

# Pursuing Meaningful Learning

## Introduction:

High Impact Practices are a major talking point of education today as they lie at the heart of a strategy for teaching students to learn at a higher level. For me high impact learning practices are a natural part of teaching architecture, even before I knew them by this name or by the nomenclature of Place Based Learning. But as I study education theory I have come to understand the central role this particular high impact practice of place based learning plays in helping my students at Citytech learn at a higher level.

## Context:

My education as well as my previous teaching experiences were in private, dormitory universities where the students were sequestered to a large degree from the world outside the academy and could focus intensely on their studies. The public commuter school is a significantly different culture for higher education. Here the students have one foot in the academic world and another in the world outside the academy, where work, family, and social commitments compete with academic pursuits.

In addition, cities like New York are challenging places for higher learning when there are so many distractions and an intense culture of commerce. These forces place pressure on our students to be efficient in their studies, leaving little time or energy for in depth investigation and deep thinking. Who can blame a student for emphasizing efficiency in their education in a culture that demands ever increasing productivity and attention to multiple tasks simultaneously?

## Learning Culture:

The efficiency the students seek can have a limiting effect on their engagement with the course subject matter. The students certainly want to pass the course, but they can become content with the goal of earning their degree with the least necessary effort. In the study of student learning How Learning Works, the authors categorize this approach of the students as the pursuit a “performance goal” or “work avoidance goals” as opposed to a learning goal. They cite research that concludes that students who hold performance goals rather than learning goals are less likely to “use study strategies that result in deeper understanding...”<sup>1</sup> When this occurs, a culture of rote learning can become pervasive. I sensed this in my first year year at Citytech and began to build my syllabi to combat this force.

Richard Mayer, Prof. of Psychology of UC Santa Barbara places learning into two broad categories of retention and transfer. As he points out, students must be able to retain the

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<sup>1</sup>Ambrose, Susan A. *How Learning Works: Seven Research-based Principles for Smart Teaching*. San Francisco, CA: Jossey-Bass, 2010. 72. Print.

information presented in the demonstration and lecture, but also process it and be able to apply that information to new situations. He contrasts rote learning and constructivist (meaningful) learning in a useful way. Rote learning is information acquisition. Constructivist learning is where “students engage in active cognitive processing, such as paying attention to relevant incoming information, mentally organizing incoming information into a coherent representation, and mentally integrating the incoming information with existing knowledge.”<sup>2</sup>

As I observe it in today’s educational environment, rote learning, especially where access to information is ubiquitous, is virtual and passive: a student need barely commit information to memory as it is only a click away on a mobile device.

Meaningful learning demands active engagement. Rote learning by definition is a mechanical process. Meaningful learning requires a cognitive, human relationship to the subject matter where the students are in the act of “constructing meaning” for themselves.<sup>3</sup>

Rote learning is most efficient when context is striped away, but context is critical for meaningful learning.

## **Paying Attention (Careful Observation):**

The first step in Mayer’s view towards meaningful learning is paying attention. Paying attention is a critical act that we educators must focus significant attention on fostering. I view Careful Observation as the starting point of this action. (Natural to science.)

### **Eye Hand Brain:**

In my own education, the vehicle to learning careful observation was Life Drawing. Life drawing is an intensive effort to capture the proportion and form of the human body present in the model. Life drawing, unlike still life drawing, is a dynamic activity that is equally physically and mentally demanding. The model is in motion even when holding a pose, which requires constant reassessment and adjustment to the drawing. It requires a mental condition that is sheltered from the immediate distractions and demands of a multitasking culture. It develops a physiological state of connectivity and dialogue between the eye, the hand, and the brain.

Careful observation cannot take place unless the incoming information is unadulterated by the brain. This seems natural, but experience suggests otherwise: for example, in perspective drawing courses it is common for students placed in a street scene to draw elements of the buildings that they do not see. The brain knows that a roof is on top of the building, so it compels the hand to draw the roof, even through the roof is hidden from view by the other building elements. If the brain is guiding action that is not based on careful observation, the result is skewed. Paying attention and careful observation must be taught, practiced, and developed as a foundational skill for higher learning.

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<sup>2</sup>Mayer, Richard E. "Rote Versus Meaningful Learning." *Theory Into Practice* 41.4 (2002): 226-32. Aug. 2013. Web. 28 Apr. 2014.

<sup>3</sup>Mayer, Richard E. "Rote Versus Meaningful Learning." *Theory Into Practice* 41.4 (2002): 226-32. Aug. 2013. Web. 28 Apr. 2014.

## **Primary Sources:**

Our students ever growing access to virtual information and virtual research sources threatens to weaken or sever students' connection to real experiences and places during their formative educational years. Therefore, I have developed my courses around case studies as the primary context and laboratory. These case studies span period and style, but are selected usually due to the combination of their accessibility, their significance, and available existing documentation (drawings). They include the Lefferts House, the Brooklyn Historic Society, Pier 41 in Red Hook, the Empire State Building, Yale Gallery of Art, the Ford Foundation, and the Yale Center for British Art.

Field investigation and research that takes students face to face with primary sources can play a powerful role in developing Careful Observation in students. Primary sources are by definition more pure or raw in a way that makes them direct and accessible. Rather than search for the meaning of someone else's interpretation, one can develop one's own observations and interpretations.

The case studies listed above can be approached and researched through multiple primary sources. The building or artifact, the architects' drawings for the project, contemporary maps and atlases documenting the site conditions.

A good example of this is the case study project for Pier 41 in Red Hook. The building is an impressive relic of mid 18th century warehouse design that evokes the nature of the Brooklyn working waterfront that played a central role in the commerce and character of Brooklyn and New York since their founding. This same relic also serves as a touchstone for the serious threats to the waterfront resulting from climate change, storm patterns, and rising ocean levels. Historic maps and atlases document the changing condition of the Brooklyn waterfront and serve as another primary source of investigation.

The students interaction with these materials, most particularly the insurance atlases and maps from the early to mid 19th century was intimate and direct. With the challenge to discern what we could learn from each map, or from the changes between one map and another, the students quietly and in a focused manner engaged with the material, paying close attention to the information in front of them. These primary sources inspired careful observation, which in turn enabled rigorous investigation and research to take place.

## **Work In Real World Context:**

### **Motivation:**

Architectural study provides many opportunities for Careful Observation, or paying attention. But how can we motivate the students to "engage in active cognitive processing" in our courses? Place based learning is a high impact practice with specific potential to increase motivation to engage, leading to increased care of observation. Out of the classroom, place based learning brings the full richness of context and climate into play, giving depth to the learning environment and experience. Placing students in urban places and buildings and challenging them to

observe, document, analyze and evaluate the case study buildings gives them a living laboratory that stands in clear contrast to textbook learning experiences.

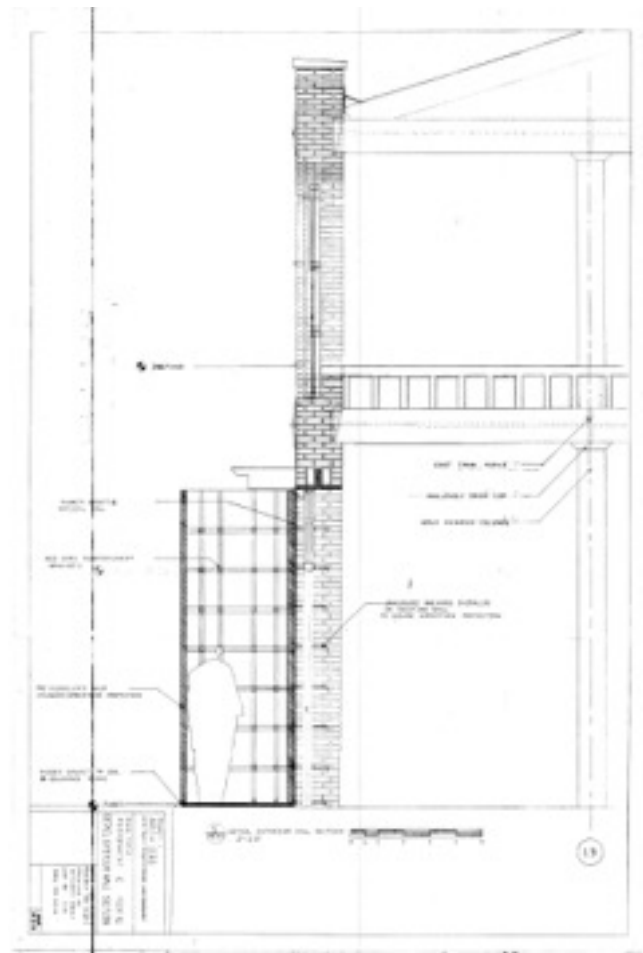
Activities have the potential to shift student goals from performance to learning if they impact the students' educational values. Research shows the efficacy of activities to accomplish this when they provide real world, authentic experiences and tasks. Case studies are natural vehicles for allow the students to "vividly and concretely see the relevance and value of otherwise abstract concepts and theories."<sup>4</sup>

### **ACADEMIC SERVICE LEARNING:**

Student values may be most impacted when they are asked to come to the aid of the community to address real world challenges. Academic service learning is a well documented high impact practice. Combined with the advantages and opportunities of the place based learning and research into primary sources, the academic service learning project is a powerful vehicle for meaningful learning.

Our case study for Pier 41 became an academic service learning project when the owner and staff at the Red Hook Winery agreed to work with our students to study coastal flooding and methods of protecting buildings. In this case, the students studied the building as a representative example of brick masonry and heavy timber construction, but also researched the flooding caused by Superstorm Sandy. The owner and staff recalled their first hand experience of the storm and the damage to their business. The students then put together a set of drawings that documented the structure and proposed a number of possible steps the owner could take to protect against the next storm.

The students' presented their drawings and findings to the owner and his staff in a final round of discussion and feedback. Each student orally presented one part of the project at the final meeting. Their engagement and dedication to the project was sincere and serious.



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<sup>4</sup>Ambrose, Susan A. How Learning Works: Seven Research-based Principles for Smart Teaching. San Francisco, CA: Jossey-Bass, 2010. 83. Print.



*Yale Center for British Art, Detail of Exterior Wall Exhibiting Condensation Staining on Concrete*

#### EXAMPLE: CASE STUDY: YALE CENTER FOR BRITISH ART

In the second Building Technology course, we emphasize environmental threats to the performance of buildings. A critical concept for the students to understand is the impact of condensation on both interior air quality as well as the long term durability and resilience of building systems and materials. After introducing the concept, we visited the building during a day long trip to New Haven. On site, we found staining on the exterior concrete under the drip edge that



*Yale Center for British Art, Exterior Wall Exhibiting Condensation Staining on Concrete Frame*



*Yale Center for British Art, Interior Structural Beam Exhibiting Condensation or Leakage Staining*

protects the concrete from rainwater. We discussed this found condition together to come to the conclusion that condensation was the problem. A concept that is abstract became vivid and concrete through this real life authentic experience.

Experiential discovery in the course of a project is another potential for motivation. The experience of discovery is more often than not one of pleasure and excitement, even more so when it is genuine and shared between the students and the faculty member. Discovery can spark a dedication and unhindered continued exploration that digs to deep depth and high levels of rigor.

Discovery in the midst of a case study is aided (in a counter intuitive way) by a limit of the expertise on that particular context by the faculty member. A fresh and non-predetermined process lets the students play a larger role in steering and refining the activity, while the faculty member joins the students in a genuine course of inquiry. For the faculty member, the urge to climb to higher levels of knowledge, understanding, analysis, and evaluation for the particular subject matter recalls their own learning process, giving strong context and cues towards enriching their students' experience. In this way, changing the case studies and frequently being on the look out for new ones helps maintain the freshness and newness for both the faculty member and the students.

## **Determining Context:**

Context also serves as an adaptable scope for case study projects. Depending on the interest of the students, the time allocation, the resources for research, the context can be widened or narrowed. In essence, the map can be expanded or contracted. Determining an appropriate or relevant scale of investigation and context to be considered requires informed judgement and is a key activity of research. As such determining the context brings the students into the culture of undergraduate research and can result in increased value placed on the case study activity by the students.<sup>5</sup>

## **Bloom's Taxonomy and Place Based Learning:**

The case study projects offer a strong infrastructure for stepping up through the levels of Bloom's Taxonomy. The very activity of documenting the case studies requires both a command of information and dimensions (REMEMBERING), sorting through the relationship of the parts (UNDERSTANDING), demonstrating an ability to put all of it together (APPLY), breaking the building into distinct systems (ANALYZE), and appraising the efficacy of the details and system over time (EVALUATE), and to rearrange and transform the concepts and ideas into a new design (CREATE).

Another layer of a case study that can expand the student learning in the terms of Bloom's Taxonomy is reflections on reflections (switching now to secondary sources.) In the case of the Yale Museums, Edward Ford's book on detailing includes a theoretical reflection on the qualities of the work of Louis Kahn.<sup>6</sup> The case study building now expands in complexity, with themes and ideas mixed into the fabric of the concrete and wood, the light and metal.

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<sup>5</sup> Kuh, George D. *High-Impact Educational Practices*. Washington DC: Association of American Colleges and Universities, 2008. Print.

<sup>6</sup>Ford, Edward R. *Five Houses, Ten Details*. New York: Princeton Architectural, 2009. Print

## CONCLUSION

Learning outside the classroom is among the most critical activities in higher education today. The benefits of the High Impact Practice of Place Based Learning and Academic Service Learning are well documented and CUNY is wonderfully situated to use New York City and its environs as a Living Laboratory to enhance student learning.

