Project Oriented Learning in Architectural Studies at Monterrey Tec

Teachers essay of the experience of implementation of Project Oriented Learning (POL) in architectural studies at Monterrey Tec, México.

Rena Overgaard Porsen, Urban Architect
rporsen@itesm.mx
Professor at the Monterrey TEC, Department of Architecture, Campus Monterrey

Monterrey, Nuevo León 25 de agosto del 2005
ABSTRACT

This essay is a qualitative and interpretive teachers essay based on my work with Taller de Arquitectura IV at the Architectural Department focused on the ecology of the classroom. The line of investigation is based on the experience of implementation the education model Project Oriented Learning (POL) in architectural studies at Monterrey Tec, México.

The essay discussed how we learn architecture and how is it thought. The paper also presents Project Oriented Learning as a didactic tool providing tools to help the students improve the design and project process and its application at the Department of Architecture, ITESM, campus Monterrey.

The process of implementing POL is combined with the use of BlackBoard, a technological platform framing the course. This combination is essential to conceive maximum benefit of the process both architectural and Project Oriented Learning.

Architecture studies are in fact singular because it is a discipline that integrates games, art, practice, and investigation in every project. It is taught provoking students to develop a personal concept on a given context and to transform an idea into the design of a liveable space. In the design studio, POL has shown being an instrument for increasing the results and the efficiency in various ways:

- Improved management of the Group Process
- Increasing the theoretical background of the project.
- A more transparent grading process.
- Description and recognition of the learning methodology.

POL is a helpful tool for improving the learning process and including wider aspects of real life components in the projects.

The idea in the long run is to apply POL as a tool to help widen the range of professions participating in the project and at the same time to include the different subjects from the classroom teaching on each semester. This will start the developing of a creative project process combined with solid theoretical knowledge.

Key Words
Project Oriented Learning, architectural studies, architecture, Monterrey Tec, teaching methodology

INTRODUCTION

The experience that will be shared in this paper is principally a description of the observations made on the evolution in project-management using POL and how POL can help improve the quality of the teaching and learning process.

The line of investigation of this paper is based on the experience of implementation the education model Project Oriented Learning (POL) in architectural studies at Monterrey Tec, México.

It a practical approach the learning process of POL based on the daily approach of the teaching and learning process for the past 4 years of using Project Oriented Learning (POL) as the methodology in my classes of architectural studios.

The first part of the paper is an introduction to POL, the appliance made at Monterrey Tec and its relevance in the Studio Class at the Architectural Department. Following there will be a description of the methodology of design based on examples and
finally there will be a description of the experiences in the classroom ending with conclusions and capitalization of the observations.

**METODOLOGIES**

**Project Oriented Learning (Pol)**

POL is a didactic tool which centres the interest in the core of the project, emphasises on constant discussion of problem-solutions in order to maintain the dynamic of the project and to widen the flexibility of the conclusive solutions during the entire design process. POL combines themes with methods such as work contract, programmatic schemes and ideas of the project.

One of the principles of POL is that emphasis is centred in the project and that the study-group is responsible for leading both the process of the project and the learning process. The professor turns into a sparring partner guiding the continuous discussion of the project with the group. The strength of POL is that it applies a series of didactic techniques to guide project, process and maintenance the group.

POL is a flexible system in a numerous ways: it can be used in small and large groups. At the same time, it permits using information of all sorts like professors of different disciplines and information not obviously related which in the end will lead to investigation on new connections and ways to engage the information and knowledge. With a dynamic POL process, projects will achieve a lot more academic interest and contain more investigation because the students are in charge both of defining the problems and subjects of the project and for the design process.

The difficult part of using the POL technique is that it demands a 100% dedication from both teacher and students in all the faces of the project, it is no like other techniques which are more easily combined with traditional teaching methodology and didactic tools.

The process of implementing POL is combined with the use of BlackBoard, a technological platform framing the course in terms of contents, information, contact and some homework. This combination is essential to conceive maximum benefit of the process both architectural and Project Oriented Learning.

**Didactic Process of Architectural Design**

In the Architecture Department, we are taking part of this redesign process revising the way we teach architecture: from having used a traditional way of classroom-teaching based on a teacher versus student relation, into a more flexible project-based study-structure open to different professions, knowledge and scale.

I have been using Project Oriented Learning in my design studio classes where it has shown to be efficient in order to guide and reinforce both the methodology and the theoretical base. This process has also forced me to reflect about the very nature of the way we teach and study architecture.

Architecture is a process of design which implies several issues:

- Design is based on the cognitive capacity based on divergent thinking.
- It is usually taught through projects.
- The learning process is no a linear course of action but a dynamic circular progression.
Finally, the design-process in architecture never completes and there are no conclusive answers to the result of the project other than the presentation, discussion and defences of the project.

To understand how architectural design is developed we have to examine examples of published design methodologies such as the renaissance processes explained in the investigation and art of Leonardo Da Vinci (1452-1519). Through his diaries he shows the most brilliant example of working in a dynamical spiral with themes of all kind of all time. Like explained later in the Analysis of Beauty by William Hogarth (1697–1764).

Among contemporarily designers there are many examples of this same way of exploiting design-themes like Santiago Calatrava, who works with equal concern on the public space as on the design of the smallest detail of a bridge.

For the future generations of architects, there has been added the virtual reality perception of space, as shown in the interesting works of PLOT and Asymptote but it is likely that the essence of the design-process will remain enigmatic and seeking.

Design is about experiencing and understanding space combined with a strong ability of transforming images and being able to rethink normality. Although the most important part may be the constant jumps of scale, information and subjects in order to uncover bits of information for final design the project. The transmission of the results is strongly visionary, at the same time it is a highly practical and a hands-on profession.

Architecture is one of the academic approaches most open to public, all we do is immediately discussed and published by the whole society. On the other hand, when it comes down to how we teach and learn how to create architecture the processes and results are rarely documented, even though architects worldwide communicate and speak the same language.

Due to the complex way we live architecture and how it is taught, architect schools apply different approaches to architectural studies: some schools like the Royal Danish Academy is teaching architecture on a project basis with a strong approach to art studies. Architecture is thought through a process oriented procedure where each student are seated on a desk and are thrown into a working methodology little common of learning by doing projects which is a methodology very far from other teaching systems students are acquainted with. In the end the student is supposed to be able to handle a set of theoretical knowledge on a self-study basis apart from handling the design process.

Other schools like la Escuela Técnica Superior de Arquitectura de Barcelona teaches architecture through a class based process with a strong engineering approach. The teaching methodology is based on traditional class education where the students is supposed to learn the design process on her or his own through a wide variety of classes teaching a lot of different subjects with the idea that the student in the end will be able to connect all the information and let it lead to the ability of handling the design process. At the architectural department at the Monterrey Tec there has been a tendency to follow the first model and to lead the students through an important variety of courses ending up with an architect with knowledge of many subjects but little ability to incorporate this information in a project context.

Architecture studies are in fact singular because it is a discipline that integrates games, art, practice, and investigation in every project. It is taught provoking students to develop a personal concept on a given context and to transform an idea into the design of a liveable structure or space. It requires a lot of discussion of the process where the solutions are constantly changing.
EMPLOYING PROJECT ORIENTED LEARNING

The teaching methodology of the architectural department is based on a series of classes that the students take every semester very like the Escuela Técnica de Arquitectura de Barcelona. The students are taking 5 different courses every semester and the design class is only one of them. The problem with this model is that students do not fully apply the knowledge they have achieved in other classes in their design studio and they are not fully prepared to work with professionals from other carers. The traditional class system is keeping the students from growing up and taking advantage of their own knowledge related with the knowledge of other participants in their working- groups.

On the other hand the classroom teaching methodology is far more cost-efficient than the schools teaching architecture on an individual basis.

Since 2002 I am employing POL in my design studio class as a didactic strategy. I have applied it on several degrees: in the seventh semester with Taller de Arquitectura IV, Urbanism in the last semester and Sustainable Design and Urban Development on master’s level. The use of POL contains different approaches due to the proper nature of each course and the level of academically maturity of the students. In the following part I will describe the process and experience of two of these classes: Taller de Arquitectura IV and Sustainable Design and Urban Development.

The core of Taller de Arquitectura IV is working with projects containing a social and civic interest; it is furthermore a goal to introduce students to a relationship with the need of a real client.

From the pedagogic point of view, of this design class is related to the changing of process and dynamics of the learning structure. On previous classes students have been participating in a process highly related to following previous established schemes. By this course, the students will gradually move into a more mature process of discussion of different design-solutions. They also have to work in groups in order to elaborate the projects.

From an architectural point of view, students have to work with complex units both in relation to the scale of their design, the amount of information applied and the combining the needs of the client and their design.

The project-description is structured around POL structure starting with an introduction to the didactic tool and the way it will work during the course. Hereafter the students start elaborating the three faces of the project: the analysis, the master-plan and finally the architectural project. During the whole project the groups give in their reports and follow the discussion-part of POL. The final presentation takes place with a jury in order to secure an adequate discussion of the project.

The way POL is used in Taller de Arquitectura IV is bases on group-support in order to learn the didactic techniques and to gain experience in managing the group and the project. For most students the first part of the course seems difficult and bumpy but later, when they begin experiencing the benefits of the didactic tools and the hold on the group-process, there is a much more enthusiastic opinion about POL.

In the case of Sustainable Design and Urban Development the situation is different; here we are talking about last semester students and master-degree students, a much more mature group both in terms of architecture and didactic tools. This class consists in designing architectural solutions in an urban area with environmental problems or preservation of natural environments close to the city limit. The students have to
investigate the subject both from the theoretical background and from the practical, designing a project on a real urban site in Monterrey.

In this course POL is used, besides the classic approach described in the sequence of taller IV, as a tool for providing a team teaching model between 3 teachers with different specialities and professions: a geologist an architect and an urban planner.

This flexible teaching structure has made it very clear that the project and the group is the real centre of each design- process and it permits exploiting a variety of themes and approaches to the environmental problems of the city.

CONCLUSIONS

The steps to a creative mind- set is to retain a spirit of discovery, to be constantly motivated for changing, to count on intellectual courage and to participate in a constant process of reflection.

Applying POL as a teaching methodology gives the instruments to combine the creative way of teaching architecture based on the process of designing the project and the class- room based methodology. Using POL as a teaching strategy has shown to be useful in order to create a methodology that provides an even structure in both ways of teaching architecture. The methodology has shown to be useful in providing tools to keep together the design process and on the other hand it is important in order to include all available knowledge in the process. With POL, projects get more complex because students themselves are in charge of defining the specific subjects of the project and are in charge of demonstrating it through their analysis of the information achieved as base of the project. POL encourages the continuing development of the creative process, and the constant changing and adjusting of the ideas to the reality and visa versa. At the same time, it is useful to use a strong analysis of the process will have to take part of the final discussion of the project in order to achieve the best results of the methodology.

In the design studio, POL has shown being a persuasive instrument for increasing the results and the efficiency in various ways:

- Improved management of the Group Process Organization
- Better use of the individual talent between the group-members
- Less time- loss.
- Increasing the theoretical background of the project.
- A more transparent grading process.
- Description and recognition of the learning methodology.

Project Oriented Learning can be a helpful tool for improving the learning process and including wider aspects of real- life components in the project. POL enables students to work with other disciplines and ideas on a creative yet disciplined cognitive process experiencing and documenting the creative process and seeking other variations of design solutions.

The most persuasive results are achieved when POL is used as the main didactic tool. Nevertheless is can be used as part of different didactic tools throughout the whole career when it is applied with a well- defined timetable and a precise project- description through the whole process; this is the way Project Oriented Learning is applied at Monterrey Tec.
POL has shown to be a significant didactic tool in Taller de Arquitectura IV because it enforces both the creative and theoretical process. In my classes it is still early to detect lasting changes in the way students approach design, but it is a clear impression that POL, as the didactic methodology, has potential to create a teaching curriculum for architectural design studios where the design methodology to project- elaboration will contain a stronger variation on subjects and themes of information and investigation for all students. This will in the long run increase the flexibility of approaching new knowledge crucial in the performing of coming generation of professionals.

The idea in the long run is to apply POL as a tool to help widen the range of professions participating in the project and at the same time to include the different subjects from the classroom teaching on each semester as a direct part of each project both as part of the project and as part of the grading system. This will start the developing of a creative project process combined with solid theoretical knowledge.

References:

Kraft, Ulrich Kraft. Unleashing Creativity,

Olsen, Poul Bitsch & Pedersen Kaare. Problemorientet Projektarbejde;

Porsen, Rena Overgaard. Rediseño de Taller de Arquitectura IV, ITESM 2002

Scott, Robert Gillam. Fundamentos del Diseño,