Available online at www.sciencedirect.com
SCIENCE DIRECT®
Landscape and Urban Planning 73 (2005) 29–48
LANDSCAPE AND URBAN PLANNING
This article is also available online at:
www.elsevier.com/locate/landurbplan

Strategy use and challenges of ecological design in landscape architecture

Meg Calkins*

Department of Landscape Architecture, University of Illinois at Urbana-Champaign, 611 Taft Drive, Champaign, IL 61801, USA

Received 3 May 2004; received in revised form 29 June 2004; accepted 29 June 2004
Available online 6 October 2004

Abstract

Despite growing interest, rhetoric and research on ecological design in landscape architecture, practitioners in the US are not implementing as many ecological design strategies as might be expected. To better understand this phenomenon, the Green Building Practice Survey (GBPS) was carried out among landscape architects practicing varying degrees of ecological design to determine: (1) the frequency of use of common ecological design landscape strategies; (2) the obstacles and challenges that contribute to non-use; (3) significant characteristics of the firms; and (4) methods of project delivery.

Phase I of the Green Building Practice Study, an online survey undertaken in association with the American Society of Landscape Architects, measured ecological design strategy use, identified unique characteristics of US ecological design practice in landscape architecture, and quantitatively revealed many challenges and constraints that practitioners face as they try to implement strategies. Phase II of the study, discussed in a separate publication, targeted a representative sample of 44 respondents with standard-questionnaire phone interviews to elucidate methods and techniques of ecological design practice.

The study revealed high-frequency use of native plants, local materials, and site protection strategies; while use of green roofs, on-site wastewater treatment and material life-cycle analysis was quite low among the respondents. Commonly cited challenges were: issues of cost; lack of information, testing and data on performance of strategies; time available for research; and resistance by project stakeholders, other consultants and code officials. The results of this study highlight a strong need for research demonstrating the economic and performance advantages of ecological design; strengthened information dissemination forums for practitioners; and marketing and education efforts directed to all project stakeholders. This paper will present the survey results, relate them to similar studies in allied fields, discuss strategy use and challenges within the framework of Classical Diffusion Theory, and identify opportunities and forums where the challenges might be addressed.

Keywords: Ecological design; Landscape architecture; Strategy use; Implementation; Practice; Green building

1. Introduction and problem statement

As environmental problems escalate, rhetoric supporting ecological design, or sustainable design, in

* Tel.: +1 217 244 6514; fax: +1 217 244 4568.
E-mail address: calkins1@uiuc.edu.

0169-2046/$20.00 © 2004 Elsevier B.V. All rights reserved.
doi:10.1016/j.landurbplan.2004.06.003

landscape architecture is increasing in academia and practice. Theories of ecological design espouse principles and strategies to create sustainable landscapes (McHarg, 1969; Lyle, 1985; Van der Ryn and Cowan, 1996; Franklin, 1997); and there are an increasing number of books devoted to technologies and strategies of ecological design (Thompson and Sorvig, 2000; Mendler and Odell, 2000; Melby and Cathcart, 2002; France, 2003b). Yet implementation of sustainable landscapes lags substantially behind discourse (France, 2003). In practice, 85% of Green Building Practice Study (GBPS) respondents are doing more green projects than they were five years ago. They characterize an average of 22% of their projects as "very green" and 45% as incorporating "some green" strategies, however most would like to be implementing more ecological design strategies in their work. Practitioners are encountering challenges to implementation though it has not been clear which strategies are problematic and why.

Ecological design, also called green building, is defined as the reduction of pollution and resource use; and the protection or restoration of ecological processes with the intent of minimizing the impact of the built intervention on the local and global environment. This paper addresses practices of site-specific ecological design and implementation of built landscapes. It does not address practices of ecological planning, land use planning and natural resource management. Additionally, discussion focuses on many "shades" of green practices ranging from firms employing just a few green strategies to those doing full-scale ecological restoration.

1.1. Related research

Minimal research exists on practice issues and challenges to ecological design in landscape architecture. Limited case study research and anecdotal discussion of green projects indicate challenges to implementation, ranging from issues of cost to a lack of testing and performance information of green technologies (Calkins, 2002a); and conflicting values of stakeholders are further exacerbated by these deficiencies. Frequencies of strategy use, and related challenges and obstacles have never been quantified.

Challenges and practices of ecological design have been better characterized in the related fields of architecture and interior design. Recent surveys of practitioners, discussed below, have quantified challenges of cost; lack of information, data and testing; deficient education and training; and conflicting values of clients and other project participants. These studies have been structured to reveal characteristics of practitioners interested in ecological design, and general challenges they encounter in ecological design activities. Challenges that practitioners encounter have been not linked to individual strategies. Individual strategy use has not been measured with the exception of two limited studies of green material use in architecture (Chick and Micklethwaite, 2004; Smida, 2003).

A majority of the studies have been surveys by print periodicals on issues and barriers in green building. Most have confirmed growing interest, and the gap between good intentions and actual implementation. The studies attribute this gap to a lack of education, training, and information on ecological design. An online survey of Metropolis magazine readers (mostly architects, interior designers, and a few landscape architects) revealed high interest in green design (93%), but a lack of education and training caused 70% to feel they are not equipped to take on a job where green design is called for (Szenasy, 2002). A study of 100 interior designers by the International Interior Design Association (IIDA) found that 83% felt a "moral obligation to offer sustainable solutions to clients", but only 37% of their projects contain sustainable solutions. Primary obstacles to their implementation were "too little information", "not enough time to do the research", and a lack of research demonstrating the economic benefits of green (Coleman, 2001).

An online subscriber survey of Building Design and Construction, a publication circulated to 76,000 architects, engineers, owners and contractors in the US and Canada, identified cost and lack of market acceptance as significant barriers to green design. Nearly two-thirds of the respondents called for more studies independently validating cost benefits; case studies of successful projects; and training and education (Cassidy, 2003). A similar online survey sent to all attendees of the first Greenbuild conference (sponsored by the US Green Building Council) in 2002 revealed comparable challenges of high first costs (78%), difficulty justifying costs and quantifying long-term economic benefits (47%), discomfort with new technologies (39%), and lack of market interest (24%).