

EDUCATIVE LANDSCAPES: INFORMAL LEARNING AND LANDSCAPE ARCHITECTURE

Modern educators have long recognized the significance of learning in hands on settings and linking knowledge in the classroom to real life skills (Dewey 1963). Not until recently however, has research begun to quantify the huge impacts of informal experiences outside of school on motivation and achievement for learning in general. Particularly in the area of science education, learning in informal settings not only reinforces what we learn in school, but helps establish lifelong patterns of motivation and curiosity. This informal learning occurs with families and in social groups, at home, on field trips, and in institutions such as zoos and museums. In these places knowledge is often built via collaboration, and people act as learners and teachers alike (Bell et al. 2009). Recognizing that learning occurs across such a wide range of settings can lend new significance to such simple and everyday actions as a walk to the bus stop, a jog in the park, or even a conversation over dinner. Facets in our everyday landscape that promote questioning, experimenting or simply talking about science are now understood to contribute to all aspects of education (Bell et al. 2009). Given this understanding, landscape architects gain a particularly interesting and exciting responsibility to aid in the quest for a populace interested, educated and fascinated with science and the natural world.

The idea of an educative landscape, one intended to teach, inspire or otherwise facilitate learning is not new to landscape architecture. These intentions are clear in the designs of zoos, arboreta and interpretive trails. Opportunities for educative landscapes are now

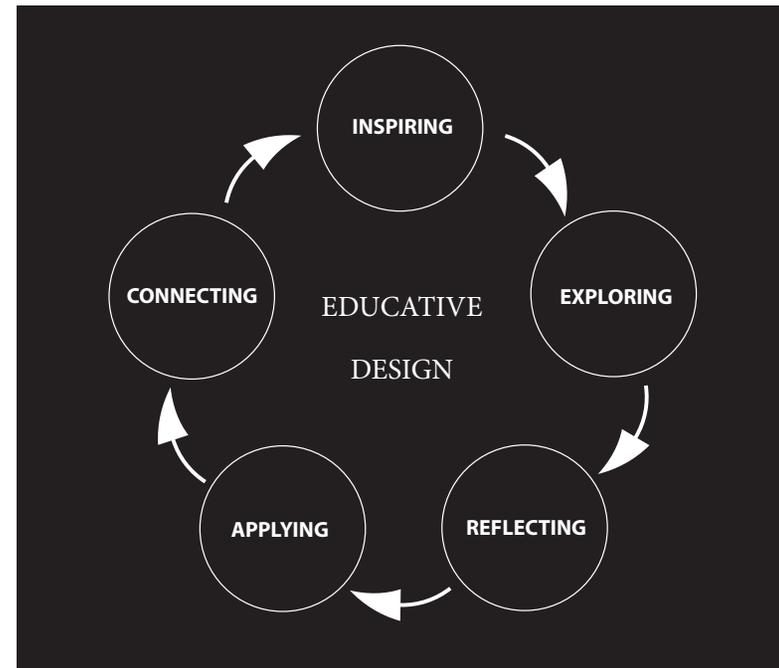


Figure 1: Learning Cycle for Educative Design

Learning happens as a series of actions or activities, building knowledge through a cycle of repetition, experience and experimentation. Each of the five facets in this learning cycle represent activities that landscape architects, architects and planners could support through careful and intentional design of space and infrastructure. (Figure by author, informed by Kolb 1984 and Bell et al. 2009)

being realized in green urban infrastructure (Echols and Pennypacker 2008), and stressed more heavily in schoolyards and gardens (Johnson 2000). As a student in the MLA program at the University of Washington I began investigating such designs, and asking how a better understanding of learning itself may aid in their success.

Drawing upon experiential education philosophy (Kolb 1984)

and the National Research Council's 2009 study Learning Science in Informal Environments (Bell et al.), I distilled learning into five distinct activities. Summarized as the Learning Cycle for Educative Design (Figure 1), each activity represents a function that landscape architects, architects and planners can support through intentional design of space and infrastructure:

- Inspiring: Experiencing excitement, interest, and motivation to learn about phenomena in the natural and physical world.
- Exploring: Manipulating, testing, experimenting, predicting, questioning, observing, measuring with the intent of making sense of the natural world
- Reflecting: Deriving general principles, patterns, relationships from observation; the actual act of 'making sense of'
- Applying: Retesting ideas in new situations; trying things out
- Connecting: Making meaning, linking ideas with identity, culture, and prior knowledge

Though diagramed in a circle (Figure 1), the activities may not necessarily occur in this particular order, nor do they necessarily have to happen on the same site. Importantly, educative landscapes exist less as isolated experiences, and more as pieces of a larger network of learning environments. People can learn in almost any space or place in their lives (Bell et al. 2009), turning the designer into one who helps bridge and make connections between ideas, places, and experiences: between school and home, museum and playground, from formal to informal learning environments. Thought of in this way the educative



Figure 2:

Rain Drums in the landscape at the Cedar River Watershed Education Center in North Bend, WA create an immediate cultural connection. Playful sounds of the raindrops offers inspiration to think about rain and water in a new way. (Photo by author. Shared with permission by: Dan Corson, www.corsonart.com, artist. Designed in collaboration with Jones & Jones, architects/landscape architects)

landscape becomes both destination and stepping stone in peoples' larger educational experience.

The activities of Inspiring and Connecting link directly with what motivates us to learn. Often described as affective learning, these aspects deal with our prior feelings about a subject, our expectations and our interest in continuing to learn more. Informal learning tends to win out in this area over classroom based learning, largely because of the low pressure, open ended nature of informal learning experiences. Studies in museums show that people are often drawn to areas where they have some prior knowledge, and rank their most powerful experiences as those that strengthen or deepen areas of familiarity (Falk and Dierking 2000). People also learn best when new knowledge or experiences tie in with prior knowledge, family or cultural values (Bell et al. 2009, Bransford et al. 2000). Informal learning opportunities

in open and public places allow visitors to make their own meanings and find cultural connections via experiences with family and friends (Figure 2). Designers of educative landscapes need to be aware of this, and make sure new and inspiring features are balanced with familiar cultural references and amenities.

Exploring, Reflecting and Applying represent more of the cognitive aspects of learning. These activities deal more with how we accumulate and test our knowledge—skills often associated with traditional views of education. Exploring, Reflecting and Applying relate together sequentially, whereas Inspiring and Connecting could happen at any point within or outside of this smaller cognitive cycle. For designs where sequencing of visitor access is possible to control, utilizing the relationship between the activities—Exploring, Reflecting, Applying—could contribute to important design decisions, dictating the pace and order of exposure to new or more complex material. Also significant to note is that cognitive learning will happen best when all three factors are present, something which is a challenge in most public landscapes. Teachers may have students write or present to one another to facilitate reflection, while the designer of a space can only invite reflection by offering comfort through seating or shelter (Figure 3). Similarly, the application of ideas to new situations often necessitates rebuilding, tearing down or somehow manipulating the environment to offer a new experience. Adventure playgrounds, school gardens and some natural spaces are able to offer ‘build and rebuild’ opportunities that may simply be destructive at other venues. Designs like these that allow for some degree of manipulation and creation meet the cognitive aspects of learning most readily, however they often require some form of supervision and may not be appropriate for heavy public use. This

remains a challenge for designers of educative spaces both in museum settings and more public landscapes as well.

Just as educative landscapes can act as stepping stones, reinforcing ideas across a range of learning environments, they can also create nodes of overlapping social activity, where different social groups can work together in support of learning. A zoo provides a place for both family and school field trips, creating experiences where a student comes in contact with the same material in two different social environments. It is a place where the student can become the teacher, sharing lessons from school, and the family can lend direct social value to these lessons through interest and sharing of their own stories and knowledge. The overlap of different social groups through formal and informal learning at venues such as zoos, aquaria and museums gives



Figure 3:

Landscapes often provide beautiful places to explore and reflect, like this bird blind at the IslandWood environmental learning center on Bainbridge Island, WA. However creating opportunities to manipulate experiences, to apply and re-apply learned concepts, can be more of a challenge. (Photo by author. Shared with permission by: Mithun, lead architects. Designed in collaboration with Berger Partnership PS, landscape architects and Sahale LCD, construction)

these places particular power in bridging cultural gaps between school and family, science and society (Falk and Dierking 2000, Bell et al. 2009).

There is similar opportunity for the design of educative landscapes in parks, school grounds, waterfronts and other public spaces that attract a wide range of social groups. Designers of learning spaces need to be aware of the different factors conducive to learning in different social settings and take advantage of places that provide opportunities for these to overlap and combine. Different learning groups will require different design approaches, following continuums of group size, teacher involvement, and formal versus informal education (Moore and Wong 1993, Bell et al 2009, Falk and Dierking 2000).

The implications for the design of learning environments along a teacher vs. student directed continuum depend largely upon the need to control group dynamics (Figure 4). Formal education and teacher directed activities require—at some point in time—all participants to be focused upon a teacher or a presenter. This type of learning environment benefits from spaces built for presentations, with opportunities for seating and easily defined boundaries. Spatial forms in these cases need to help organize and control the attention of a group. On the opposite end of the gradient, free choice or self-directed learning environments function quite differently in terms of spatial arrangement. In this case, the space needs to allow for freedom of movement, with multiple opportunities to engage and disengage as dictated by the interest of the user (Falk and Dierking 2000). The important implication here is that different learning programs—teacher versus student directed and those in between—move through spaces differently, and design can heavily influence their success in a given space.

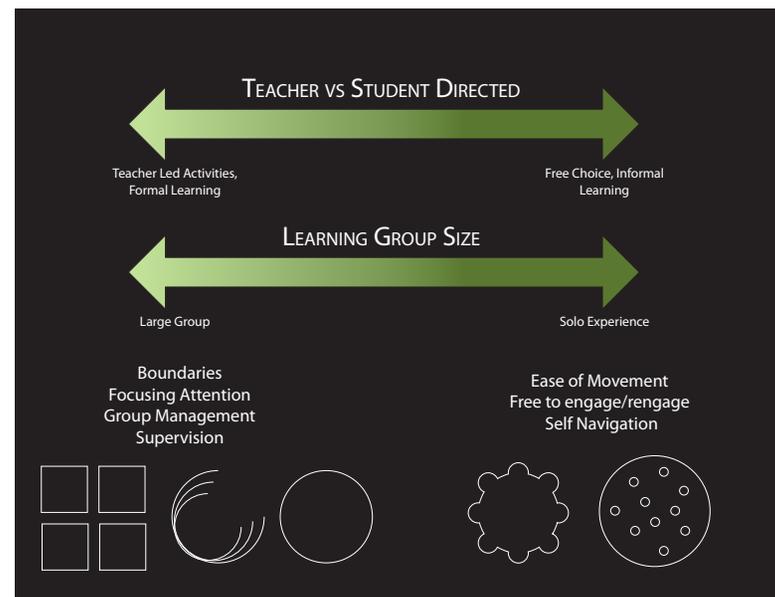


Figure 4: Continuums of Learning

People learn in different ways given the amount of teacher direction, size of peer group and personal control over the learning experience. The design of learning environments can utilize different shapes and arrangements to support learning along these continuums, from teacher to learner directed, and from solo to group experience. (Figure by author, informed by Moore and Wong 1997, Falk and Dierking 2000 and Bell et al. 2009)

In the field or in a classroom, teachers like to set up their spaces in a way that affords shifting easily from large to small groups. This allows for different discussion dynamics and hands on access to equipment or materials that is just not possible in a larger group. Design of all educative landscapes can benefit from this strategy, with or without the guidance of a teacher. Spaces for exploring, reflecting, and applying can be sized for individuals, couples, families, and larger parties. Learning happens in different ways with different levels of friendship, closeness and familiarity with those around us (Bell et al 2009). These are essential factors to consider when designing educative landscapes, given that learning in general is strongly connected to language and social factors found in group settings (Vygotsky 1978, Bell et al. 2009,

Bransford et al. 2000, Falk and Dierking 2000). In the eyes of the designer, other learners should be viewed as part of the educative landscape itself, and the physical form of a space can either encourage or restrict interaction based on the desire for group versus individual reflection and participation.

Testimonials from top ranked science professionals, and a growing body of research demonstrate the power found in places of informal learning, museums in particular; other research shows that museum experiences increase interest in science careers for young people, especially those at an age when they are defining lifelong interests and aspirations (Satchetello and Sawyer et al. in Bell et al 2009). These powerful experiences do not have to remain within the walls of museum exhibit halls. Indeed they should not. The same research also shows that the impact of museums wanes unless the experience is reinforced within six to eight months. Our learners need more stepping stones. Landscape architects routinely design educative landscapes that cut across social boundaries, expanding inspiration and access to all. But we should not do it alone. Collaboration with teachers, museums and education professionals will only increase the strength of this network, supporting learners in all formal and informal spaces where we live work and play.

About the author:

Jason Medeiros (student ASLA) resides in Seattle where he graduated from the University of Washington MLA program in 2011. Prior to this he spent ten years teaching middle school science and environmental education. This piece is an excerpt from larger thesis work on the design of environmental learning centers and the overlap between museum design, education theory and landscape architecture: *Outside Lies Learning: Landscape Architecture and Principles of Educative Design*. Copies are available upon request: spectabolis@yahoo.com.

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