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Learning styles of design students and the relationship of academic performance and gender in design education

O. Osman Demirbas*, Halime Demirkan [1]

Department of Interior Architecture and Environmental Design, Faculty of Art, Design and Architecture, Bilkent University, 06800 Bilkent, Ankara, Turkey

Abstract

The study focuses on design education using Experiential Learning Theory (ELT) and explores the effects of learning styles and gender on the performance scores of freshman design students in three successive academic years. Findings indicate that the distribution of design students through learning style type preference was more concentrated in assimilating and converging groups. Further study indicates that the first and third groups were found to be more balancing while the second group being mostly a southerner. The learning style preferences did not significantly differ by gender in all three groups. Although there is no consistency in all three groups, results indicate that the performance scores of males were higher in technology-based courses, whereas scores of females were higher in artistic and fundamental courses and in the semester academic performance scores (GPA). Also, it was found that the performance scores of converging and diverging students differed significantly in favor of converging students only in design courses. In design education, instructors should provide a strategy that is relevant to the style of each learner in design studio process.

Keywords: Design education; Experiential learning; Learning styles

1. Introduction

In design studio, the knowledge acquired in various courses has to be integrated into the design process in order to find an optimal solution to the design problem. Schon (1983, 1987) observed that learning in the studio developed through a process he called 'reflection-in-action', however, research oriented to design education has not flourish (Waks, 1999, 2001). Recently, design educators have started to explore the characteristics of learning styles of students that can be used for the enhancement of learning in design (Demirbas, 2001; Demirbas & Demirkan, 2003; Kvan & Yunyan, 2005; Uluoğlu, 2000). This literature suggests that design students should learn by experiencing, reflecting, thinking and doing in the process of finding solutions to assigned design problems. Therefore, design education can be considered as being in line with the Experiential Learning Theory (ELT) of Kolb (1984). This study

* Corresponding author. Tel.: +90 312 290 1515; fax: +90 312 266 4136.
E-mail addresses: demirbas@bilkent.edu.tr (O.O. Demirbas), demirkan@bilkent.edu.tr (H. Demirkan).
[1] Tel.: +90 312 290 1465; fax: +90 312 266 4136.

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aims to focus on learning in design education using Kolb's learning styles and explores the relationship between learning styles, gender and academic performance.

2. Design education

In design education, learning and teaching methods aim to balance the creative process with a critical awareness of more objective criteria in the development of a proposition. Each design outcome tends to be unique, non-repetitive and immanent in its conception and development. During a design project, the student transforms a field of inquiry into a proposition or scheme. The learning process is characterized by continual dialogue. Students learn from sharing information with one another and instructors, and from the critiques of the jury members. The most important learning experience comes from what is known in other disciplines as self-reflection, a skill central to the acquisition of all design knowledge and skills, and one that is consciously developed (Demirbas & Demirkan, 2003; Newland, Powell, & Creed, 1987). Consequently, the learning process in design education can be underpinned by ELT of Kolb (1984).

The assessment process is distinctive to design education and is a considerable part of the learning process. At the end of the time allowed for the design project, each student's work is reviewed by a jury in front of an audience of fellow students, instructors and visiting critics from inside and/or outside the institution. At these sessions, the students present their design proposals, then the audience comment on and discuss the issues that it raises the quality of the design project. Critiques may be given to students in verbal, written and drawing forms. Other courses in the undergraduate curriculum are usually assessed through standard methods, such as coursework, examinations, papers and project-based work.

The graduates of a design department are expected to be highly motivated, technically competent and mentally prepared to deal with ideas at a professional level. The rationale of the curriculum has to enable the students to build up a model that will guide them to understand and apply the knowledge, skills, process and theories of design and to provide a balanced synthesis between the artistic, technological and humane aspects of the profession.

The curriculum of contemporary design education is studied under four categories. In the first category, there are fundamental courses that develop the design formation; the knowledge in these courses is generally theoretical rather than practice based. Secondly, there are technology-based courses that provide the scientific formation of design; the acquired knowledge in these courses is both theoretical and practice based. The third category consists of artistic courses that strengthen the base of design and expression; the acquired knowledge from these kinds of courses is the presentation techniques of preparing and expressing design ideas, so the expected outcomes are directly related to the application of them. Finally, there are design studio courses, which are a synthesis of the previous three categories (Demirbas, 2001; Uluoğlu, 1990). Design studio courses constitute the most important part of design education.

According to the characteristics of the different courses (fundamental, technology-based, artistic courses or design studios), different learning styles may be more effective in each. The recent studies showed that all learning styles are effective in different stages of the design studio process, since design studio is the combination of all other courses in architectural education (Bunch, 1993; Demirbas, 1997, 2001; Demirbas & Demirkan, 2000, 2003; Teymur, 1992, 1996; Uluoğlu, 1990, 2000).

3. Learning styles

Slaats, Lodewijks, and Van der Sanden (1999: 489) state that understanding the "learning styles of students has a wide range of possible applications in education" from classifying the learning preferences of students to detecting potential learning problems at an early stage in order to choose the appropriate teaching methods. Many studies of learning styles have been conducted in the field of higher education (Biggs, 2001; Busato, Prins, Elshout, & Hamaker, 2000; Coffield, Moseley, Hall, & Ecclestone, 2004; Guild, 1994; Hartman, 1995; Vermetten, Lodewijks, & Vermunt, 1999). Although the studies classify different learning types and/or styles in different ways, their aims and approaches are similar. Felder (1996) claims that since the instructional approaches around the cycle of learning models are similar, it is not important, which learning style instrument has been chosen. Among the various learning style theories, Kolb's (1984: 41) ELT that defines learning as "the process whereby knowledge is created through the transformation of experience. [and in which] Knowledge results from the combination of grasping and transforming experience" was chosen to underpin this study. Cassidy (2004: 423) describes learning styles in the ELT of Kolb "as the individual's intellectual approach to the processing of information". Consequently, each learner has her/his preferred way of