

**Intuition as a pedagogy strategy  
Abstract**

Since 2001 the School of Architecture in Aarhus has undergone dramatic changes according to the new standards of the Bologna Declaration. This has led to a complete reorganisation of the study as well as substantial tutorial changes. As a result the pedagogic strategies have been evaluated and adjusted to meet the future demands for teaching. In the following it is discussed how these changes has inflicted upon the pedagogic strategies in the teaching of construction, materials and tectonics. The discussion is based on a five week course for first year students.

**Background**

The course that is to be presented must be evaluated with two specific objectives. The tutorial reality of today, and the reality of the student of today.

The first objective derives from the reality that an increasing number of students have to be taught at the same time. The number of students admitted at the School of Architecture in Aarhus has increased in a five year period from 90 to 200 per. year. This has altered the student/teacher-ratio and has called for new and collective teaching methods with a flexibility to match the present situation.

At the same time it has underlined the inefficiency of the old and traditional "master- apprentice" pedagogy, which is characterised by the close dialogue between student and teacher. This pedagogic strategy is with the present situation not possible to be practised any longer. A key question to be asked has therefore been how it is possible to teach construction for 200 students at the same time?

The second objective, the reality of Student of today, derives from the fact, that the students have a different background today than earlier on. Some years ago more than 25% of students attended the School with a background in traditional craftsmanship. As a consequence, a high number of students had a basic knowledge concerning materials, construction and production.

Today this situation has changed, as the students that attend the School mainly have a High-school degree. This means that they are very well-trained intellectually, whereas they lack practical skills. As a result they have nearly no knowledge concerning structural dispositions and the use of materials. Therefore they "move with a certain blindness" and lack of intuition in this field.

Yet another reality of today is that fewer and fewer students come from families with a background in craftsmanship or practical work in general. Therefore the students are unaware of the relations that exist between material, form and process. As a result they lack a general intuitive understanding of how the built world is conceived. Instead they relate to

the physical world more as a collage of surfaces than a structural and three-dimensional phenomenon.

Given the tutorial reality of today and the reality of the student it has been of great importance in forming a new agenda for a pedagogic strategy to focus on teaching scenarios with the aim of improving the students' intuitive abilities. That is to say, not only to train the students to follow an intellectual approach to solving architectural problems, but also an intuitive approach.

This has resulted in a series of exercises and courses with a more practical and intuitive approach. Or in other words, it can be reflected in choosing the old and traditional pedagogic strategy of "learning by doing".

Following this pedagogic strategy it has been of great importance and with first priority to carry it out in the first part of the architectural education.

The five-week construction course for first year students consists of a series of four smaller exercises. All exercises are linked, and form together a progression with an increasing complexity. Except from the last exercise, all the exercises are introduced at the same time. This leaves the possibility of solving the exercises simultaneously. The exercises are to be solved in groups of 2-4 students using physical models as the major tool.

#### Exercise I

Investigation of shear- wall systems

In the first exercise, the aim is to give the student a fundamental understanding of the principles behind shear-wall systems. This is accomplished by asking the student to build a series of spatial models in cardboard using shear-walls as the fundamental constructional principle. The models are all to be seen without scale which leaves the freedom of interpretation into a building, a piece of furniture or a piece of sculpture.

#### Exercise II

Investigation of a minimal construction in wood and plywood.

In the second exercise it is the aim to give the student an understanding of static strength and elasticity. In groups of four the students are asked to give form to a beam using a restricted amount of material.



## The Aim "learning with the stomach"

## The Course



The exercise is to be solved only with the use of models as a tool. Every afternoon the students have the possibility of having their beam tested in terms of its weight/ load bearing capacities. This leaves the possibility of remaking or improving the constructions with the assistance and guidance of engineers and architects. In the evaluation of the constructions the aesthetic qualities are also to be evaluated.

#### Exercise III

Investigation of the use of materials as an architectonic parameter

In the third exercise the students are given an existing building that is to be investigated and examined with the objective of the use of materials. In other words, the students are asked to examine how the physical, technical and aesthetic potential of a specific material has been used as the architectural point of departure for the building.

The buildings to be investigated are all chosen with the criteria that they are constructed with the use of one major material. The buildings are located all over the country, which makes it necessary for the student to make a trip to visit them.

#### Exercise IV

Tectonics

In the fourth exercise many of the experiences of the previous exercises are summarised. In groups of two the students are asked to give form to a construction with the capability of carrying an object in a specific height, measured from a tabletop (In the most recent version of the exercise the object to be carried has been a pentangle-ball with the weight of 1200 grams).

The construction has to be formed with the use of previous knowledge and with the materials inherent physical and aesthetic potentials taken into consideration.

As an extra "layer" that is added to the exercise the object to be carried must function as part of the construction. This means that if the object is removed the construction collapses.

Yet as another "layer" the students have to take the issue of tectonics into consideration. This has as consequence, that the construction is not only evaluated as such but also with regard to tectonics as an aesthetic quality.



Given the background of the course, the criteria for success have been, whether or not the students have been given a competence with long term sustainability. This is certainly very difficult to measure at this moment as it calls for a long term investigation.

Nevertheless, it is our impression that the students have got an intuitive learning and understanding in the domains of materials, construction and tectonics.

Most prevalent from the course has been the enthusiasm of the students. The students have generally enjoyed the course and have worked with great enthusiasm and inspiration. It is our impression that this mainly has been due to the workshop oriented teaching.

Another goal that has been achieved has been the learning during the process. At no time have we focused on the result but instead the learning during the process. This has especially been empathized with the organisation of the specific exercises, where the students at all times have had the possibility of redoing their models. This possibility has been welcomed by the students to a surprising extent. They have constructed their models, seen them being tested and crushed, and finally had the wish of redoing them, -not only once but sometimes four to five times. This "learning-by-doing" has proved to be the pedagogic "backbone" of the course, as it has improved the student's intuitive and long term understanding of materials, construction and tectonics.

Describing the pitfalls, the difficult part has been to test the knowledge of the students. As the students have been focusing more on the process than the final presentation of a model, it has been more difficult to evaluate their work. We have tried to overcome this problem by asking the different groups of students to present their work process using Powerpoint as the presentation tool. This has proven to be a very good solution as the students have been trained in summarising and evaluating their own learning process. Used in this way the IT-media have been a skilful tool in reflecting on the work, which has been carried out.

## **Evaluation What Went Right, What Went Wrong?**