Learning for Teaching Town Planning. A new approach

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Abstract: - Enhance the creative capacity of students to intervene over the city requires new learning methodologies implemented in the workshop that improve significantly the capacity of critical reasoning of the students, thus increasing their skills to be able to resolve certain problems that may occur in the discipline of town planning that they'll have to face up in the future. Evaluate their results should allow, at the same time, enhance such initiatives and learning techniques.

Key-Words: town planning, architecture, teaching innovation, city, urban design, e-Portfolio

1 Introduction
Cities show a high complexity. To be able to intervene on them is necessary a precise reading on their different singularities, and embrace different disciplines at the same time in order to understand their logic and thus achieve a critical knowledge about them [1]. This process of reading and understanding requires to design a series of educational methodologies which are described below, seeking as a whole to enhance the learning capacity of students in this area.

In particular, these methodologies have been applied in the course of Town Planning IV, a matter that students of architecture of the Superior School of architecture of Barcelona (UPC) enrolled in their third year. One of the most important aspects of this course is learning to read the city with eyes of a planner, which requires special attention to discover their dysfunctions to be able to speak on it. This involves developing tasks of visits of field and detailed analysis on various fundamental elements of the city.

The course consists of 4 hours a week, which 2 are dedicated to theoretical classes, and the other 2 are for the workshop, where we deal with the work that students carry out. Students, in this workshop, develop along the course a 12 hectares residential project with a program of 1,000 new dwellings, with open spaces and different facilities and services, as well as a commercial area, on the outskirts of the city of Barcelona. We are 3 professors for 90 students: the theoretical sessions gives them a single teacher in one classroom where are 90 students, and the workshop are classrooms of 30 students per professor, where a more personalized attention is monitored in their work. This paper focuses specifically on the tasks elaborated in the workshop sessions and complementary tasks that have been developed in parallel to the development of that residential project.

2 The competences
With regard to the competences of the subject in question, current 2010 studies plan establishes a specific competences that are described below. Methodologies employed in this paper are intended to have an impact on some of them, specified in the following list in cursiva. The rest of competences will not be affected by this initiative, understanding that either do not need improvement, or are not very relevant, marked with an asterisk (*), or are considered inappropriate or unattainable, in the latter case marked with two asterisks (**):

1. Ability to apply the knowledge of graphic representation of spaces and objects.
2. Ability to conceive and represent visual objects attributes and master the proportion and drawing techniques, including the computing ones.
3. Appropriate knowledge and application to architecture and urban planning of the systems of space representation.
4. Appropriate knowledge and application to architecture and urbanism of the analysis and theory of form and the laws of visual perception.
5. Appropriate knowledge and application to architecture and urban planning of the metric geometry and design.
6. Appropriate knowledge and application to architecture and urban planning of the bases of typography, hipsometry and cartography and the techniques of modification of the land.
7. Ability for the knowledge, practice and developing tasks of urban projects.
8. Ability to develop functional programs in buildings and urban spaces.
9. Ability to draft civil engineering projects. (*)
10. Ability to design and implement urban projects and projects of construction, gardening and landscape.
11. Ability to implement norms and town planning Ordinances. (**)  
12. Ability to develop environmental, landscape, and correction of environmental impact studies. (**)  
14. Knowledge of the architecture general history. (*)
15. Knowledge of the social needs, quality of life, habitability and the basic housing programmes.
16. Knowledge of ecology, sustainability and the conservation principles of energy resources. (*)
17. Knowledge of Western culture planning and landscape. (*)
18. Knowledge of proper sociology, theory, economics, and urban history. (*)
19. Knowledge of the methodological foundations of the urban planning and spatial planning at the metropolis. (*)
20. Knowledge of mechanisms and drafting and management of urban plans at any scale.
21. Knowledge of civil, administrative, urban and the regulation of the building at the professional development industry. (**)  

So with this learning technique we are affecting exactly 12 of the 21 specific competences. In regards to the generic competences, these are for this experience very important, and are all of them affected by this methodology:

1. Sensitivity and social commitment: knowing and understanding the complexity of the economic and social phenomena that are typical of the welfare society; ability to relate the well-being with globalization and sustainability; ability to use in a balanced and consistent technique, technology, the economy and the sustainability.
2. Autonomous learning: detect gaps in own knowledge and overcome them through critical reflection and the choice of the best performance to expand this solvent knowledge.
3. Worthy use of computing resources: manage the acquisition, structuring, analysis and visualization of data and information in the specialty, and be critic about the results of this management.

3 Gathering information, evaluation and feedback  
All documentation generated by the student has been provided in digital format via Atenea, the intranet University moodle service. Contents on the Forum have been answered in this context, simultaneously doing monitoring of those who have participated.

The feedback on the methodology and the dynamics of course are absolutely essential, in order to be able to restructure that methodologies used to achieve better results in future editions [2]. To this end, a survey has been built for students, which has been distributed at the end of the course, and whose content and outcomes are shown later, forming an essential part of the conclusions of this work.

4 The strategy  
In the development of the residential project different parallel activities have been applied to improve the creative capabilities of students aimed to strengthen the critical thinking on the subject, a key aspect in this work. Five strategies have been used in concrete: the Table of Criteria, the Learning Record Card, the Puzzle, the Coevaluation between peers, and the Small Workshop Activities.

At the same time, the students had to build an e-Portfolio, a multimedia and digital document which should collect, in addition to the residential project developed by each student, all these activities, which must be pondered depending on the learning acquired in each one of them. This document is the structural cornerstone of the experience, because in it all the advances in the student's learning are reflected, and allows precise control over their own evolutionary process. To this end, and to facilitate the preparation of this document, a specific pattern created in Google Sites has provided, and which can be found at https://sites.google.com/site/u42012.  

The following are the different strategies.

4.1 The Table of Criteria  
For each of the three deliveries that the student has to do during the course, it has been prepared some headings intended to inform students, before starting
their task, what are the aspects that will be valued in their work, so that they can properly orient their realization.

The header, as one can see, affects on various issues and with different intensity. The aspects that are considered less transcendental, as the question of the presentation of the work, have less value, but it is important that students become aware that the presentation will be an aspect that also will be valued. Other issues such as the organisation of the work or the clarity of its general structure are aspects that have greater significance, and therefore, higher score.

4.2 The Learning Record Card

At the same time, for each of the deliveries that the student must make it has been requested the elaboration of a brief text on a sheet in order to answer to three basic questions, both before carrying out the work, as well as after its delivery. The questions are as follows:

A. Before the job:
1. What do you think your work is going to be useful for?
2. Which do you think are its three main objectives?
3. How are you going to structure your job to prove you have achieved these goals?

B. After the job:
1. What is the most important argument that you can extract from the work?
2. What aspect do you think you would get better?
3. What new questions and concerns has this work generated in your mind?

It is therefore very important that students do not limit their work to what the professor has asked, but are rather able to reflect on what they are doing in order to avoid the superficial knowledge and achieve to a truly deeper learning. We'll be able to confirm, in the survey made at the end of the course and showed at the end of this text, that the student demands, and thanks for, activities that led him to think [4].

4.3 The Puzzle

This activity was carried out during the two hours of the workshop. Since the time that we had in the workshop session was limited, were distributed by moodle three texts through the introduction of a table in which each student could see which of the three texts had to read before the session. The student had to came to the session with his text read. First, groups of three students with a different text were made. Once made the base groups, the 30 students were regrouped in new groups of three, this time with students who had read the same text (the "expert" groups). For 20 minutes they had to discuss together contributions from the text, questions that generated, and had to resume the fundamental aspects of it. After this session, students returned to the base group and then, in shifts of about 10 minutes, had to explain to the two companions of the group the content of his writing. At the end of the session, each student becomes aware of the contents of each text, with the addition that he had to explain the contents of his own text, once contrasted with other two students in the previous phase of "experts". This does not allow passive activity, sometimes frequent in cooperative activities. The session ends with a question to the group that links the three texts, which musts be responded together and delivered on a sheet of paper.
4.4 The Coevaluation
For each delivery was carried out the activity of the evaluation between peers. To be able to develop, it was opened a forum in the moodle tool where all works were hung, and also a table in which each student should grade two exercises that we assigned at random. The student only had to look for the two works to evaluate, and then use the Table of Criteria to make his assessments, and enter in the moodle his own considerations. He was also requested to be able to put a note to the work. This task was made in the forum moodle context, so everyone was encouraged that, at the time of receiving any assessment of their own work, they should answer the comments of his colleagues, in order to get a better dynamics of their own work and provide a continuous feedback on the work of each student.

4.5 The Small Workshop Activities
At the beginning of some of the workshop sessions, we started them with a 20 minutes activity in order to influence again in the critical reasoning. These activities consisted of making a small speech, but using mainly a video about the city, or a film, or an extrapolation with other disciplines as music or literature, related to the exercise that we were developing. After this task, the students had five minutes more to aim on a paper, and individually, the suggestions generated in their brains, with the aim of creating a debate on that issue.

Fig. 2: Some Small Workshop Activities

5 Results
With the aim of elaborating the set of implemented activities conclusions, it is necessary to synthesize the results of these experiences before separately.

5.1 The Table of Criteria results
The introduction of headings has been delivering some works much more ordered and organized than the previous years. Each one of the drawings that students have delivered had main title, and were also organized by themes. This means that the student was able to better organize his work and that it was an effective effort to present properly their own work. This effort on the part of the student has been also, in turn, a greater speed in my correction of the work, where I didn't have to do a strain to know what they were talking about in each case.

5.2 The Learning Record Card results
The introduction of the Learning Record Card has allowed me to be sure that the student has made a critical assessment about what he has been doing. It guarantees at the beginning of the task that he really knows which utility will have what has to be done (it is obvious that if he does not found any utility, his motivation will be null) and allows him to make a personal assessment of the performed task. This tool is very useful to be able to recognize the evolution of the student learning, as we can contrast the Learning Record Cards of each student at beginning of course with the last performed, an we can so testify his evolution in his manner of addressing the problems and on his way to assess the work done and recognize at the same time and by himself his possibilities and potentialities in this matter.

5.3 The Puzzle results
Once done the puzzle, the task that the students had to do consisted of developing a writing between three students in a half-page, which should put forward new arguments that would bind three items at the same time. One of these students was responsible for hanging the writing in the moodle Forum to be accessible to other students. The result of this work has been the development of these writings and the entire process of reflection and cooperation that the student has had to make.

5.4 The Coevaluation results
The valuation of some classmates work has helped students become aware of their own work and its shortcomings. This task, although it has not involved considerable effort on our part, aside from the preparation of tables and hanging each work on moodle Forum, has been an important method of
learning for students, as it is not the same to evaluate the own work, that evaluate what's wright and wrong about another work. The result has been also satisfactory to the extent that some students have taken the trouble to reply the companions who have rated them the work, which has generated a higher level of knowledge. However, there is to say that the fact of having to assess the work of the fellow putting a note has not been a good idea, for two main reasons. The first is that the students felt uncomfortable when it comes to having to put the note, and the second is that the student has been, in the majority of cases, excessively benevolent in his score, since the process of valuation has not allowed anonymity.

5.5 The Small Workshop Activities results
The result of these activities is clearly qualitatively, although unable to provide any evidence, given that no objective data has not picked up. In any case, these activities have allowed extending the scope of reflection of the students through open debate. The fact that the student and not the teacher is the center of attention and thinking provides in these activities to improve the social conditions of the classroom, drifting towards some relaxed reflections in which the student can find more comfortable at the time to give a constructed opinion or simply participate in the discussion with new and own arguments.

6 The basic role of the e-Portfolio
All these activities require further reflection by the student in order to be able to extract the most out of each one. The role of the e-Portfolio is not only to pick up such activities, but to order them and think about them, with the purpose of reaching the deep knowledge of the subject, and not just the superficial one. In this sense, the e-Portfolio consists of an argued narrative of the learning process, made with different materials and languages. The documents must be necessarily diverse, of individual and collective sources: bibliography, scholarly articles, web sites, newspaper articles, photos, charts, analysis, field work, videos, interviews, experiments, evaluations, teacher's corrections and feedback from partners, and also references to work of their companions considered by the student as suggestive [5].

It is not, therefore, a simple accumulation of documents and reports, as would be the case of a standard dossier. The student musts prove that he has learned. Students need to select the content required but above all other optional inputs: the student has to take a center stage in his own learning process. On the other hand, the motivation of the students comes from the fact that students are able to build a document that they can reuse for future activities, in order to present their credentials and ability to apply for a scholarship, to enter into an inter-university project, or even to look for jobs in the future.

7 The Survey
This valuable document, the e-portfolio, means therefore the key element that structure and brings together the activities discussed. But aside from the results obtained and explained above, it is necessary to attend the assessment that the student can do on his own learning process. It is therefore being done a survey for students on its various activities in general and on the role of the e-portfolio in particular, that has allowed to extract a number of valuable conclusions for future editions and verify the effectiveness of this learning methodology.
This survey incorporates two opened questions, namely the 3 and 11, while the other calls for a specific answer. In regards to question 3, the most valued aspects of the e-portfolio were as follows:

1. Is recognized the adventatges of reviewing the work done and the possibility and advisability to think about it.
2. Also is recognized the importance of achieving a document that summarizes in an ordered manner the tasks performed during the course.
3. It allows also to be aware of the subject and the knowledge acquired.
4. It is considered highly valued the motivation that represents the availability of a document that can be used for future work or to study abroad, in addition to deeping on the knowledge gained.

On the other hand, the less valued aspects were:

1. The time necessary to develop properly the e-Portafolio.
2. The need to take extra time for gathering information for dealing with internet tools.

As for the open question n.11, the considerations were 93% positive, highlighting significantly among them the effective utility of the e-Portfolio to consolidate the knowledge gained throughout the course.

As for more specific questions, results are shown in the following table.

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<th>Survey Table</th>
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Table 1: The Survey Values

In this table you can see how are especially valued the structure pattern in the e-Portfolio (see web space mentioned at the beginning of the paper), as well as also recognizes the importance of analyzing the the other colleagues work. On the other hand, has been less valued the opinion that other colleagues may have on the work of each student, and it has also recognized the fact that the e-Portfolio is not transferable to other subjects, especially the more technical ones.

8 Conclusions

All these activities require further reflection by the student in order to be able to extract the most out of each one. The incorporation of certain teaching methodologies that are covered by the design of an effective e-Portfolio allows to get to the deep knowledge of the subject and to achieve an effective critical reasoning with greater guarantees of success. Activities implemented throughout the year have allowed to improve significantly the learning of students who, through a detailed study of the results, guarantee us the effectiveness of such methodology:

1. Encourages the motivation of the student by the subject.
2. Improves his ability of learning.
3. Allows to reach a critical reasoning.
4. Provides the student a very useful product for his future.

References: