

A theoretical basis for recommending the use of design methodologies as teaching strategies in the design studio



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The aim of this article is to provide a theoretical basis to encourage the strategic use of design methodologies¹ as teaching strategies in the design studio. Learning to design is a developmental process where effective methods for approaching design problems evolve with increased knowledge and experience. Many design tutors, functioning as experts, make use of design methodologies that are developmentally mismatched with the way that students approach design problems at different stages. I propose that by understanding the cognitive theory and principles behind the acquisition of design expertise as a cumulative developmental/cognitive process, design education can be greatly enhanced (made more effective) by the introduction of developmentally appropriate design methodologies as a teaching strategy at incremental stages of development.

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¹ In this article design methodology is understood as the overall process leading to a design solution, whereas design methods are specific strategies used during the various stages of the design process.

It is the goal of design education, among other things (including socializing, passing on standards of professional practice, technical knowledge, critical thinking, civic responsibility, etc.), to facilitate the effective acquisition of design expertise. There are many contributing factors that influence how students learn to design. These include a student's predisposition (aptitude) to design both as a discipline of study and as a specialized set of skills, the structure and quality of the design curriculum, the quality of the learning environment, level of motivation (resolve), teaching method/strategies, the ability and expertise of design instructors, and others. In this paper I am concerned with teaching method/strategies.

My experience, after 25 years of teaching design at architecture schools in North America, Europe and Northeast Asia, is that architecture design tutors typically resist and often reject the value of introducing specific models of design methods as teaching strategies in the design studio. I believe that this resistance is well-intentioned, being based on their years of experience and personal reflection on how they approach design problems. Many argue that design cannot be codified, that there is no specific methodology that accurately describes how they design. They argue that design is not a step-by-step process



and that following a prescribed methodology in no way guarantees a successful design solution. These objections all have merit, but miss the point: *the way novice designers design is not the same as how expert designers design*. Rather than make use of the valuable insights gained through design research into design methodology as a teaching strategy, they use their own model of expert design performance as the norm for teaching design at all levels. The problem with this approach is that they are basing their teaching strategy on a description of how they design (as expert designers) as the normative model while teaching novice designers who lack the domain expertise, procedural knowledge or internalized experience to perform at that level.

1 Expert performance as a model for teaching

Design tutors, generally speaking, are expert designers. Expert designers typically take a solution-driven approach to design problems, calling upon years of experience, making use of tacit knowledge, often unaware of exactly how they do it (see [Cross, 2004](#)). That's the goal of design education. What expert designers often forget, however, is that they did not always perform at this level; that it took intensive study, a good deal of trial and error, and years of focused deliberate practice to acquire this level of performance. It did not happen all at once.

Project-based studio methodology continues to be the primary means for teaching architecture design at university-based schools of architecture. This methodology has proven to be an effective means for introducing students to design principles, problem solving, planning, form-making, tectonics, buildings types and for developing esthetic judgment as well as analytical and representational skills. One of the noted strengths of project-based studio learning is that it promotes situated active problem solving and solution exploration under the guidance of an experienced

practitioner ([Schön, 1984](#)). In most schools, project types and scope increase in complexity as the student moves through the studio curriculum. Learning objectives and expectations for performance are both explicit and implicit, and vary from school to school. At the first year, architecture design students are expected to be able to perform at a basic level, at the second year at the next level, at the third year at still a more improved level, etc. The level of performance in the studio presupposes mastery of specific skills, competencies and domain knowledge at certain stages of their development, with the expectation that at the end of the program students have acquired a sufficient level of design expertise that will enable them to function effectively as entry-level professionals.

Though it is not without criticism (see [Salama & Wilkenson, 2007](#); [van Dooren, Boshuizen, Merriënboer, Asselbergs, & Dorst, 2013](#); [Dutton, 1987](#); [Glasser, 2001](#)), the studio system works more-or-less well. But the system is flawed. The problem is related to the somewhat counter-intuitive observation that elite performers (artists, athletes and musicians) typically do not make the best teachers/coaches (see [Beilock, 2010](#)). Like expert performers in other fields, design tutors, as expert designers, tend to rely on a tacit (implicit) understanding of how they design as their operative model for teaching design. Observing that design tutors, as expert designers, often find it difficult to make explicit what they do and how they do it, [van Dooren et al. \(2013\)](#) argue that the ability to 'make explicit' is necessary for effective design education. They explain that for experienced designers the design process 'is not split up into separate steps and actions but the process is an undivided whole with automatic steps, actions based on common practice or routine, and moments of reflection and exploration'. They typically cannot tell you *how* they do it; they *just do it*, and expect that the student can do the same. In addition, the way an expert designs presumes in-depth knowledge of

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