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Design Process in Landscape Architecture: Developing a Learning Guide for the Design Workshop Archives at Utah State University

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DESIGN PROCESS IN LANDSCAPE ARCHITECTURE: DEVELOPING A

LEARNING GUIDE FOR THE DESIGN WORKSHOP™ ARCHIVES AT UTAH

STATE UNIVERSITY

by

John A. Gottfredson

A project submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF LANDSCAPE ARCHITECTURE

Approved:

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UTAH STATE UNIVERSITY
Logan, Utah
2014

ABSTRACT

Design Process in Landscape Architecture: Developing a Learning Guide for the Design

Workshop™ Archives at Utah State University

by

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Utah State University, 2014

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In 2011, Utah State University created the Design Workshop™ Landscape

Architecture Archive [Archive] housed in the Merrill-Cazier Library's Special

Collections and Archives. These archives constitute a valuable and unique learning

opportunity for students, researchers and professionals in landscape architecture.

The Archive consists of the process documents and work product of over 40 years

of professional practice in landscape architecture by Design Workshop™, a leading

landscape architecture firm. The documents represent a wide and diverse range of

projects and locations, but with special emphasis on projects in the unique landscape of

the American West. Archive documents are broad in scope, from concept sketches and

design alternatives, inter-office memos, to final planning reports and construction

documents.

These documents provide students with a rare insight into the thinking and processes that go into the successful creation of large, complex landscape architectural design and planning projects. Such access to the design process is normally not available to students; rather, students usually only have final design documents and/or the actual built projects, and must rely on conjecture to determine how the designers arrived at the final design solutions. The archived documents allow the student to examine the processes and thinking behind successful projects, providing guidance and instruction to the students on design process and how they might approach their own projects.

However, the size and scope of the Archive as currently constituted is not conducive to effective study and application. With hundreds of large, complex projects designed and built over decades of practice, the actual quantity of documents is enormous, making it difficult for students to navigate and digest the information. Additionally, it is difficult to deduce the process of design thinking when documents are viewed singly, rather than in context of what came before or after, or without understanding the supporting goals and values that drove any design changes.

This project was undertaken to develop a design process model capable of organizing and classifying the Design Workshop™ Archives, providing supporting information relating to design process, in order to enhance learning of professional landscape architectural practice, thinking, and design implementation.

(97 pages)

PUBLIC ABSTRACT

Design Process in Landscape Architecture: Developing a Learning Guide for the Design
Workshop™ Archives at Utah State University
John A. Gottfredson

After 40 years of successful professional practice in landscape architecture,
Design Workshop™ was seeking a permanent home for its vast archive of process
document and work product accumulated over that period. Utah State University saw
significant educational value in such a body of work could provide, and began working
with Design Workshop™ to acquire the documents. In 2011, Utah State University
created the Design Workshop™ Landscape Architecture Archive [Archive], to be housed
in the Merrill-Cazier Library's Special Collections and Archives.

Among the many learning opportunities presented by the Archive is the rare
opportunity for students of landscape architecture to see design thinking in action; that is,
they can study all of the drawings, tables, sketches, memos, and other supporting
documents through the entire process of a project's design. In this way, students gain
unique insight into how professional landscape architects achieve creative solutions to the
wide range of design problem landscape architects are called upon to solve in the course
of professional practice.

While the completeness of the Archive is one of its greatest assets, the enormity
of the collection also makes it difficult for students to navigate through and digest the
information. Therefore, this project was undertaken in an effort to facilitate students'
ability to access the archive and make sense of the design thinking they contain, so that
the students might improve in their own approach to design.

ACKNOWLEDGMENTS

I would like to thank my committee for all their expertise, hard work, and critical feedback that was essential in making this project a reality: Carlos Licón, David Bell, and Cheryl Walters. Carlos has been especially helpful and patient with me on this project, for which I am grateful. I would also like to thank Liz Woolcott and associated library staff for helping me prepare the large number of Archive documents necessary for this project in a timely and professional manner. I thank Kate Spears for her valuable assistance and expertise in the design and layout of the Learning Guide. I also thank Conrad Gottfredson for contributing his deep and invaluable instructional design expertise with the format and structure of the Learning Guide.

Finally, I would like to give a special thanks to my wife and best friend Ashley, and my children, Anna and James, for their unwavering love, support, and patience.

John A. Gottfredson

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CHAPTER I

PROJECT NEED AND PURPOSE

With the acquisition of the Archive of Design Workshop™ (Archive), students of

landscape architecture at Utah State University have been provided with a unique

learning resource and opportunity. Design Workshop™ is a leading landscape

architecture and planning firm, having established its position in the industry as a leader

in sustainable design, achieving creative and high-performing results through a unique

approach known as Legacy Design™, developed over the course of 40 years of

professional practice (Moses, 2007).

The Archive consists of a wide and diverse range of projects and locations, but

with special emphasis on projects in the unique landscape of the American West. Archive

documents are broad in scope, from concept sketches and design iterations, to inter-office

memos, to final planning reports and construction documents.

These documents provide students with a rare insight into the thinking and

approaches that go into the successful creation of large, complex projects. Such access to

the design process is normally not available to students; rather, students usually only have

final design documents and/or the actual built projects, and must rely on conjecture to

determine how the designers arrived at the final design solutions. The Archive documents

allow the student to examine the processes and thinking behind successful projects,

providing guidance and instruction to the students on design process and how they might

approach their own projects.

However, the size and scope of the Archive as currently constituted is not

conducive to effective study and application. With hundreds of large, complex projects

designed and built over decades of practice, the actual quantity of documents is enormous, making it difficult for students to navigate and digest the information. Additionally, it is difficult to deduce the process of design thinking when documents are viewed singly, rather than in context of what came before or after, or without knowing the supporting goals and values driving the design changes between different versions of each document singly.

Therefore, the purpose of this project is to develop a design process model capable of supporting and framing the organization and classification of the landscape architectural materials, providing information relating to design process in order to enhance learning of professional landscape architectural practice, thinking, and design implementation. This will be accomplished by comparing approaches currently used by design professionals, and looking for areas of agreement to create an acceptable approach to landscape design process. Once an approach is developed, a template for a digital learning interface will be built as a model for organizing design process documents and materials. Finally, process documentation from a real-world project will be viewed through the lens of the new design process and organized according to the learning interface. The intent is to discover whether the design process and learning interface might be useful for further study and understanding of the Archive.

This learning interface (Learning Guide) offers students and researchers several potential benefits. They will have enhanced opportunities to gain insights into design process and design thinking. They will have increased access to professional graphic and written communication, highlighting professional graphic standards and writing in the language of design. Students will be able to review the Archive for design inspiration and

precedent, and gain exposure generally to the professional practice of landscape architecture from a firm with a successful 40-year history.

While it is obvious that significant design thought and valuable information is contained within the Archive documents, students will have difficulty in extracting the design thinking from looking at the documents alone without additional context and understanding. The process documents indicate changes being made throughout the design, yet students are left to guess at the reasons behind those changes. Without the original designer to explain why changes or design decisions were made, a void in context and understanding is created for the student. This Learning Guide will provide a framework of general knowledge concerning the design process, and how landscape architects traditionally have approached design decisions in general. As best practices are identified and understood by the student, he or she will be able to deduce the intents and actions of the design professional with a greater degree of accuracy, and therefore gain more meaning and value from the study of the projects and documents within the Archive.

CHAPTER II

BACKGROUND

Joe Porter and Don Ensign formed the landscape architecture firm known as Design Workshop™ in 1969. Both men received their bachelor degrees in landscape architecture from Utah State University (USU) in 1963. Since the firm's founding, it has distinguished itself as a leading voice and example in sustainable and successful project development, earning the designation of the top landscape architecture firm in the United States by the American Society of Landscape Architects in 2008.

In August of 2009, Sean Michael, Department Head, and Michael Timmons, associate professor from the department of Landscape Architecture and Environmental Planning (LAEP), along with Cheryl Walters, Associate Librarian and Head of Digital Initiatives and Brad Cole, Associate Library Dean at Utah State University, headed out to Denver, Colorado, to meet with representatives of Design Workshop™. For years prior to this meeting, discussions had taken place between Design Workshop™ and LAEP/USU about the possibility of transferring the Design Workshop™ archives, constituting the accumulated design and support documents of the body of work generated in the previous 40 years since the firm's inception, to a permanent home at Utah State University.

It was the expressed desire of Design Workshop™ that their body of work not only be archived, but also clearly seen as a valuable repository of decades-worth of design thinking (C. Walters, personal communication, March 1, 2012) expressing a clear set of values and principles, including a respect for the environment and a commitment to landscape architects' role as good stewards of it; a recognition of the importance of

economic considerations, with the true source of long-term value being found in good design and quality craftsmanship; an affirmation of the value of a strong and vibrant community strengthened by a well-conceived built environment; and a belief in the power of art, beauty, and aesthetic expression for the enrichment of lives (Moses, 2007). This design philosophy, known as Legacy Design™, has provided the basis for the high standard of work that Design Workshop™ has set through the years. The intent in conveying the Archive to an institution of higher learning, therefore, was to make available and visible their process, product, and philosophy for the betterment of the profession and design community (C. Walters, personal communication, March 1, 2012).

Utah State University was interested in acquiring access to the Design Workshop™ Archive for a variety of reasons. Many established landscape architecture firms have their archives sitting, underutilized, in storage. By receiving, archiving, and providing access to the Design Workshop™ archives, Utah State University and Design Workshop™ could serve as a model for other institutions of higher learning and design firms. It was also clear that such a body of work would have deep inherent value for research, teaching, and learning (C. Walters, personal communication, March 1, 2012). In commemoration of their 40th anniversary, the Design Workshop™ Landscape Architecture Archive was created, comprised primarily of the physical archive of original material and a more selective digital collection online in the Library's Digital Collections at http://digital.lib.usu.edu. The Archive was officially unveiled on March 25, 2011 at the annual meeting of the Utah Chapter of the American Society of Landscape Architects (ASLA) hosted at Utah State University.

Upon arrival of the Archive, the Head of the Department of Landscape Architecture and Environmental Planning (LAEP), Professor Sean Michael, invited Professor Carlos Licón to lead the creation of various digital learning initiatives with the goal of enhancing students' learning opportunities related to the Archive. Several projects were identified as exemplary in their ability to showcase successful application of the guiding principles of Legacy Design™. One of these projects, High Desert, in Albuquerque, New Mexico, was selected as a good candidate for examination and case study in conjunction with the department's digital initiatives. Professor Licón worked with the author in developing this Learning Guide in conjunction with these efforts by the department.

CHAPTER III

DESIGN PROCESS

Process Definition and Importance

Design process in landscape architecture can be defined as the steps or approach taken in search for form or answers to design questions. It is a process of envisioning and weighing possibilities (Lynch & Hack, 1984), with the aim of proposing intentional change (Steinitz, 1995). The approach can be organized into a workable framework of various levels of design iteration to ensure proper rigor and quality of design output. Design is the search for forms that satisfy a program (Lynch & Hack, 1984), and can be thought of as a form of research, based on the asking of questions (Steinitz, 1995).

In their 1964 landmark book *Site Planning*, Lynch and Hack defined the design process as "the organization of the external physical environment to accommodate human behavior. It deals with the qualities and locations of structures, land, activities, and living things. It creates a pattern of those elements in space and time, which will be subject to continuous future management and change. The technical output – the grading plans, utility layouts, survey locations, planting plans, sketches, diagrams, and specifications – are simply a conventional way of specifying this complex organization." (Lynch & Hack, 1984, p. 57).

A distinction needs to be made between the act and process of design, and the product of that design process. Often, designers will organize their workflow around the products of design as a matter of practical necessity, for billing and so forth. A plan of work, for example, tells clients what they will get, and describes what the designer must

do. It does not necessarily indicate how that design work happens (Lawson, 2006).

Therefore, "design process" may refer to the steps of interaction taken between the client

and the designer to fulfill the terms of the contract, or it may refer to the interaction

between the designer and the design questions arising from the goals of the contract.

In order to avoid confusion between terms, a further distinction should be made

between design process, design thinking, and design methods. Design process is a larger

umbrella term that can refer to the overall approach to design, with two sub-components:

design thinking, encapsulating the mental attitude and cognitive techniques necessary for

creative problem solving and productivity, and design methods, which usually refer to the

actual steps or actions taken to produce a given output (Ertas & Jones, 1993; Lawson,

2006). Design thinking as a concept is accepted and applied in many fields, including

business and technology (Lamster, 2010). Design thinking provides a creative balance to

the left-brain, numbers-driven approach to problem solving that is often credited with

producing static, non-innovative solutions (Cross, 2011). Design methods are often

institutionalized by organizations in order to systematize a particular approach and

achieve consistent results (Jormakka, 2008). While both design thinking and design

methods are necessary components to a vigorous design process, the balance between the

two must be carefully scrutinized to ensure that one does not stifle the other. Concerning

this relationship, Schön (1983) stated, "Design thinking trumps design methods; the

thinking will help us confront change and complexity in ways that static methods cannot.

Professional methods, if the professional become entrenched in them, are not sufficient to

confront the complexities of a dynamically changing reality" (p.16). Design thinking

certainly is critical to being able to approach new problems in a creative and meaningful

way. Conversely, a robust methodology is also necessary to produce rigorous and

thorough design:

> "It should be clear that a well-structured approach in design does not mean
>
> that the final project will be "good" or "correct". Conversely, an attempt to
>
> structure one's search does not mean that the creative capacities of the
>
> individual are dulled and that his solutions will lack a 'spirit' of their own.
>
> Landscape architecture, as well as other fields in environmental planning
>
> and design, requires a balance between reason and intuition" (Toth, 1988,
>
> p.2).

Value of Design Process

Design process is valuable for a number of reasons. First, there is a direct

benefit for the designer. Second, a well-developed process is vital to the

development of a profession as such. Finally, good design process facilitates the

good design education.

Benefits for the Designer

A rigorous and robust design process provides many benefits to the

designer. Perhaps one of the most salient benefits is the high level of

thoroughness that is assured. The last thing a landscape architect wants to find out

deep into the design work is that an important consideration was neglected earlier

on, and significant time and effort has to be spent to incorporate new information.

This is not only a matter of credibility with clients and stakeholders, but costs

money to the client or, more likely, the design firm.

A good design process helps the designer know early on in the process who the key players are that need to be involved in the project, allowing for early and productive collaboration. Allied professionals and specialists help clarify the design goals by helping the designer know what questions to ask, and the parameters within which to work (Motloch, 2001; Ingels, 2004).

Design is a collaborative endeavor, and a clear design process allows for feedback and involvement in the process by others (Filor, 1991). In public projects, for example, it is important to involve the public in the process. Design professionals have come under criticism for taking a top-down, expert-driven approach to design, as opposed to an open, honest approach that allows for stakeholder involvement and feedback. In this regard, designers have been urged to take a few lessons from the sciences, where the scientific method is open to inspection and critical examination (Jones, 1992).

Furthermore, designers themselves need critical evaluation on their design ideas in order to obtain the best result. Lawrence Halprin says that by making the process visible, it actually frees up the creative process. "I have found, in my own work, that my hang-ups come when there is some buried obstacle that I don't understand and can't flush out. When I can "see" obstacles or get in touch with what's blocking me, I can deal with them" (Swaffield, 2002, p. 62).

Because each place landscape architects are called upon to design is unique, with its own scale, special needs, culture, history, and intended use, there can be no universal design process (Steinitz, 1995). Designers need to be able to customize the design process to suit the situation (Schön, 1983). Furthermore,

while there is no universal design process, there are universal design principles, that allow designers to ask the right questions, and know how to choose among the answers (Steinitz, 1995).

Professional Development

The process of design in landscape architecture is important for students to learn and practitioners to refine. While landscape architects are slow to impose any strict procedures that would impede designers from acting and thinking creatively, it must be recognized that in order to constitute a profession, landscape architects should collectively work to develop processes and procedures that can be examined and improved over time and used to train new practitioners (Schön, 1983). Landscape architecture can rightly be considered a profession as long as it has developed methodology, standards, and instrumental problem solving made rigorous by the application of scientific theory and technique (Schön, 1983).

Design is too often accused of being intellectually soft, intuitive, informal, and "cookbooky" (Schön, 1983). A refined approach to design will help ensure consistent quality and results throughout the profession, and elevate designers as serious professionals.

Design Education

Beyond helping the existing profession of landscape architecture, a strong understanding of design process methodology is essential for the training of students and new design professionals. Design is a learnable skill (Lawson, 2006, Steinitz, 1995), and a process for training design principles and methodology should be a central part to all

landscape architectural education programs. Concerning design education, Steinitz emphasized that there is a great need at the professional or "Community" level to standardize or professionalize the techniques and processes of landscape architecture and design, without stifling the creativity or intuition at the "Individual," or student level (Steinitz, 1995). Hideo Sasaki made it clear he felt that design thinking and design process should be a centerpiece of education in landscape architecture:

"Upon analysis, it is evident that the solution of any given problem is not of primary import; what is of basic significance is the process of thinking which the student undergoes in arriving at a solution. Also, no matter what the given problem, the manifest solution of a particular problem can hardly ever be used to solve another. Conditions change with each new problem, and each solution is unique.

"The thing basic to solving all of these problems is the *thinking process*— the critical thought process used in understanding and solving any given problem. Designing is essentially a process of relating all the operational factors into a comprehensive whole, including the factors of cost and effect" (Swaffield, 2002, p. 51).

Design Process Characteristics

While there are many aspects of design process, two characteristics stand out as being critical for the student to understand. First, design process is non-linear. That is, while different approaches to design are often described in straightforward ways, this is mainly for ease of explanation, while the reality is quite the opposite (Brett & Schmitz,

2009; Lynch& Hack, 1984). Secondly, as designers make decisions throughout the design process, they are not exempt from inserting their own values into their decisions, whether purposefully or inadvertently. These values affect the outcome of the design and their existence and effect need to be understood.

Non-linear

The most important characteristic of the design process to understand at the outset is that it is not as straightforward and linear as one would like. In reality, the process is cyclical, iterative, and messy. "Knowledge of a later phase influences conduct of an earlier one, and early decisions are later re-worked. Site design is a process of learning in which a coherent system of form, client, program, and site gradually emerges" (Lynch & Hack, 1984, p. 61). Because the real issues and solutions are not known at the beginning of the process, the designer must engage in a series of analyses. First, an idea is formed. This idea might be born of intuition, analysis, or assignment, or can be based on a metaphor or some other over-riding design scheme. Then the idea must be tested, measured, and analyzed for viability, bringing in social and ecological science and processes. Consequently the form or concept is modified, and the process begins again (Lawson, 2006). This creates a cycle between *intuition* and *reason* (Toth, 1988; Lynch & Hack, 1984), where the designer can be thought of as having a conversation with the design (Schön, 1983). As each test is made, and failures in the design concept are found, the designer is pointed to new ways of thinking about the project, the problem is reframed, and the cycle is continued (Lynch & Hack, 1984). Rather than beginning with a

problem, analyzing it, and forming a solution, this cycle of reason and intuition results in the problem and solution being manifested simultaneously (Lawson, 2006).

Despite the messy nature of the design process, it is still depicted in the literature as being somewhat linear and straightforward, in order to simplify learning. This is beneficial to beginning designers in order to help them conceptualize how they might approach a design problem. However, it is important that they recognize that this semblance of simplicity is more of an educational construct, rather than a working design model.

Value Laden

Designers need to take care that they are self-aware as they approach design work. "All design methods are laden with values; none are objective. Each emphasizes some environmental qualities over others and favor particular ways of judging." (Schön, 1983, p. 24). In part, this is why an open, "honest" approach to design, with stakeholder involvement and participation in the actual design process, is important. The stakeholder's values, not simply the designer's need to be incorporated and addressed (Jones, 1992; Crewe & Forsyth, 2003).

Landscape architectural professional practice should be understood as a spectrum, with ecological, scientific foci on one end, and aesthetic and psychological emphasis on the other (Licon, 1997). Crewe and Forsyth (2003) suggested that the majority of landscape architecture practice could be classified into six main categories:

1. Design as synthesis
2. Cultivated expression

3. Landscape analysis

4. Plural design

5. Ecological design

6. Spiritual landscapes

As Crewe and Forsyth explain, "Each of these approaches involves a distinctive way of practicing landscape architecture on several dimensions: its goals, the process used in design or analysis, main clients or audiences, the scale of concern, intellectual or knowledge base, ethical approach, relation to the natural world, and the approach's analysis of power relations or the larger role of landscape architecture work in society" (Crewe & Forsyth, 2003, p. 37).

In addition to recognizing or establishing a frame of reference toward a given project, a designer must choose and understand the values and ethics that will inform and drive his or her design philosophy and decisions. For example, a designer might have to determine his or her commitment to sustainable materials and practices, in the face of a client's pressure to design a commercial development over sensitive lands. The designer's personal design philosophy, or lack thereof, will make a difference on the ultimate outcome of a critical project.

Existing Models/Approaches

In order for students to develop their own approach to design, it is instructive to examine the approaches taken by other designers. The following are design process outlines utilized by landscape architects, architects, planners, and design theorists:

Hideo Sasaki

Hideo Sasaki outlined a straightforward approach to developing a design, consisting of three major steps: "(1) research, to understand all the factors to be considered; (2) analysis, to establish the ideal operational relationship of all the facets; and (3) synthesis, to articulate the complex of relationships into a spatial organization" (as cited in Swaffield, 2006, p. 35).

1. Research

2. Analysis

3. Synthesis

Sasaki described the first step, research, as consisting of primarily three parts: verbal research, including reading and discussing, visual research, including examination of plans, drawings, and built works, and experimental research, consisting of activities undertaken by the designer to isolate the main questions of pure design from the utilitarian aspects of functionality, budget, materials, etc, and allow the designer to explore the deeper design potentials of the project.

Analysis is the second step, where the designer seeks to understand each set of relationships in the design through a process of diagramming. Examples include relational diagrams, circulation diagrams, functional-use diagrams, and space or sequential diagrams.

Finally, the designer undertakes the task of synthesis, or articulating all the factors into a design form. This is where the details of size, shape, materials, and system of construction are all decided. It is this step that distinguishes the designer from the

engineer or technician. "The skill of organizing the functional with the touch of aesthetic is the particular quality of a designer" (Swaffield, 2006, p. 36).

Jane Darke

Darke developed her design model based on observation of how architects actually design, and concluded that the traditional analysis-synthesis approach was not actually followed in practice. Rather, the designers would latch onto an over-arching concept, and then experiment with a variety of designs based on the original idea until a satisfactory product was produced. Lawson summarized Darke's hypothesis as follows: "…first decide what you think might be an important aspect of the problem, develop a crude design on this basis and then examine it to see what else you can discover about the problem' (Lawson, p.45). Darke referred to the driving concept as the 'primary generator,' with conjecture being the crude design based on the idea, and analysis the process of examining the design in a search for insight, knowledge, or solutions (as cited in Lawson, 2006), as follows:

1. Generator

2. Conjecture

3. Analysis

Royal Institute of British Architects (RIBA)

According to RIBA, the design process can be summarized under the following four headings:

1. Assimilation

2. General Study

3. Development

4. Communication

Assimilation is the accumulation and ordering of general information specifically related to the problem in hand. General Study includes the investigation of possible solutions or means of solution. Development involves the refinement of one or more of the tentative solutions isolated during phase two. Finally, Communication involves describing one or more potential solutions to people inside or outside the design team (as cited in Lawson, 2006).

Kevin Lynch and Gary Hack

While Lynch and Hack outlined the design process as a linear, chronological set of actions taken from initial problem definition through occupation and management, they were quick to point out that such a portrayal of the design process is simplistic and inaccurate, due to the swooping, changing nature of design. "Knowledge of a later phase influences conduct of an earlier one, and early decisions are later reworked" (Lynch & Hack, 1984). Their process is outlined as follows:

1. Defining the problem;

2. Programming and the analysis of site and user;

3. Schematic design and the preliminary cost estimate;

4. Developed design and detailing costing;

5. Contract documents;

6. Bidding and contracting;

7. Construction; and

8. Occupation and management.

Richard E. Toth

Toth has mapped out his approach to design in significant detail, while disclaiming that in reality it is even more complex. For simplicity of understanding, he organized the process under nine broad categories. It should be noted that even though Toth's approach is detailed, he emphasizes the circular nature of design, while maintaining the importance of having an organized approach to design or problem solving, much the same way that other professionals like doctors have well-practices approaches to problem solving (Toth, 1974). Toth's nine phases are as follows:

1. Pre-analysis (problem formulation)

2. Data inventory and file

3. Full-scale analysis

4. Criteria-evaluation development

5. Concept development

6. Concept evaluation and selection

7. Site planning

8. Site Design

9. Implementation

John Ormsbee Simonds

Simonds outlines his approach to the design process with general headings of the several phases of the process, with the assertion that these phases apply to all design projects without regard to the scope or complexity of the project. However, some steps or

phases can happen concurrently. Under the broad headings, he lists specific actions that might fall under each category, as well as some guiding principles for each. For example, the Research phase includes surveys, interviews, data collection, and observation, and should be understood to be "an exercise in gaining awareness" (Simonds, 1998).

1. Commission
2. Research
3. Analysis
4. Synthesis
5. Construction
6. Operation

James A. LaGro, Jr.

LaGro describes a design process where either programming or site selection may occur first, with the one informing the other. Subsequent inventories of the physical, biological, and cultural attributes of the site also inform whether it is a proper site for the program, or whether the program is right for the site, through the process of site analysis. Once this circular design development activity results in a clear understanding of the site with an appropriate program, the designer may continue on to the concept development, master planning, construction documents, and culminating with project implementation.

1. Programming, Site Selection
2. Site Inventory
3. Site Analysis
4. Concept Development

5. Master Planning

6. Construction Documentation

7. Project Implementation

Jack E. Ingels

Ingels sees design as a clear process, beginning with a sequential accumulation of data, followed by analysis of the data, and ending with a sequential organization of ideas and solutions. He sees this process as being two-pronged, with the same analysis happening for site, as well as program, then through synthesis bringing everything together for the master plan (Ingels, 2004).

1. Site and Program Inventory

2. Site and Program Analysis

3. Synthesis

4. Master plan

Bryan Lawson

Lawson envisioned the design process where problems and solutions are reached simultaneously through the three acts of the designer: evaluation, where the scope of work/design/research is determined, analysis where it is broken apart into its various parts for individual study and understanding, and synthesis, where it is all put back together again in a new form or understanding. In turn, the result of the previous cycle of design action is re-evaluated, re-analyzed, and re-synthesized. As this process moves forward, a true grasp of the problem, and therefore its solution, are reached simultaneously.

1. Evaluation

2. Analysis

3. Synthesis

Design Process Synthesis

The design process framework was created by comparing the studied approaches and looking for areas of agreement. Upon examination, it appeared that the majority of approaches could be classified under four main headings (Table 1).

Table 1.
Comparison of Approaches to Design

DESIGN PROCESS COMPARISONS				
GOTTFREDSON	Generate	Develop	Evaluate	Communicate
SASAKI	Research	Analysis	Synthesis	
LYNCH & HACK	Define The Problem, Develop Program	Site Analysis, User Schematic Design	Developed Design	Contract Documents
TOTH	Pre-Analysis (Problem Formulation), Data Inventory	Full-Scale Analysis, Criteria Evaluation Development, Concept Development	Concept Evaluation & Selection, Site Planning	Site Design
INGELS	Program Inventory, Site Inventory	Program Analysis, Site Analysis	Synthesis	Master Plan
DARKE	Generator	Conjecture	Analysis	
RIBA	Assimilation	General Study	Development	Communication
LAWSON	Evaluation	Analysis	Synthesis	
LAGRO	Programming, Site Selection, SiteInventory	Site Analysis, Concept Development	Master Planning	Construction Documents
SIMONDS	Commission, Research	Analysis	Synthesis	Construction

In order to avoid confusion, four new heading names were selected: Generate, Develop, Evaluate, and Communicate. These titles are written as verbs, denoting the fact that they are actions to be taken in the process. Each category encompasses various sub-steps detailing common action items. A brief description of each category and sub-step is outlined below.

Generate

The first step in the design process is Generate. This title refers to the need to generate all the necessary ideas that will define what it is that is trying to be accomplished, how it will be accomplished, why it is necessary or meaningful, etc.

Landscape architecture is a broad discipline, and landscape architects are called upon to work on projects bordering on the scientific and technical, such as conducting an environmental impact assessment, or projects bordering on art and poetry, such as the creation of a meditation garden. Subsequently, each project should be approached anew, with a clear understanding of what needs to be done to produce a successful design or project.

The Generate step encompasses the following sub-steps:

- **Site & Cultural Inventory & Analysis**, where the designer examines what there is to work with and gains a preliminary understanding of what is *there.* Site constraints and opportunities are identified that, when combined with client needs for a design solution, help to inform the programming.

- **Programming**, where goals and objectives are set and metrics for measurement and evaluation are established.

- **Inspiration & Precedents,** where research into past or existing projects provides lessons and ideas for the current project. Artistic work is also explored that may inspire design elements or concepts for the current project.

- **Define Values & Perspective,** where the landscape architect determines the paradigm or lens through which the project at hand will be seen and evaluated and which will drive the design process.

Develop

The Develop phase of the design process is where ideas begin to take shape. The landscape architect examines the data and information gathered in the Generate step, and begins to formulate design solutions to the problems needing to be addressed. As the designer begins to understand the issues of the site on a deeper level through the different analyses executed as part of this phase, new insights arise and the program is adjusted. As the program becomes finalized, the designer focuses in on the areas of the site and cultural analyses that are most relevant, and completes the analysis at a deeper level.

After the program and site/cultural analyses have been finalized, the landscape architect continues to conceptualize the project, where different ideas and iterations get laid out for examination and feedback, culminating in the development of design alternatives. These alternatives are different designs which conform to the program requirements, but perhaps each emphasize something different, allowing the designers, clients, and stakeholders to see the options available to them.

The Develop step encompasses the following sub-steps:

- **Refine Program**, determine to what extent the program and site are, or could be, compatible. While the cursory site analysis and evaluation might reveal to the designer immediately apparent flaws in the program as given, oftentimes it is not until a deeper analysis is conducted that the true compatibility between site and program is known.

- **Perform Final Site & Cultural Analysis**, where the refined program informs the final aspects of site and cultural analysis that are performed. In order for the design to successfully fulfill the goals and objectives set in the program, a final, more specific level of analysis must occur that hones in on the now refined informational and design solution needs of the project.

- **Conceptual & Schematic Design,** where the previous steps in the process come together to inform and create a basic concept design. Concept design focuses on the basic layout, function and circulation of a site. Schematic design takes the basic concept a step further, locating site materials and more specific functional aspects of the design.

- **Develop Alternatives,** where alternative layouts and site functions are explored, but the program goals and objectives are still met.

Evaluate

If the culminating act of the Develop phase is to create design alternatives, the next logical phase would be to select from those alternatives. This process is more than just looking at them and subjectively deciding which one seems the best; cost and true impacts need to be studied before a selection can be made. In addition, quantitative

measurements (metrics) that were developed in the Generate phase to evaluate 'softer' goals, such as connectivity or sustainability, are validated or re-evaluated here. The chosen design is refined through this process, with the design becoming more exact and detailed, resulting in the 'finished' design.

- **Select Scheme from Alternatives** where the various design solution alternatives are evaluated and a final design is decided upon that best meets the goals and objectives defined in the program.

- **Refine Design** where the final design scheme is refined and developed to at a deeper, more nuanced level. Final layout and circulation paths are determined and designed and final selections of materials for the space are determined.

- **Re-Evaluate, Validate Goals and Metrics,** where refined/final design is re-evaluated against the goals and objectives set forth in the programs and the design metrics are evaluated to determine the success of the final design solution.

Communicate

To say that the Evaluate phase results in a 'final' design would be to oversimplify the reality to a degree. While the conceptual design work is completed, and the form defined, translating that idea and vision into a set of documents that can definitively and objectively convey those forms and ideas to a legally binding degree of accuracy is a large design task by itself. As the details get hashed out through the preparation of the construction documents, the designer will be continually called upon to make design decisions, ensuring that the quality and character of the place is translated down to the smallest details.

In addition to communicating the design to related professionals through the construction documents, landscape architects are often called upon to communicate their designs to the public, their client, or other stakeholders. This may be to 'sell' their concept for the project to the client at the earliest stages of trying to land the job, or in the early phases of design. Or it may be part of the process of 'selling' the idea to investors, or to effectively communicate the vision to zoning and permitting government officials. In any of these events, the designer needs to tailor the design materials and presentation for the occasion.

- **Identify Message, Medium, Audience,** where the appropriate audience, for the design solution is determined in order to utilize the most appropriate message and medium for optimum communication of the design solution to that audience.

- **Produce Design,** where the final rendition of the design is produced that reflects the consideration of the chosen message, medium and audience.

- **Implement Design,** where the final design is produced and the construction and installation are supervised by the designer or design firm.

A complete description of each step and sub-step in the design process outlined above can be found in Appendix B. Learning Guide Text.

The graphic model below conveys the inherently iterative nature of the process and the relationships between the different steps (Figure 1).
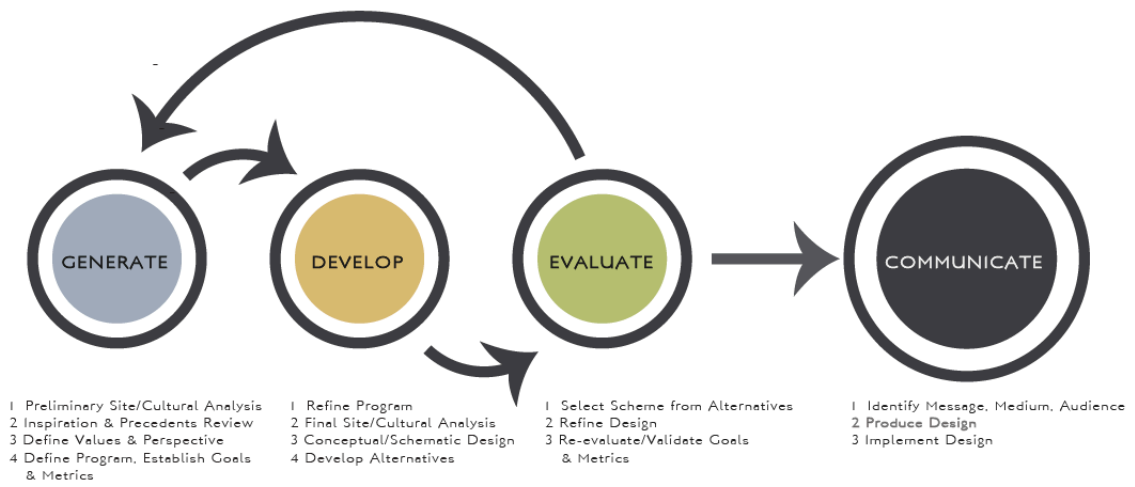
Figure 1. Basic design process

CHAPTER IV

DEVELOPING THE LEARNING GUIDE

The intent of this project is to develop a design process framework that will enhance students' interaction with the Archive documents by providing meaningful design process background and context, as well as facilitate Archive research and exploration. This will be accomplished by creating a digital learning interface [Learning Guide] that will take the generic design process framework developed above, break it down into its sub-steps, provide descriptions of those steps along with links to additional learning resources, and present all of the information in a user-friendly, accessible format. The Learning Guide will also function to help the student access the Archive documents through search terms based on the steps and sub-steps of the design process, as well as broader search criteria.

Finally, a project from the Archive will be selected and sample documents classified in accordance with the design process framework. The goal is to understand the fitness of the framework by evaluating how well the chosen project integrates into the Learning Guide.

Scope

The Learning Guide functions as the tool by which students can study the Design Process discussed above. Its format allows for future expansion and refinement by instructors and administrators.

The Learning Guide is scalable, automatically incorporating relevant, new content from Design Workshop™ projects in the Archives as they become digitally accessible in

the Archives digital collection. A comprehensive search page allows students to search the Archives by a wide range of search filters such as project type, size, or location.

The information included in the Learning Guide is not meant to be authoritative and exhaustive. Rather, its intended function is to briefly outline some of the basics surrounding each step of the design process, providing the entry-level user or student enough context to extract value from the Archives. Links to more in-depth information will be provided to facilitate further study.

The Learning Guide template developed here is intended to lay the groundwork for the future development of a functioning web-based learning system.

Description of Layout

The sections of this template adapt to a webpage format to facilitate understanding and transfer to future online applications.

The main "landing" page of the Learning Guide provides an introduction to the purpose, intention, and functionality of the learning tool. It is the starting point from which the user can navigate throughout all the different topics and pages. At any point during the navigation of the pages, the user can reference his or her location within learning guide by looking at the main heading bar across the top, as well as reference his or her location within the design process by looking at the headings along the left hand of the screen.

Learning Guide "Home" Page

The description of the home page is as follows (Figure 2):

A. *About* - Provides a brief description of the Learning Guide, its intended

purpose, and how it came about.

B. *Home, Overview, Design Process*, and *Projects* - Page navigation tabs.

C. *How This Site Works* - A description of how to navigate through the

different pages and how to access the Design Workshop™ Archives.

D. *Design Process* - A graphical overview, quick link.

E. *Projects* - Archive projects overview, quick link.

F. Search bar.

Figure 2. Learning guide "home" page.

Learning Guide "Overview" Page

The "Overview" page is comprised of the following parts (see Figure 3):

A.   Textual description of design process and its attributes: definition of design process, the importance of clarifying one's process and making it observable, and the cyclical, iterative nature of design, with linked sources cited where applicable and for quick reference to additional information.

B.   Diagram showing the Design Process.
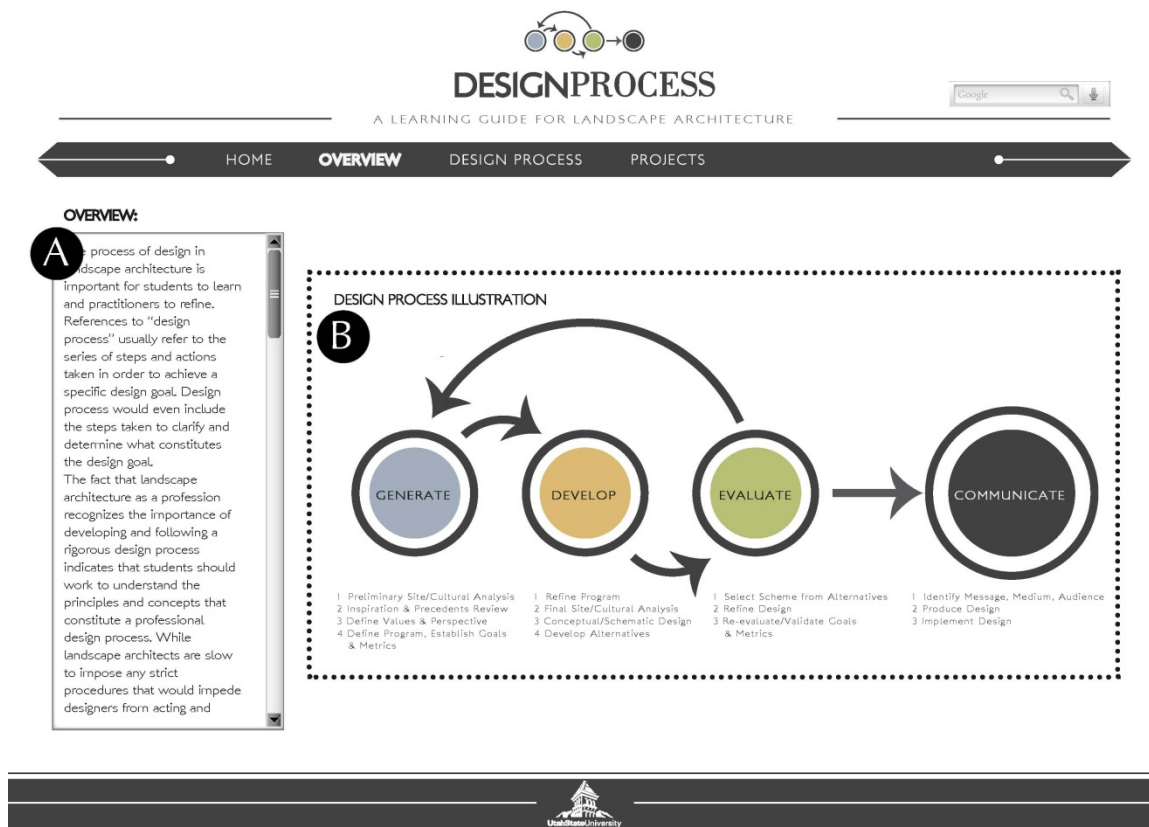
Figure 3. "Overview" page.

Learning Guide "Design Process" Page

The "Design Process" page is comprised of the following parts (see Figure 4):

A. Navigation bar along the left-hand side allows for access to the different steps in the design process.

B. *Design Process* graphic demonstrating the relationship between the different steps in design, with sub-steps listed below.

Figure 4. "Design process" page.

Learning Guide "Design Process - Generate" Page

The "Design Process - Generate" page is comprised of the following parts (see Figure 5):

A.   Navigation bar along the left-hand side allows for access to the different steps in the design process.

B.   *Overview* and related information tabs of the *Generate* step. Outlines the general theory and approaches to the initial step of the design process.

C.   Graphic to add visual interest and support to the *Generate* concept.
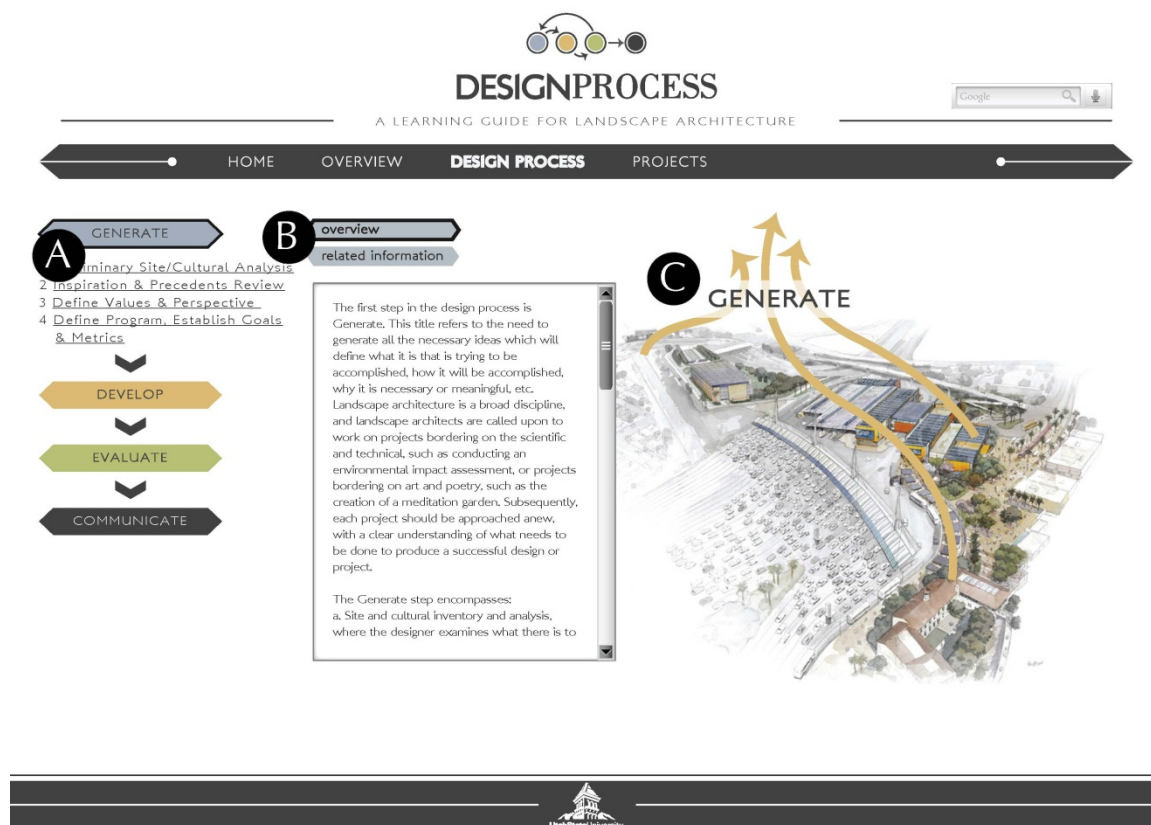
Figure 5. "Design process - generate" page.

Learning Guide "Design Process – Generate, Preliminary Site & Cultural

Analysis, Overview" Page

The "Design Process – Generate, Preliminary Site & Cultural Analysis,

Overview" page is comprised of the following parts (see Figure 6):

A.   Navigation bar along the left side allows for access to the different steps in

the design process, lists sub-steps, and orients the current page within the process.

B.   *Overview* of the *Preliminary Site Analysis* sub-step. Outlines the general

theory and approaches.

C.   Graphic to add visual interest and support to the *Preliminary Site &*

Cultural Analysis, Overview concept.
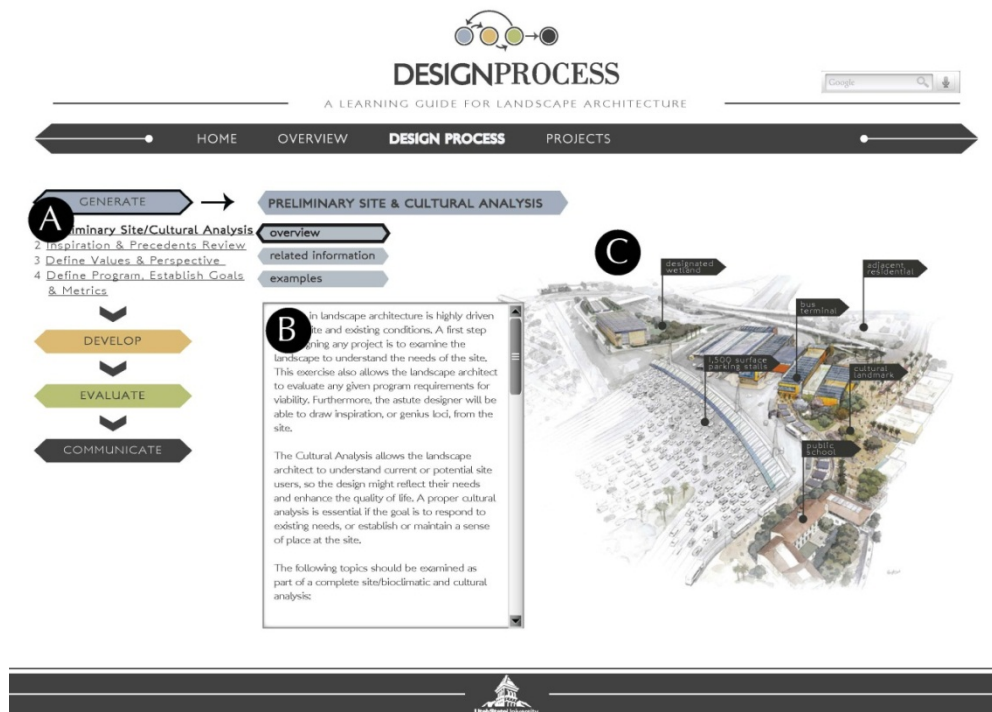
Figure 6. "Design process – generate, preliminary site & cultural analysis, overview"

page.

Learning Guide "Design Process – Generate, Preliminary Site & Cultural

Analysis, Related Information" Page

The "Design Process – Generate, Preliminary Site & Cultural Analysis, Related Information" page is comprised of the following parts (see Figure 7):

A.   Navigation bar along the left-hand side allows for access to the different steps in the design process, lists sub-steps, and orients the current page within the process.

B.   *Related Information* tab links to additional resources such as papers on general site analysis or articles providing information on one of the site's specific elements being analyzed.

C.   Graphic to add visual interest and support to the *Preliminary Site & Cultural Analysis, Related* concept.

Figure 7. "Design process – preliminary site analysis, related information" page.

Learning Guide "Design Process – Generate, Preliminary Site Analysis,

Examples" Page

The "Design Process – Generate, Preliminary Site Analysis, Examples" page is

comprised of the following parts (see Figure 8):

A.   Navigation bar along the left-hand side allows for access to the different

steps in the design process, lists sub-steps, and orients the current page within the

process.

B.   *Examples* tab opens up a menu to choose from different Legacy projects.

Documents from the chosen project demonstrate aspects of this sub-step in the

design process appear for examination.

C.   Graphic representing and identifying the selected *Examples* project.
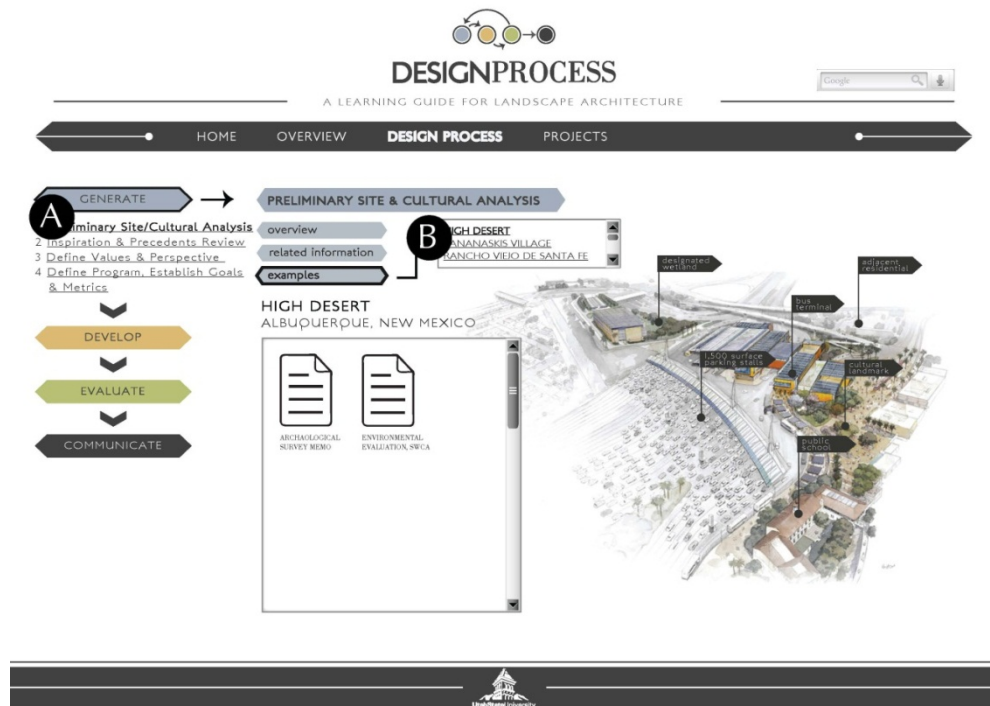
Figure 8. "Design process – preliminary site analysis, examples" page.

Learning Guide "Projects" Page

The "Projects" page is comprised of the following parts (See Figure 8):

A.   Drop-down search menus with search terms (For complete list, see

Appendix A).

B.   Viewing window for examining documents.

(To see the complete Learning Guide template, see Appendix C – Attached CD;

to see complete Learning Guide text, see Appendix B – Learning Guide Text)
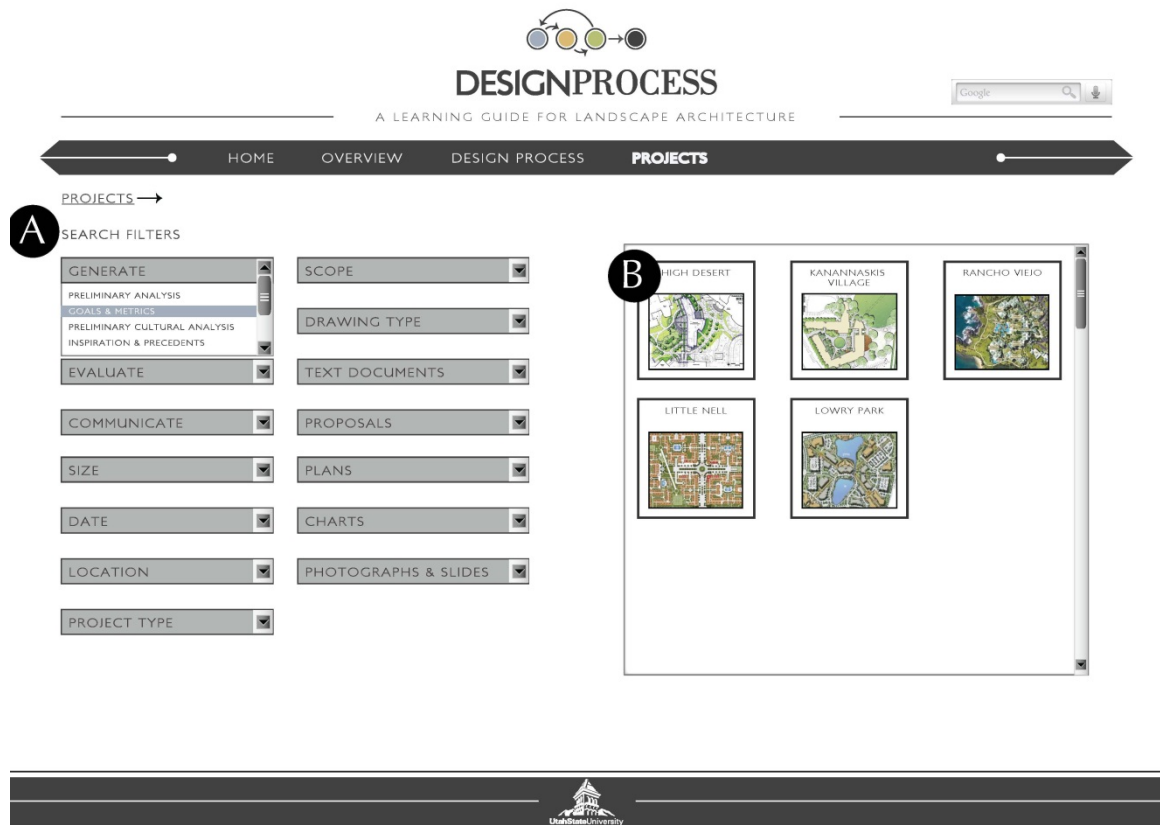
Figure 9. "Projects" page.

Application and Assessment

To understand whether the Learning Guide would be of value in accomplishing its intended function of helping to categorize projects while making them easy to search, it was decided that a project would be selected from the Archive, select materials and pages of the project would be categorized and inserted into the Learning Guide. In this way, one could look through the Learning Guide, and observe whether the stated descriptions and explanations of each step aligned with actual examples from real world projects.

Project Selection

When the Department of Landscape Architecture and Environmental planning and the Merrill-Cazier Library were working with Design Workshop™ to determine how the Archives could be of use to students and the University, certain projects of the firm were identified as being particularly useful for study. These were entitled "Legacy Projects," and were considered valuable because of the quality of the design and successful implementation, as well as demonstration of other valuable characteristics or attributes, such as environmental sensitivity or cultural enhancement (C. Walters, personal communication, March 1, 2012). High Desert was a project designed and built in Albuquerque, New Mexico in the early to mid-nineties, and was selected by LAEP as a good candidate to be studied and used in the Learning Guide.

Archive Search

The first step in identifying a suitable project entailed searching through the list of documents on the Library's Digital Collections Design Workshop™ homepage. The website has a finding aid that allows the user to search using basic categorizations or

search terms, such as searching by project, or by material type. These documents had

previously been tagged and organized by library staff according to various metadata

criteria that may be found on the archive library website. A list of documents that looked

applicable was made. Sara Skindelien, a Library Assistant working with the Archive, was

able to locate and make available the original documents included in the list.

Subsequently, the materials were examined in an effort to identify documents that

showed high potential to demonstrate one or more steps or sub-steps in the design

process. After the documents had been selected, they were sent to Liz Wolcott and Darcy

Pumphrey, digital initiative staff, who oversaw the metadata and categorization work,

making the selected documents available for online viewing, where they were then

downloaded for use in this project.

Categorization

Once a folder with all the downloaded archive materials was created, each

document was again examined to determine which of the four main steps in the design

process it best represented. The criteria for determining where a certain document might

belong in the design process was two-fold: first, an attempt was made to determine what

the document actually was or represented in the project's process of design. Certain

documents had clear titles written right on them, such as "Design Alternatives,"

simplifying the analysis. Others were less clear, and informed judgments had to be made.

Second, in recognition of the inherent learning value of process documents for

demonstrating graphical representation, professional communication, scope of work, etc.,

documents were selected for visual clarity and multi-purpose utility for learners. Some

materials were deemed valuable for demonstrating design thinking on multiple levels, and were included in more than one category. Once the documents were separated under the four main headings, they were examined again to see which sub-steps best described the documents. All documents were categorized and organized accordingly.

CHAPTER V

DISCUSSION

Interpretation of Results

Generic Design Process

This project was based around the assumption that a generic design process could be formulated, and that actual project documents could be categorized and interpreted through the lens of the design process to better understand them and extract valuable lessons. This premise starts with ability to develop an acceptable design process, which seems to have been accomplished here.

Through the exploration of the literature on design process, certain leading thinkers seemed to be referenced time and time again. In addition, the majority of the literature consulted tended to outline design processes that had some clear commonalities in their approaches. When a comparison was made between the approaches studied (See Table 1), four main categories emerged under which the approaches could be organized. The weight of concurring approaches provides an acceptable level of assurance that the design process adopted for this study – Generate, Develop, Evaluate, and Communicate – is an acceptable approach.

Success of Design Process

The second objective of this project was to use the Design Process as a way to organize and access the Design Workshop™ Archives. The Design Process model is simple and straightforward, making classification of documents easy to do. As each document was examined, reference to the descriptions of each phase of the design

process was made, and a determination was made as to whether the document best represented the Generate, Develop, Evaluate, or Communicate phase. Once all the documents were divided into these four categories, all documents within a particular phase were examined again to determine which of the sub-categories the document was most closely suited. In this manner, all the selected archive documents were quickly organized by type, allowing for a student or user of the Learning Guide to see multiple examples of documents that might be created during that particular phase of design.

Drawbacks of Design Process

The biggest drawback of applying a simple Design Process model to a large, real-world project is the simple fact that the real project was not designed in a simple way. In real life, design phases are not neatly separated, with the process moving forward in a clear, linear fashion. Instead, the process is messy, cyclical and iterative, and some phases happen simultaneously. Therefore, while the model was successful in demonstrating types of drawings or other work product that might be produced during a particular phase, it is not well suited to describing the actual flow of a real-world design process. Students and other users, therefore, are still required to find out how the designers arrived at certain results, rather than having the designers' process clearly laid out before them.

In addition, the way the Learning Guide is set up allows a user to search for *a* document that is an example of a particular phase. However, the model does not provide for a way to look at drawings *in sequence*. This would be helpful for a student who is looking to understand how design documents progress, and would help speed up the effort, rather than having to move through a series of search filters for each document, or

group of documents in the same design phase. It would also help strengthen the design narrative.

Despite the inherent drawbacks of overlaying a generic and simplified design process over a real world project, the design model outlined above seems to work reasonably well as a way to organize design process documents for study and evaluation.

Limitations of the Study

Non-documented Information

From the beginning of the discussions with Design Workshop™ about the value of the Archive documents for learners, it was made clear by the designers of the projects that the documents that would be transferred to USU only tell part of the story. The discussions, meetings, and other experiences throughout the actual design process could not be captured in a relatively small amount of hard-copy documentation. Therefore, the dream of fully re-creating the design process was never a real possibility. The best that could be hoped for was to catch glimpses of the thinking that was captured through the documentation.

In addition, the documents would have a much greater value if they were all looked at in context of the true design narrative. For example, a memo from a consultant might mention the work being done by other consultants. Having a clear narrative of all the major players during that particular phase of the project would clarify who everyone is, but more importantly, why they were involved in the project. This in turn would clarify what some of the concerns were, such that these specialists were called in.

Implications for Future Study

Project Refinement

As mentioned above, the size and scope of the project chosen for study was a limitation of the Design Process' utility. This is due in large part to the enormity of the project, which took many years to complete with many scales of design work involved. Study and work is needed to break the larger projects in the Archives down into smaller, simpler, sub-projects. For example, the design of a park within a new community could have its own design process and narrative. In such a case, the Design Process found in the Learning Guide could prove quite valuable in laying out the design thinking involved.

In addition, future study is needed to understand the following details of each project documented:

- The people involved. Landscape architects, graphic designers, marketing specialists, environmental consultants, attorneys, etc. Who are these people, and why were they involved in the project? Who were the clients, and what was their contribution to the process?

- Challenges faced. Every project is unique, with its own challenges. It is immensely beneficial for beginner designers to see how experienced landscape architects take a leadership role in overcoming project challenges. Which documents demonstrate this? Are there memos or meeting notes that document the discussions of these challenges and proposed solutions?

- Program development. It is important that students are able to clearly understand the design program, so as they examine the actions taken throughout the design process, they are able to see how the program influenced design decisions.

However, it is also very important to understand how the program was developed. What were the goals, objectives, and values of the client, designers, and other stakeholders, and what compromises were made to satisfy all three?

- Lessons learned. As designers look back upon their own projects, undoubtedly they become introspective and examine ways in which they can improve their process or product. Perhaps no one else is as qualified to extract lessons or reflect on lessons learned. Sharing these reflections with students and researchers will go far in helping others benefit from the work produced.

Application of Technology

Another area requiring future study is obviously finding and implementing the correct technology. While this project focused on design process, further research is needed to assure that the manner in which the design process is conveyed to the user is efficient and effective. The discipline of instructional design is very robust, and certainly good principles and best practices of instructional designers should be applied here, both in the refinement of the layout and content of the material presented, as well as the technology and method of conveying that information to the user.

In addition to conveying the information to the learner in an effective manner, the technology will need to be able to dovetail into the existing products and technology employed by the Digital Initiative's staff.

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APPENDICES

Appendix A. Design Workshop™ Archive Search Terms

The following search terms will allow the student or researcher to access the Archive documents in specific or strategic ways, organizing search results by their place in the design process, material type, date, scope, or location of project.

A.   Generate

    1.   Perform preliminary Site, Cultural Analysis

    2.   Define program, establish goals and metrics

    3.   Look for inspiration, review precedents

    4.   Define values and perspective

B.   Develop

    1.   Refine Program

    2.   Perform final Site, Cultural Analysis

    3.   Conceptualization, Schematic Design

C.   Evaluate

    1.   Refine Design

    2.   Re-evaluate goals and metrics

    3.   Validate design metrics

D.   Communicate

    1.   Identify message, medium

    2.   Produce Design

    3.   Implement Design

E.   Size

    1.   0-10 acres

      2.   10-50 acres

      3.   50-250 acres

      4.   250+ acres

F.   Date

      1.   1970-1980

      2.   1980-1990

      3.   1990-2000

      4.   2000-2010

      5.   2010-2020

G.   Location

      1.   Northeast

      2.   Southeast

      3.   Midwest

      4.   Rocky Mountain West

      5.   Inter-mountain West

      6.   West Coast

      7.   Southwest

      8.   International

H.   Project Type

      1.   Resort

      2.   Residential

      3.   Urban

      4.   Parks

5. Commercial

6. University

7. Government

8. Environmental

I. Scope

1. Master Plan

2. Conceptualization

3. Envisioning

4. Project Lead

J. Drawing Type

1. Planting Plan

2. Streetscape

3. Renderings

4. Schematic Drawings

5. Black and White Drawings

6. Color Drawings

7. Conceptual Drawings

8. Design Development Drawings

9. Sketches

10. Tracings

11. Wireframe Drawings

12. Working Drawings

13. CAD Drawings

14.   Cutsheets

K.   Text Documents

    1.   Contracts

    2.   Correspondence

    3.   Environmental Impact Statements

    4.   Estimates

    5.   Guidelines

    6.   Invoices

    7.   Memoranda

L.   Proposals

    1.   Presentation Drawings

    2.   Proposals

M.   Plans

    1.   Comprehensive Plans

    2.   Blueprints

    3.   Floor Plans

    4.   Grading Plans

    5.   Landscaping Plans

    6.   Master Plans

    7.   Site Plans

N.   Charts

    1.   Color Charts

    2.   Flow Charts

3.   Pie Charts

4.   Diagrams

O.   Photographs and Slides

     1.   Aerial Photographs

     2.   Black-and-white Photographs

     3.   Color Photographs

     4.   Slides

Appendix B. Learning Guide Text

Home Page

About

This Learning Guide will provide students of landscape architecture with a more in-depth understanding of the design process in landscape architecture. Thanks to the recent acquisition of the Design Workshop™ Archives by the Merrill-Cazier Library and the department of Landscape Architecture and Environmental Planning (LAEP) at Utah State University, students, researchers, and practitioners now have access to the design thinking of a leading landscape architecture firm. This Learning Guide is one of the initiatives by LAEP and Library staff to provide greater use and access of this valuable resource.

How this site works

Users of this Learning Guide are encouraged to navigate throughout all the different pages and links provided. This Guide will provide a brief outline of the Design Process in landscape architecture, with the real learning happening through accessing and examining the Design Workshop™ Archives.

Design Process graphical overview, quick link

The Design Process utilized throughout this learning guide is shown to the right. It is a generic approach to design in landscape architecture, simplified for the purpose of instruction, and should be understood as such.

Through the subsequent pages, click through each step and sub-step in the process, and the graphic shown here will be located on the left-hand side of the page for orientation and quick navigation.

Archive projects overview, quick link

Utah State University Merrill-Cazier Library is actively archiving and documenting the vast amount of documents received from Design Workshop™. As projects become available digitally, they will be accessible here. Either click below or go to the PROJECTS tab to review each project's process.

Overview

The process of design in landscape architecture is important for students to learn and practitioners to refine. References to "design process" usually refer to the series of steps and actions taken in order to achieve a specific design goal. Design process would even include the steps taken to clarify and determine what constitutes the design goal.

The fact that landscape architecture as a profession recognizes the importance of developing and following a rigorous design process indicates that students should work to understand the principles and concepts that constitute a professional design process. While landscape architects are slow to impose any strict procedures that would impede designers from acting and thinking creatively, it is recognized that in order to constitute a profession, landscape architects should collectively work to develop processes and procedures that can be examined and improved over time and used to train new practitioners.

Good design is extremely valuable. A well-designed site reduces construction costs, protects inherent amenities, and allows the continuation of critical environmental processes. Good design can speed up permitting procedures, and enhance relations with investors and stakeholders during the construction process, and increase employee productivity and property values post-construction (LaGro).

The Design Process utilized throughout this Learning Guide has been intentionally simplified to facilitate learning. In reality, the process of design utilized by landscape architects is cyclical, messy, and difficult to define or relegate to distinct steps or phases. It is recommended that students spend time reading the related literature provided throughout the Learning Guide, as well as continue to refine their own approaches to design, while understanding and utilizing the principles outlines here as applicable.

Generate

Generate - Overview

The first step in the design process is Generate. This title refers to the need to generate all the necessary ideas that will define what it is that is trying to be accomplished, how it will be accomplished, why it is necessary or meaningful, etc.

Landscape architecture is a broad discipline, and landscape architects are called upon to work on projects bordering on the scientific and technical, such as conducting an environmental impact assessment, or projects bordering on art and poetry, such as the creation of a meditation garden. Subsequently, each project should be approached anew,

with a clear understanding of what needs to be done to produce a successful design or

project.

Generate - Related Information

1. Crewe, K., & Forsyth, A. (2003). LandSCAPES: A Typology of Approaches to Landscape Architecture. *Landscape Journal*, *22*(1), 37–53.

2. Jellicoe, G., & Jellicoe, S. (1987). *The Landscape of Man* (Revised and Enlarged.). London: Thames and Hudson LTD.

3. LaGro, J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design.* New York: John Wiley & Sons, Inc.

4. Lawson, B. (2006). *How Designers Think: The Design Process Demystified* (4th ed.). Amsterdam: Architectural Place.

5. Licón, C. V. (1997). *Landscape Assessment: A Classification of Methods for Landscape Ecological Planning.* (Master of Environmental Planning Thesis), Arizona State University, Tempe, Arizona.

6. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

7. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

8. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

9. Steinitz, C. (1995). Design is a Verb, Design is a Noun. *Landscape Journal*, *14*(2), 188–200.

Generate - Perform Preliminary Site, Cultural Analysis

Overview

Design in landscape architecture is highly driven by the site and existing

conditions. A first step to designing any project is to examine the landscape to understand

the needs of the site. This exercise also allows the landscape architect to evaluate any

given program requirements for viability. Furthermore, the astute designer will be able to

draw inspiration, or *genius loci*, from the site.

The Cultural Analysis allows the landscape architect to understand current or

potential site users, so the design might reflect their needs and enhance the quality of life.

A proper cultural analysis is essential if the goal is to respond to existing needs, or

establish or maintain a sense of place at the site.

The following topics should be examined as part of a complete site/bioclimatic

and cultural analysis:

    A. Physical attributes:

          1. Soils

          2. Topography

          3. Hydrology

          4. Geology

          5. Climate

          6. Vegetation

          7. Wildlife

    B. Cultural Attributes

          1. Land use

          2. Legal

                a. Political boundaries, land ownership, easements

3. Utilities

4. Circulation

5. Historic

6. Sensory

    a. Visibility

    b. Visual quality

    c. Noise

    d. Odors

Related Information

1. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Licón, C. V. (1997). *Landscape Assessment: A Classification of Methods for Landscape Ecological Planning.* (Master of Environmental Planning Thesis), Arizona State University, Tempe, Arizona.

4. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

5. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

6. Motloch, J. L. (2001). *Introduction to Landscape Design* (2nd ed.). New York: John Wiley & Sons, Inc.

7. Ndubisi, F. (2002). Managing Change in the Landscape: A Synthesis of Approaches for Ecological Planning. *Landscape Journal*, *21*(1-02), 138–155.

8. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

9. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Generate – Define Program, Establish Goals and Metrics

Overview

Programming is the process of defining what a successful project will be. Determining quantities of physical attributes, such as number of parking spaces and units per acre, is an important part of this process. Of equal (or greater) importance is examining and defining the "soft" aspects of design, such as establishing a sense of place or community.

Usually, a project is started in one of two ways: a client has a site, and looks to develop a program for it; or a client has a program, and is searching for a suitable site. The job of the landscape architect is to ensure that both site and program are compatible.

Metrics are methods of measurement. Where possible, it is important to define a quantifiable method for determining whether the program goals have been met. For example, if the broader goal is "Provide a sense of interconnectedness among the community," a metric could be "Provide ¼ mile of walking trail for every housing unit," or "Provide public gathering areas or amenities within ¼ mile of every housing unit." This provides an added level of accountability to the designers, as well as a more open, objective method of determining whether a project has been designed in accordance with the program goals.

Related Information

1. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

4. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

5. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Generate – Look for Inspiration, Review Precedents

Overview

Landscape architects have the benefit of history and precedent to help inspire and guide their design process. Students are encouraged to make a life-long habit of carrying a sketchbook and engaging in extensive travel, with the goal of examining the built environment and learning to "read" it, extract lessons, and subsequently recreate unique and meaningful space. Especial emphasis is placed on visiting Europe or other places with a rich history of intensive urban development.

Inspiration should particularly be looked for in the cultural and site analyses; in order to create or maintain a true and authentic sense of place, the design must reflect and enhance the special characteristics that make the place unique and meaningful.

Post-occupancy evaluations (POE) and case studies provide an excellent source of study material when looking for examples of successful – or unsuccessful- projects.

Finally, the related fields of art, architecture, and literature should be seen as valuable sources of design inspiration.

Related Information

1. Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press.

2. Cantor, S. L. (1997).*Innovative Design Solutions in Landscape Architecture*. New York: John Wiley & Sons, Inc.

3. Crewe, K., & Forsyth, A. (2003). LandSCAPES: A Typology of Approaches to Landscape Architecture. *Landscape Journal*, *22*(1), 37–53.

4. Jellicoe, G., & Jellicoe, S. (1987). *The Landscape of Man* (Revised and Enlarged.). London: Thames and Hudson LTD

5. Jones, J. C. (1992). *Design Methods* (2nd ed.). New York: Van Nostrand Reinhold.

6. Knecht, B. (2004). Accessibility regulations and a universal design philosophy inspire the design process. *Architectural record*,*192*(1), 145–150.

7. Lawson, B. (2006). *How Designers Think: The Design Process Demystified* (4th ed.). Amsterdam: Architectural Place.

8. Lupton, E. (2011). *Graphic Design Thinking: Beyond Brainstorming*. New York: Princeton Architectural Press.

9. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

10. Newton, N. T. (1971). *Design on the Land*. Cambridge, Massachusetts: Harvard University Press.

11. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

12. Swaffield, S. (2002). *Theory in Landscape Architecture*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

Generate - Define Values and Perspective

Overview

The practice of landscape architecture is wide and varied. It is a mistake to attempt to settle on one approach and attempt to apply it to every project, scale, audience, and so forth. Each project needs to be framed and evaluated on its own needs and merits, with a unique approach crafted to produce the best results.

Landscape architectural professional practice should be understood as a spectrum, with ecological, scientific foci on one end, and aesthetic and psychological emphasis on the other. It has been suggested that the majority of landscape architecture practice can be classified into six main categories (Crewe & Forsyth):

A. Design as synthesis

B. Cultivated expression

C. Landscape analysis

D. Plural design

E. Ecological design

F. Spiritual landscapes

As Crewe and Forsyth explain, "Each of these approaches involves a distinctive way of practicing landscape architecture on several dimensions: its goals, the process

used in design or analysis, main clients or audiences, the scale of concern, intellectual or knowledge base, ethical approach, relation to the natural world, and the approach's analysis of power relations or the larger role of landscape architecture work in society." (Crewe & Forsyth, p. 37)

In addition to recognizing or establishing your frame of reference toward a given project, a designer must choose and understand the values and ethics which will inform and drive their design philosophy and decisions, ie, commitment to sustainable materials and practices.

Related Information

1. Crewe, K., & Forsyth, A. (2003). LandSCAPES: A Typology of Approaches to Landscape Architecture. *Landscape Journal*, *22*(1), 37–53.

2. Licón, C. V. (1997). *Landscape Assessment: A Classification of Methods for Landscape Ecological Planning.* (Master of Environmental Planning Thesis), Arizona State University, Tempe, Arizona.

3. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

4. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

5. Schön, D. A. (1983). *The Reflective Practitioner*. New York: Basic Books, Inc.

6. Steinitz, C. (1995). Design is a Verb, Design is a Noun. *Landscape Journal*,*14*(2), 188–200.

7. Swaffield, S. (2002). *Theory in Landscape Architecture*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

Develop

Develop - Overview

The Develop phase of the design process is where ideas begin to take shape. The landscape architect examines the data and information gathered in the Generate step, and begins to formulate design solutions to the problems needing to be addressed. As the designer begins to understand the issues of the site on a deeper level through the different analyses executed as part of this phase, new insights arise and the program is adjusted. As the program becomes finalized, the designer focuses in on the areas of the site and cultural analyses that are most relevant, and completes the analysis at a deeper level.

After the program and site/cultural analyses have been finalized, the landscape architect continues to conceptualize the project, where different ideas and iterations get laid out for examination and feedback, culminating in the development of design alternatives. These alternatives are different designs which conform to the program requirements, but perhaps each emphasize something different, allowing the designers, clients, and stakeholders to see the options available to them.

Develop - Related Information

1. Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press.

2. Ching, F. D. K. (1996).*Architecture: Form, Space, and Order* (2nd ed.). New York: John Wiley & Sons, Inc.

3. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

4. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press

5. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

Develop - Refine Program

Overview

As mentioned earlier, it is often the case that a client has a pre-existing program in mind when the landscape architect is commissioned for the job. The landscape architect's job is to determine to what extent the program and site are, or could be, compatible. While the cursory site analysis and evaluation might reveal to the designer immediately apparent flaws in the program as given, oftentimes it is not until a deeper analysis is conducted that the true compatibility between site and program is known. And because time costs money, rather than begin with a deep-dive landscape analysis, designers will more often conduct the pre-analysis work to understand the problem more clearly and start the project in the right direction, refining the program as they move forward.

Related Information

1. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

4. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

5. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Develop - Perform Final Site, Cultural Analysis

Overview

Site analysis is the synthesis of site inventory information deemed to be relevant to the project, based on the program. Site analysis takes context, opportunities and constraints into account. Successful integration of the design program with the opportunities and constraints of the site results in creating a sense of place; failure results in placelessness.

When conducting an Opportunities (site's assets) and Development Constraints (site's liabilities) analysis, the following aspects should be examined (see LaGro):

A. Constraints:

1. Ecological infrastructure (wetlands, critical wildlife habitat, etc.)

2. Health or safety hazards

3. Physiographic barriers (slopes, shallow bedrock, etc.)

4. Natural resources (prime farmland, sand and gravel deposits, etc.)

5. Historic resources (Historic buildings and structures, archaeological sites)

6. Legal restrictions (zoning, wetland regulations)

7. Visual Amenities (Specimen trees, scenic views)

8. Nuisances (Undesirable views, noises, or odors)

B. Opportunities and Assets:

   1. Visual amenity

      a. Open water, ridge tops and high points, specimen trees, native plant communities

   2. Natural Resource

   3. Cultural Resource

Related Information

1. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Licón, C. V. (1997). *Landscape Assessment: A Classification of Methods for Landscape Ecological Planning.* (Master of Environmental Planning Thesis), Arizona State University, Tempe, Arizona.

4. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

5. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

6. Motloch, J. L. (2001). *Introduction to Landscape Design* (2nd ed.). New York: John Wiley & Sons, Inc.

7. Ndubisi, F. (2002). Managing Change in the Landscape: A Synthesis of Approaches for Ecological Planning. *Landscape Journal*, *21*(1-02), 138–155.

8. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

9. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Develop - Conceptualization, Schematic Design

Overview

Concept development is the process of adapting the program to the unique features of the site. "Concept plans spatially organize proposed site activities and improvements on the site. If the development program is unrealistic, the concept plan will reveal those deficiencies; in some cases, the program must be revised." (LaGro, p 118)

Proposed and existing elements that can be conveyed graphically on a conceptual land use plan (see LaGro):

A. Open Space

B. Vehicle circulation

C. Pedestrian Circulation

D. Other Circulation

E. Buildings

F. Utilities

G. Views

Related Information

1. Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press.

2. Ching, F. D. K. (1996).*Architecture: Form, Space, and Order* (2nd ed.). New York: John Wiley & Sons, Inc.

3. Friedman, J. B. (1989).*Creation in Space: Fundamentals of Architecture*. Dubuque, Iowa: Kendall/Hunt Publishing Company.

4. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

5. Lawson, B. (2006). *How Designers Think: The Design Process Demystified* (4th ed.). Amsterdam: Architectural Place.

6. Loidl, H., & Bernard, S. (2003).*Opening Spaces: Design as Landscape Architecture*. Basel: Birkhauser.

7. Lupton, E. (2011). *Graphic Design Thinking: Beyond Brainstorming*. New York: Princeton Architectural Press.

8. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

9. Reid, G. W. (1993). *From Concept to Form in Landscape Design*. New York: John Wiley & Sons, Inc.

10. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

11. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Develop - Develop Alternatives

Overview

Perhaps the culminating act of the Develop phase in the design process is the

development of design alternatives. These alternatives comply with the requirements of

the design program, and have sufficient detail that development costs and other

measurement techniques can be applied in the Evaluate phase. Alternatives are useful for

presenting and receiving feedback from other design professionals, yet perhaps their real

value is in the involvement of clients, the public, and/or other stakeholders.

Ideally, design alternatives will be different enough that they each have an area of

emphasis, be it economic, environmental, or cultural. At this stage, it is useful to maintain

a "loose" presentation, often hand-drawn, so as to emphasize that these are conceptual,

and can be changed or manipulated according to the needs or desires of the clients,

public, or stakeholders.

Related Information

1. Cross, N. (2011). *Design Thinking*. New York: Berg.

2. Filor, S. W. (1991). *The Process of Landscape Design*. New York: McGraw-Hill.

3. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning.

4. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

5. Lawson, B. (2006). *How Designers Think: The Design Process Demystified* (4th ed.). Amsterdam: Architectural Place.

6. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

7. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

8. Reid, G. W. (1993). *From Concept to Form in Landscape Design*. New York: John Wiley & Sons, Inc.

9. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

Evaluate

Evaluate - Overview

If the culminating act of the Develop phase is to create design alternatives, the next logical phase would be to select from those alternatives. This process is more than just looking at them and subjectively deciding which one seems the best; cost and true impacts need to be studied before a selection can be made. In addition, quantitative measurements (metrics) that were developed in the Generate phase to evaluate 'softer' goals, such as connectivity or sustainability, are validated or re-evaluated here. The chosen design is refined through this process, with the design becoming more exact and detailed, resulting in the 'finished' design.

Evaluate - Related Information

1. Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press.

2. Ching, F. D. K. (1996).*Architecture: Form, Space, and Order* (2nd ed.). New York: John Wiley & Sons, Inc.

3. Lawson, B. (2006). *How Designers Think: The Design Process Demystified* (4th ed.). Amsterdam: Architectural Place.

4. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

5. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

6. Ndubisi, F. (2002). Managing Change in the Landscape: A Synthesis of Approaches for Ecological Planning. *Landscape Journal*, *21*(1-02), 138–155.

7. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

8. Swaffield, S. (2002). *Theory in Landscape Architecture*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

9. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Evaluate - Select Scheme from Alternatives

Overview

Once design alternatives have been created, the next logical step is to select the design scheme that best represents the goals outlined in the design program. Usually this involves feedback from the client, but sometimes it can also include feedback from the public, governing agencies, investors, or other stakeholders. Likely these individuals will want to know not only which alternative will look and feel the best, or have the highest social impact on the community, but will want to know the true economic or environmental costs or impacts of each. Therefore, in the Evaluate phase of the design process, the landscape architect gets down to the nitty-gritty task of quantitatively evaluating the various proposals.

As part of this process, consider the following areas for evaluation (see LaGro):

1. Infrastructure costs

2. Public service costs

3. Traffic generation

4. Stormwater runoff (quantity and quality)

5. Pedestrian circulation (safety and convenience)

6. Visual impacts

With the concept of sustainability commonly understood to encompass economic, social, and environmental concerns, be sure to balance the evaluation of costs and impacts across all three areas.

Related Information

1. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

2. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

3. Swaffield, S. (2002). *Theory in Landscape Architecture*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

4. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Evaluate - Refine Design

Overview

Once a design alternative has been selected, the design is now ready to move beyond the conceptual stage to the final design. Decisions concerning aesthetics, materials, and all the fine detailed design work take place in this stage.

This phase is where the real detailed work of evaluation begins. While rough costs and estimates of impacts were previously sufficient, hard bids and professional analyses of impacts are now required. As goals and metrics are measured and re-evaluated, the

design is changed to reflect the quantitative feedback received. Social impacts of the designs are studied, with behavioral design and other planning and design principles employed to ensure a design that is successful across multiple fields of measurement, including economic, social, and environmental.

Related Information

1. Ching, F. D. K. (1996).*Architecture: Form, Space, and Order* (2nd ed.). New York: John Wiley & Sons, Inc.

2. Danko, S., Meneely, J., & Portillo, M. (2006). Humanizing design through narrative inquiry. *Journal of interior design*, *31*(2), 10–28.

3. McHarg, I. L. (1992). *Design with Nature* (25th Anniversary.). New York: John Wiley & Sons, Inc.

4. Reid, G. W. (1993). *From Concept to Form in Landscape Design*. New York: John Wiley & Sons, Inc.

5. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

6. Strom, S., & Nathan, K. (1993).*Site Engineering for Landscape Architects* (2nd ed.). New York: Van Nostrand Reinhold.

7. Toth, R. E. (1974). *A Planning and Design Methodology*. Paper. Department of Landscape Architecture and Environmental Planning. Utah State University. Logan, UT.

Evaluate - Re-evaluate, Validate Goals and Metrics

Overview

At this stage in the design process, both designers and clients will undoubtedly have evolved in their goals, objectives, and metrics for measuring success in the design. This happens due to feedback received from clients and other stakeholders along the way,

as well as a deeper understanding of site constraints or opportunities, and user needs. It is therefore necessary to re-examine the goals and metrics outlined at the beginning of the process.

It is important to recognize that strengths and weaknesses of alternative concept plans should be evaluated and compared quantitatively. Statistics that summarize the existing site conditions and the proposed development are essential in evaluating the merits of any land use plan (LaGro). Designers are encouraged to employ market analysis tools and practices employed by allied disciplines to quantitatively understand the user and client needs and ensure a viable product.

As the landscape architect selects the 'winning' concept scheme, it is because it most fully measures up to the standards set for the project. Subsequent refinement of the design also adheres to and refines the goals and metrics of the program.

Related Information

1. Brett, D. L., & Schmitz, A. (2009). *Real Estate Market Analysis: Methods and Case Studies* (2nd ed.). Washington, D.C.: Urban Land Institute.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

Communicate

Communicate - Overview

To say that the Evaluate phase results in a 'final' design would be to oversimplify the reality to a degree. While the conceptual design work is completed, and the form defined, translating that idea and vision into a set of documents that can definitively and objectively convey those forms and ideas to a legally binding degree of accuracy is a large design task by itself. As the details get hashed out through the preparation of the construction documents, the designer will be continually called upon to make design decisions, ensuring that the quality and character of the place is translated down to the smallest details.

In addition to communicating the design to related professionals through the construction documents, landscape architects are often called upon to communicate their designs to the public, their client, or other stakeholders. This may be to 'sell' their concept for the project to the client at the earliest stages of trying to land the job, or in the early phases of design. Or it may be part of the process of 'selling' the idea to investors, or to effectively communicate the vision to zoning and permitting government officials. In any of these events, the designer needs to tailor the design materials and presentation for the occasion.

Communicate - Related Information

1. Duarte, N. (2010). *Resonate: Present Visual Stories that Transform Audiences*. Hoboken: John Wiley & Sons, Inc.

2. Harris, C. W., & Dines, N. T. (1998). *Time-Saver Standards for Landscape Architecture: Design and Construction Data* (2nd ed.). New York: McGraw-Hill Publishing Company.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

4. Swaffield, S. (2002). *Theory in Landscape Architecture*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

Communicate - Identify Message, Medium, Audience

Overview

Regardless of how creative or significant a design might be, if it is not clearly and effectively communicated to its intended audience, it is of little value. In order for communication to take place, the message must both be *delivered* AND *received.* It is inherent upon landscape architects that they not only produce successful designs, but that they carefully think about how those design concepts need to be translated to reach decision makers.

Because the process of design involves a series of activities requiring the visualization of diverse site information, clear, legible graphic communication skills are paramount. Diagramming quickly conveys often complex information in simple terms, helping clients and others get up to speed on what the designer is working with and proposing. Characteristics of the site and spatial relationships can be efficiently communicated.

The quality of the graphic materials will make a difference on how they are received. For example, if a designer wishes to present design alternatives with the intent to gain productive feedback, loose graphics (perhaps hand drawn) are best employed to communicate the idea that this is a work in progress, and things are set in stone. If the goal is to win over investors, then highly developed, artistic renderings would be appropriate to convey a sense of experience and value to the project.

Identifying the message, medium, and audience will allow the designer to specifically tailor the type of materials used, the level of graphic detail, and the quality and amount of information used to most effectively communicate the concepts and values of the design.

Related Information

1. Duarte, N. (2010). *Resonate: Present Visual Stories that Transform Audiences*. Hoboken: John Wiley & Sons, Inc.

2. Lagro Jr., J. A. (2001). *Site Analysis: Linking Program and Concept in Land Planning and Design*. New York: John Wiley & Sons, Inc.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

4. Straub, C. C. (1982). *Design Process & Communications: A Case Study* (2nd ed.). Dubuque, Iowa: Kendall/Hunt Publishing Company.

Communicate - Produce Design

Overview

A landscape architect's design is only as good as it is communicated. When design documents are produced, it is the responsibility of the designer to make sure that objective observers can understand what the intent of the document is.

This is particularly true when it comes to construction documents. The construction documents become part of the legal contract between the contractor and the client. What may seem like minor discrepancies on paper can become large and expensive mistakes when built. In addition, the landscape architect can be liable for those mistakes. It is incumbent on the designer to consult and understand local codes and ordinances, principles and best practices of engineering, maintain a familiarity with the best materials as well as professional construction methods, and to design accordingly.

Beyond construction documents, landscape architects produce design guidelines, impact studies, conceptualizations, and many other product types. In each case, the landscape architect is responsible to maintain a high level of professionalism, both in written and graphic representation.

Related Information

1. Harris, C. W., & Dines, N. T. (1998). *Time-Saver Standards for Landscape Architecture: Design and Construction Data* (2nd ed.). New York: McGraw-Hill Publishing Company.

2. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

Communicate - Implement Design

Overview

Beyond producing graphic representations of the built environment, the landscape architect is often hired to oversee the implementation of the design. This ensures a seamless execution of the design with the designer working alongside the allied trades and disciplines to realize the highest quality product for the client.

As part of the implementation team, the role of the designer is to help convey the information contained in the construction documents so all involved have the same understanding and expectations for the project. Undoubtedly changes and tweaks to the original design will need to be made based on unforeseen circumstances of site or budget, and the landscape architect needs to be ready and on-hand to facilitate the process.

Implementation goes beyond ensuring that the design vision becomes a reality. Good designers will want to find ways to improve their process and increase their knowledge; taking part in the construction process will help the designer see any inherent flaws in their design – be it through over- or under-designing certain areas, or choosing inadequate materials, for example. By continually observing their designs become reality, astute designers will be able to continually improve and refine their abilities to design functional, efficient spaces.

Finally, conducting Post-Occupancy Evaluations (POE's) further provide designers with the true measure of the relative success or failure of their design.

Related Information

1. Ingels, J. E. (2004).*Landscaping: Principles and Practices* (6th ed.). United States: Thomson Delmar Learning

2. Lynch, K., & Hack, G. (1984).*Site Planning* (3rd ed.). Cambridge, Massachusetts: The MIT Press.

3. Moses, V. (2007). *Toward Legacy*. Washingon, DC: Grayson Publishing.

4. Motloch, J. L. (2001). *Introduction to Landscape Design* (2nd ed.). New York: John Wiley & Sons, Inc.

5. Simonds, J. O. (1983). *Landscape Architecture: A Manual of Site Planning and Design* (2nd ed.). New York: John Wiley & Sons, Inc.

6. Straub, C. C. (1982). *Design Process & Communications: A Case Study*(2nd ed.). Dubuque, Iowa: Kendall/Hunt Publishing Company.

Appendix C. Attached CD, Learning Guide Template, Archive Examples