# Learning by Experiencing the Space: Informal Learning Environments in Architecture Education

Emine Erktin and Sema Soygeniş

## Abstract

This paper discusses the effects of a structured programme in an informal learning environment in higher education and aims to initiate the integration of other forms of education into the formal education system in architectural education. Acknowledging the relationship between learning and the context, the programme was designed to take place in an informal setting, ie. the city with its buildings, museums and urban spaces. Participants were a group of students from the architecture department of a Turkish university. The informal learning environment was six different cities in a foreign country, Italy that was unfamiliar to the students. The authors evaluated the program using preinstruction and postinstructor. Students demonstrated design, written comments of the students, and a report written by the instructor. Students of the study may provide some insight into the use of informal education in higher education.

Keywords: Informal Education, Informal Learning, Higher Education, Architectural Education, Modes of Education

## Introduction

Learning and teaching are the subjects that most interest researchers at all levels of education. They study the means and methods of learning and teaching, but the place where learning and teaching occur is also a subject for research. Since learning and teaching traditionally occur in schools, education is usually associated only with schools, but education also occurs in the diverse locations of everyday life as well as in the strictly defined classroom. According to Rogers (2005), the aim of education is to reproduce or strengthen the dominant culture according to social needs at the same time producing controlled and directed social change. It has been the schools, with their structured programmes and conventional environments that have fulfilled this aim. Their methods of learning and teaching are known as formal education. Today researchers are also interested in other forms of education, which may be classified by the context in which learning and teaching take place. Accordingly, education has been defined as formal, informal, and nonformal in much of the literature (Vadeboncoeur, 2006). Research studies show increasing interest in other forms of education besides formal because formal education does not account for all the learning of a lifetime (Werquin, 2010).

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Coomb and Ahmed (1974) define formal education as a "highly institutionalized, chronologically graded and hierarchically structured" system extending from elementary schools to institutions of higher education. Formal education requires a programme, teachers, learners, and a physical environment. Traditionally the environment is the classroom, although the nature of the classroom may change depending on the discipline and level of education (Erktin & Soygenis, 1998). The classroom environment requires specialized design, especially in the case of higher education, when the classroom may become a laboratory for the chemistry student, an operating room for future physicians, a design studio for future architects.

Discussions of nonformal education became louder in the 1960s, particularly in the context of developing countries (Rogers, 2005). Nonformal education is defined as education that is outside the formal educational system for particular subgroups of the society (Coomb & Ahmed, 1974). Nonformal education also includes educational programs provided by industrial organizations, which are different from the formal hierarchical education carried out in schools and colleges of all levels (Miles, 1964). Eshach (2006) argues that nonformal education occurs "in a planned but highly adaptable manner in institutions, organizations and situations beyond the spheres of formal or informal education." According to Simkins (1977), formal and nonformal education differ from informal education, since they are purposefully organized to facilitate certain kinds of learning.

Unlike formal and nonformal education, informal learning is not structured. The environments in which formal learning takes place are highly structured, whereas informal learning environments are less structured (Gerber, Marek, & Cavallo, 2001). Informal learning according to Werquin (2010) occurs during daily activities related to family, work, and leisure, and it continues throughout one's lifetime. In most cases it is unintentional, unorganized, unstructured. Gerber et al. (2001) point out that informal education does not require a teacher. Dierking (1991), on the other hand, does not make a sharp distinction between formal and informal education because he sees the physical setting as only one of many factors that govern learning.

Experience suggests that informal learning experiences in science lead to further inquiry, enjoyment, and a sense that science learning can be personally relevant and rewarding. Informal learners are diverse and comprise learners of all ages and abilities, of all cultural and socioeconomic backgrounds, including hobbyists, tourists, families, preservice teachers, online communities, and student groups, who might learn at home, at work, or in diverse social organizations, just about anywhere, really. Ideally informal learning experiences enable learners to connect with their own interests; such experiences develop in interactive learning spaces and allow in-depth exploration of topics "on demand" (Bell, Lewenstein and others 2009). Research done on children in informal learning environments shows that, learners develop awareness, interest, motivation, and social competency (Putman, Michael, & Walker, 2009). Considering the role of motivation in learned behavior, the influence of informal settings on the motivation of the students is notable (Gambrell, 1996). Pumpian, Fisher, and Wachowiak, (2006) claim that, informal learning environments such as museums, cultural centers, and botanical gardens, along with integrated instruction, contribute significantly to literacy. Hidi and Haracliewicz (2000) claim that informal contexts in

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which students can interact with text materials, artifacts, and exhibits are invaluable for developing their interests.

One of prevalent theoretical frameworks for understanding the nature of learning in alternative contexts is the Contextual Model of Learning proposed by Falk and Dierking (1992, 2000), which portrays "contextually driven dialogue as the process/product of the interactions between an individual's (hypothetical) personal, socio-cultural, and physical contexts over time" (Falk & Starksdieck, 2005). These contexts are not stable; they change. Since human beings are products of cultures and social relationships (Ogbu, 1995), they interact with other people. Research shows that interactions with docents, performers, or other visitors to museums can make a difference in visitor learning (Crowley & Callanan, 1998). All types of learning occur in all sorts of physical environments, and people communicate with the space they are in. In museums, a typical free-choice learning environment, the learning experience is voluntary and reactive to the setting (Falk & Dierking, 2000). Depending on personal motivation and expectations, people learn through social interaction in relation to a physical setting.

#### Architecture and the Environment

Theoretical developments in the contextual model of learning and growing interest in informal learning environments in primary and secondary education have led us to consider new approaches to learning in higher education. Architecture, the art and science of creating physical space seems like an appropriate subject for informal education in diverse environments because of its nature.

In addition to theory courses in an architectural curriculum there are courses on practice and design. Some of these courses require cooperation with the building industry and site visits to physical and tactile environments. The nature of an architectural education and research showing the advantages of learning beyond the confines of school (Rogers, 2005) led us to develop a structured programme for architecture students in an urban setting, using the city as the context for learning and teaching. Rogers (2005) referring to Paulson (1973) comments on heterogeneity and differences in educational provision among educational circles now. Decentralization as well as localization of control, democratization, introduction of different educational cultures, increased participation is the emergent issues in education. Besides the tendency to include different methods of teaching and learning, alternative contexts for learning environments inquiring an integrated approach have been considered beneficial (Wee, 2008). Providing an outdoor environment for children has become a current trend in education is considered to be a valuable learning experience for them (Peacock & Bowker, 2004).

We developed a structured programme to take place during the summer. The innovative nature of informal education in higher education especially a programme conducted in a foreign country setting offered an interesting opportunity to study the effects on student learning. How the context was combined with the structure of the programme was an issue, because research done among children has shown that informal learning environments, such as workshops and guided tours outside the school, although beneficial, were unsuccessful when critical teaching and learning processes

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were not integrated (Wee, 2008). Having a preplanned educational programme with documentation is advised (Peacock & Bowker, 2004) for a successful learning experience.

We assumed that a city would be an appropriate informal environment for learning and teaching architecture, the design of interior and exterior spaces. The nature of architectural design would emphasize the close relationship between environment and architecture. A foreign city with its unfamiliar and complex dynamism would provide a conceptual challenge resulting in new concepts and symbolic representations not previously in the students' scheme of things (Maclelan, 2005).

The design of a building includes its immediate environment. Architects design buildings for specific populations in a specific location. They analyze prospective occupants and their behavior in interior and exterior spaces. They visit the site to learn about its topography, orientation, plantation, surrounding urban fabric, and so on. Students in the architecture program would learn about the process in the studio, the library, and at building sites. The natural and the built environment are learning mediums for architecture students. Maclellan, (2005) referring Edwards, Hanson, and Raggatt (1996) emphasize the importance of learners' involvement in choosing what they want or need to learn. In the rich informal learning environment of a city, the students would have the leeway to identify the essential and the generic and to make connections among different contexts.

# Aim

The aim of this paper is to investigate the effects on learning of a structured educational program in an informal learning environment. Because of it structure, this informal learning program is similar in some ways to formal learning programs. The difference is the environment of its implementation and the annexation of the students' free time, when they had to cope in an unfamiliar society in unfamiliar urban spaces in a foreign city.

Educators have been questioning the traditional view of learning as an individual effort confined to a classroom environment. It is believed that people learn by being active in the learning process and working in collaboration with others (Maclellan, 2005). Vygotsky, (1978) and Lave (1988) argue that the construction of knowledge is a dialectical process related to a system of social relations. In this respect, the city is a social environment in which students have an opportunity to learn through relations with others. When experiencing the city as a tangible man-made physical environment, students can become active learners, not merely the passive recipients of a highly structured program. The aim of this study was to investigate the effects of an informal educational program located in a foreign city and offered as an adjunct to the architectural curriculum of a university.

## **Research Question**

What is the difference between the students' performances before and after instruction in an informal learning environment?

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# Method

This study employed the mixed method of quantitative analysis of pretest posttest scores followed by qualitative analyses.

## Sample

The sample comprised 2 male and 10 female students from the faculty of architecture in a Turkish university. Six were studying for a degree in architecture and six for a degree in interior architecture. One was a senior; two were in their third year; one was in his second year; and the rest were in their first year.

## Assessment

The students presented their ideas by sketches, showing their understanding of an existing space and responded to the space by designing a new structure to occupy it. Their work included a design assignment in which they would use photographs and sketches to explain their ideas for a specific urban context. The instructor evaluated their work according to a rubric that included points for creativity, expression of ideas, and sketching technique.

# Procedure

The students were participants in a summer training program during which they had a twenty-day tour to six cities in a foreign country, Italy. They stayed twelve days in Florence and visited other five cities for one or two days. Their program developed under the theme of "Urban Spaces" included visits to museums and historical sites, explorations of city architecture, and a sketching course given by a local architect. Because research shows that novel field situations can produce adjustment or adaptation methods.

problems (Balling, 1982), students were first asked to gather information about places they would later visit. This first stage took place at their university, where they did some research and contributed to a travel booklet consistent with the urban theme of the program. The content of the booklet was designed under each city to be visited with respect to the urban squares. They found plans of city squares and the buildings around the squares, and each student was asked to provide basic information about selected buildings. The booklet also contained sketches to be traced and empty pages on which to sketch and take notes during the visit. The first stage aimed at preparing the students for the trip by constructing their own exhibits (Lucas, 2000).

The second stage of the program took place in the city of Florence with an emphasis on urban squares and surrounding buildings. They undertook a two-phase task that enabled us to evaluate the role of informal learning in this context.

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Phase 1

- 1. Sketches made while touring the streets
- 2. A preinstruction design vignette of an exhibition stand in one of the urban squares, Piazza Santa Maria Novella, assigned at the beginning of the informal educational program in the city of Florence.
- 3. Discussions about the urban square and their design sketches

Phase 2

- 1. Sketching course from a local architect in the studio and in some urban squares of Florence.
- 2. An urban analysis board consisting of photographs and sketches of a selected urban square in Florence, prepared by students working in pairs.
- 3. A postinstruction design vignette at the conclusion of the program (as in phase1, step 2)
- 4. Discussion on the design vignettes and reflections about the program.

The first phase took place during the first day they visited Florence, when the students were asked to visit a selected urban square, Piazza Santa Maria Novella. While encountering the square and surrounding buildings for the first time, they were asked to design an open air exhibition stand for the square and to express their ideas in a sketch and in writing. After completing the design task they discussed their design ideas, and the instructor asked what they had been thinking about as the work progressed.

The next day students started to take sketching and watercolor courses taught by a local architect, two sessions in a studio and four in the streets and squares of the city of Florence. Then, for the next twelve days they traveled to different urban squares and visited some of the buildings around the squares as well as several museums in the city. As they walked and discussed what they were seeing, they took photographs and made sketches in their travel booklets.

The students were also given an assignment to work at in pairs. Each pair was asked to spend time in one of the squares of the city of Florence and to make a visual essay with a plan, elevation drawings, sketches, and photographs that would capture the characteristics of the space and some of the activities of the people.

As a final task, the students revisited the first square, Piazza Santa Maria Novella and again designed an exhibition stand for the location. They prepared and then presented their designs. In a subsequent discussion they explained how they had responded to the first and second phases of the task.

The third stage was back in their university environment when they returned from their tour. The students submitted all their work, which the instructor evaluated according to a rubric. The final event was more like a celebration, an exhibition prepared by the students and a teaching assistant who had participated in the program after they all returned back to the university.

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# **Data Analysis**

Data from the pre- and postinstruction sketches and the retrospective reports were evaluated by the instructor who awarded scores to the sketches along three traits, creativity, expression of ideas, and sketching technique. A comparison of pre- and postinstruction scores was calculated using t-tests. Friedman's two-way analysis of variance was used to compare the distributions of scores for the pre- and the postinstruction sketches.

## Results

Table 1 shows the results of the t-tests comparing the pre- and postinstruction sketches for traits of creativity, expression of ideas, and technique.

|                       | Mean | Std.      | Т      |
|-----------------------|------|-----------|--------|
|                       |      | Deviation |        |
| Creativity presketch  | 2.00 | .894      | -9,46* |
|                       |      |           |        |
| Creativity postsketch | 3.32 | .956      |        |
| Expression presketch  | 2.64 | .809      | -4.10* |
|                       |      |           |        |
| Expression postsketch | 3.55 | .789      |        |
| Technique presketch   | 2.05 | 1.150     | -6.03* |
|                       |      |           |        |
| Technique postsketch  | 3.59 | .769      |        |
|                       |      |           |        |

Table 1. Pre- and postsketch means, standard deviations, and t-tests

\*: p< 0.001

Results of the Friedman two-way analysis of variance show that the distribution of the scores for all three traits was significantly different for the presketches. But this difference disappeared for the post-sketches.

The results of the quantitative analysis indicated significant development in students' performances after instruction. The difference was expected and is not necessarily attributable to the effect of the informal learning environment on the students' performances. To supplement the results of the quantitative analysis, we arranged discussion sessions to learn about the students' responses to the informal learning environment. The results of the quantitative analysis led us to examine the students' and instructor's reports during the discussions. The discussions indicated how the students felt about the influence of the informal learning environment on their work.

There were two formal discussion sessions during the program. The first one took place after the students had completed their first design vignette. That discussion centered on the sketches and other topics, including

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-Contextual references, analogies

-The genius loci or spirit of a place

-Phenomenological approach to understanding space through one's senses

-The users of a space, their movement and modes of life

-The physical characteristics, size, form, and elements of space

-Pedestrian movement and approach to the urban space.

-Architectural details and finishes, textures, colors, and light in space

The first discussion was about the importance of contextual references and analogies in design. The students were asked to articulate their feelings in the square, referencing it to the phenomenology of space and attempting to describe the *genius loci*, or spirit of the place. There was a special emphasis on the different modes of experiencing space through one's senses. In this case the smell of baking waffles was the specific example. The instructor explained through examples how people use each space differently and commented on the scale of the square and how people respond to the pavement and details on the surrounding facades. The instructor criticized the twodimensional approach in the students' sketches because they had chosen to explain their ideas mainly by drawing plans instead of three-dimensional drawings, which might mean they had difficulty visualizing the space in three dimensions. The students, on the other hand, did not seem able to express clearly what they were thinking in the design vignette. They focused on the function and the physical representation of their exhibition stands without much concern about the concept of their design and the location of the exhibition stands with respect to the context.

Students were asked to write their ideas in the second phase as they did sketching.

Student 1 remarked that she began to "feel the space as a place" in the second phase. Her writing became more descriptive as she referred to the buildings in the square. She acknowledged the importance of the church as one of the buildings and responded to its presence. She made references to the shutters of the typical houses of the city and said that her design of the exhibition panels showed that she had become aware of the environment she was in and how she had started to use elements of the environment in her exploration of new design ideas.

Student 2 responded to the physical characteristics of the square in the second phase; she said that she had started to "see" the square.

Student 3 had responded to the physical characteristics of the square in the first phase, but in the second she commented on the life of the square, how people used this square as distinct from the way people used other squares she had seen. She had developed a more sophisticated understanding of architectural space, enabling her to appreciate the physical environment as well as the tactile environment in the design of space. In making comparisons she seemed to employ more analytical skill.

Student 4 included an analytical description of the square in the first phase. In the second phase she criticized certain elements in the design of the square. She had developed a critical eye, a different mode of thinking about the square, which caused her to question its design.

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Student 6 made a descriptive analysis in the first phase; in the second phase she included some information she had gathered during the programme, which she was then able to integrate in her design of the exhibition stand in the second phase.

In her second phase, Student 7 referred to information she had used in the second sketch and commented on the buildings, the pavement, the use of the square, even the pigeons in the square. She had started to develop a more detailed vision of space that included its physical, tactile characteristics and the people who use it.

By the end of the programme, the students had learned to pay attention to formerly unseen features of the square and the city. They had also improved their sketching technique. Student 8 felt that he was gaining the skill to look carefully at the environment, to understand it and perceive the spaces in it. He thought that his second sketch was better because of the sketching course. Student 7 said she could now perceive the space better and had started to think about how people use an urban square and have a role in the in its formation. Student 9 said that she had started to think in three dimensions and could now express ideas by using perspective in her sketches. Student 5 said that she started to analyze her environment from the general to the specific, and she had learned how to shift from the city scale to the building scale. Student 1 said that she had learned to gather more information before starting a design. She said that she had started to feel at home in the space, indicating her awareness of phenomenological understanding applied to space. Student 10 said that she believed that her design skills had improved, that she could perceive and analyze an environment better as a result of the program, which included visiting different cities and buildings as well as the structured program.

#### Discussion

Findings of the study revealed that between the beginning and end of the program there was significant improvement in the students' ability to express design ideas through sketches. The instructor's report records that the students' approach to design developed from the solely functional to the functional, conceptual, and contextual. Some students reported that they were learning how to look at the environment and to use their perceptions during the design process. This visual and conceptual awareness included the physical characteristics of the micro-environment, the buildings and the museums, as well as the macro-environment, the characteristics of the city and its inhabitants. The students were surrounded by the buildings and inhabitants of the city throughout the learning process. As Falk and Storsdieck (2005) stated, living within a three-dimensional environment has a correlation with what and how much an individual learns.

Eshach (2006) referring to Pedretti (2002) and Ramsey-Gassert, Walberg, and Walberg (1994) argued that science field trips can create a sense of wonder, enthusiasm, and eagerness to learn, affective outcomes that are often neglected in formal schooling. Most of the students indicated that their motivation increased as their sketching technique developed because they could see their work improve. Falk (1983) similarly found that students are motivated by learning in a museum, where they can make choices about what they will learn. Students in the programme had considerable latitude in choosing what they would take from the rich and varied experiences in the city.

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## Conclusion

This research study aimed at exploring the effects of informal learning in the education of architecture students. The results reveal a powerful method for improving the sketching and perception skills of these students, so that sketching becomes a mode of thinking and a means of expressing their design ideas and decisions. Their craftsmanship and creativity developed during the programme. An important discovery was the relationship between creativity and craftsmanship at the beginning and at the end of the programme. There was a difference between measures of craftsmanship and creativity in sketches drawn at the beginning of the programme, but the difference between measures of these two traits was considerably reduced at the end of the programme. This change indicates improvement of the students' overall performance.

The results point to the benefits of using informal learning environments, especially the city, for students of architecture. Informal learning in the city provides a hands-on experience, a constant flow of information for analysis and abstraction as represented in the Contextual Model "for organizing the complexities of learning within free-choice settings" (Falk & Dierking, 2009) Navigating unfamiliar surroundings while visiting museums and other buildings in a city requires spatial abilities and contributes to spatial intelligence (Eshach, 2006), a necessary trait for architects to possess.

This research study suggests the need for further investigation of the use of informal learning settings for developing the design skills of architecture students. It provides an early step toward understanding the complexity of free-choice learning experiences in "dynamical learning environments" (Barab and Kirshner, 2001). Further research is needed to find out how to integrate structured programmes and informal learning environments in the architectural curriculum. As noted by Bayindir (2010), the role of instructors in informal learning environments is an open area for research. There is a need also for experimental studies to investigate the roles and relationships of informal and formal settings in architectural studies specifically and in systems of higher education generally.

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# Alanı Deneyimleyerek Öğrenme: Mimarlık Eğitiminde Yaygın Öğrenme Ortamları

## Özet

Bu çalışma yüksek öğretim bağlamında hazırlanmış sınıfdışı (informal) öğrenme ortamından oluşan bir programın etkinliğini tartışmakta ve örgün öğretimdeki farklı biçemlerin mimarlık eğitiminde içerilmesini amaçlamaktadır. Öğrenmenin mekan ve bağlam ile ilişkisine vurgu yapan söz konusu program bir sınıfdışı (informal) öğrenme ortamı olarak binaları, müzeleri ve tüm mekanları ile şehir ortamında işlenmek üzere tasarlanmıştır. Bir Türk Üniversitesinin Mimarlık bölümünde okuyan bir grup öğrenci çalışma grubunu oluşturmuştur. Öğrencilerin yabancısı oldukları İtalya'da altı farklı şehir çalışmanın sınıfdışı ortamını oluşturmuştur. Program uygulama öncesi ve sonrasında yapılan mimari tasarım eskizleri, öğrencilerin yazılı yorumları ve programı uygulayan öğretim elemanının hazırladığı rapor üzerinden değerlendirilmiştir. Bulgular öğrencilerin yaratıcılık, ifade zenginliği ve çizim becerilerinenkeki gelişmelere işaret etmektedir. Sonuçların yükseköğretimde sınıfdışı öğrenme uygulamalarına ışık tutacağı düşünülmektedir.

Anahtar Sözcükler: Sınıfdışı/Informal Eğitim, Sınıfdışı Öğrenme, Yükseköğretim, Mimarlık Eğitimi, Eğitim Modelleri

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