

The learning process that the students went through in this blended learning experiment accords well with Kolb’s (1975) Experiential Learning Model which identifies the process of learning as moving from a concrete experience to reflective observation to abstract conceptualization and finally to active experimentation or planning. This quadripartite process clearly occurred for each of the student groups in this academic exercise with the online challenges bringing an additional impetus to their reflecting and conceptualising of their learning experience.

This is confirmed by the results of an Oikonet online survey conducted with the students at the end of their project. In answering the following question: “How useful was the OIKONET online environment for the collaborative learning experience?” where the range was from 0 (not at all) to 10 (completely); all the responders were in the 5-10 positive bracket, while 60% of these were in the 7-10 bracket. Another question asked: “Did students / teachers of other universities comment on your work- If yes, did you find their comments useful?” 80% responded positively in the 7-10 range with one student noting: "There were some great
comments left on the work, some there to help you and others that really motivated you and gave you confidence in the work you have done by giving positive and constructive comments on all aspects of work.” Lastly in response to the question: “Do you think this learning experience is worth to be repeated in the future”; 100% of student responders answered “yes”.

Therefore we conclude that the experience of using on-site learning together with an on-line environment has contributed to enhancing the educational space for these students.

5 References

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Assigned architect; Rose Bonner / Paul Fox
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Assigned architect; Susan Cogan
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Assigned architect; Daniel Coyle

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Viera Joklova, Faculty of Architecture, Slovak University of Technology, Bratislava, Slovakia.

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