HANDS-ON DESIGN FOR HANDS-ON LEARNING WITH YOUTH IN SOUTHERN WEST VIRGINIA- A CASE STUDY IN PARTICIPATORY DESIGN PROCESS

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1 ABSTRACT
Wyoming County in southern West Virginia is an economically and ecologically compromised area long dependent on extractive industries. Public space for recreation, community building and education is dwindling as non-resident landowners, controlling eighty-five percent of predominantly forested landscapes, continue a trend of physical enclosure and controlled access to previously quasi-public areas. In particular, children lack local access to the experience of nature and the ability to interact with their environment within an educational setting. Identifying opportunities and devoting space for outdoor learning, especially in STEM fields, is a concern of local educators who desire project-based learning opportunities to increase student interest, motivation and performance. Faculty and students from West Virginia University (WVU) landscape architecture program joined with WVU Extension’s local 4H, Friends of the Earth (a high school environmental club), Groundwork Wyoming County (a local non-profit), and the Upper Guyandotte Watershed Association to develop a vision for the design of an outdoor classroom at Wolf Pen, WV along Indian Creek to be funded by the private landowner Cliffs Natural Resources, a significant local employer. The ‘site understanding’ activities and following design process integrated ecological assays, cultural landscape exploration, site ritual, and abstract art production. This process sought to create a transformative experience for students in designing the outdoor classroom- and create a model process for participatory design with youth.

1.1 Keywords
Participatory Design; Place-based Design; Outdoor Classrooms; STEM; Outreach
2 PROJECT CONTEXTS
2.1 Partnership in Planning
Building partnerships between the academic community and local groups creates sustainable momentum for the implementation of site specific projects. This project, the design of a two-acre community space/outdoor classroom for Wyoming County high schools, brought together local youth, private industry, non-profit and academic groups to envision and design an outdoor classroom at the site along Indian Creek, equidistant between East and Westside high schools and a short detour off of the National Coal Heritage Trail, a National Scenic Byway. Faculty (Professors Butler, Campbell, Kyber and Wittner) and graduate students from West Virginia University (WVU) landscape architecture program joined with WVU Extension’s local 4H, Friends of the Earth (a high school environmental club), Groundwork Wyoming County (a local non-profit), and the Upper Guyandotte Watershed Association to develop a vision for site development to be funded by the private landowner Cliffs Natural Resources, a significant local employer. The Upper Guyandotte Watershed Association monitors and quantifies water quality data for Indian Creek and is a strong local environmental advocacy group and community organizer. Groundwork Wyoming County (GWWC) is a non-profit group committed to the rehabilitation of brownfields and the mitigation of environmental liabilities. The organization also consists of partnerships between other non-profits including the Coal Heritage Highway Authority, Eastern Coal Regional Roundtable, Upper Guyandotte Watershed Association and Rural Appalachian Improvement League, Inc. GWWC’s mission includes directing park and recreation development for the county which is currently not a role of local government. WVU Extension officials provided a much needed connection to the local 4H and assisted in organizing the project. Cliffs Natural Resources has assisted non-profit groups by funding projects that create positive change in the county and region including water quality mitigation and reforestation initiatives.

2.2 Context- Social, Environmental and Local Issues
Wyoming County in southern West Virginia is an economically and ecologically compromised area long dependent on extractive industries. Local public health is of particular concern. When compared to national averages, the county has higher rates of physical as well as mental health problems. Heart disease, diabetes, cancer, and other illnesses, especially immunosuppressive illnesses, are elevated and rising in an aging demographic where population growth is stagnant. Lifestyle is at the center of the health issues in Wyoming County. Poverty, where the workforce depended on the boom and bust cycles of the now mechanized coal industry, puts an emotional strain on disadvantaged area youth. Contaminated water, soil, and poor air quality creates both a perceived and real threat in the environment that may prevent youth from engaging in activities and interaction with the natural world. Where rivers run orange with abandoned mine drainage and refuse piles stretch over infertile acres children seemingly have nowhere to engage with nature. Life expectancy is declining at a rate rarely observed across the United States (Finn, 2008) with mine-related pollution the probable cause. Aluminum, lead, and other mine-related pollutants are entering the water system contaminating wells.

Surface mining has dominated the economy and landscape of this part of West Virginia for some time and is now considered to be the primary driver towards land use change in the Central Appalachian region of the United States (Palmer, 2010). Deforestation, soil compaction, topsoil loss, alteration of hydrologic flow regimes and coal processing practices associated with mining operations have significantly altered the ecology of the region and seriously fragmented the ecological processes of the landscape. It is estimated that approximately 800,000 acres of forest, 470 mountains, and 1900 miles of headwater streams have been destroyed by surface mining in Appalachia (Wuerthner, 2009). Primary impacts include; increased stormwater runoff, soil degradation, contamination of streams, accumulation of airborne toxins, loss of biodiversity and decline in human health.

Fragmentation of these landscapes and loss of ecosystem services have the potential to devastate landscapes beyond repair, threatening a culture that has existed for generations. Ecosystem services (Costanza, 1987), providing the green infrastructure that has sustained populations for centuries, are now disabled. Lacking in contemporary West Virginia are the natural and semi-natural benefits that locals traditionally obtained from their environment including essential elements such as food and water provisions, regulating services such as flood and disease control, and production services such as nutrient cycling, soil formation, and oxygen and biomass production. A more socio-cultural view of ecosystem services refers to non-material benefits that people obtain from their environment such as recreational, cultural and aesthetic experiences (MEA, 2005). The Guyandotte River watershed is contaminated with domestic wastes and mine drainage creating a compromised landscape. The 2004 TMDLs (Total Maximum
Daily Loads) for the Guyandotte River (Hydrologic Group E) include: Aluminum, Conditions Not Allowable (CAN)-Biological, Fecal Coliform, and Iron (WVDEP, 2008). Indian Creek of the Upper Guyandotte is impaired as a public water supply and warm water fishery, containing iron and manganese (EPA, 2008). Figure 1 demonstrates the level of fragmentation and disturbance in close proximity to the outdoor classroom site.

Figure 1: Gray areas show surface mine permit boundaries. Circles show all mine permits. The white pin is the site of the outdoor classroom project along Indian Creek, Guyandotte River Watershed (2010 Google Earth Image and 2011 WVDEP mine permit data).

3 OPPORTUNITIES FOR OUTDOOR CLASSROOMS

3.1 Critical Need

Public space for recreation, community building and education is dwindling as non-resident landowners, controlling eighty-five percent (GWWC, 2009) of predominantly forested landscapes, continue a trend of physical enclosure and controlled access to previously quasi-public areas. Trails into the dense Mesophytic forest are gated with video surveillance to control trespassing. The loss of land in West Virginia mining counties, particularly in Wyoming County, due to surface extraction, is often overlooked. Areas where communities once explored, harmonized and had strong ties to their landscape are now no longer accessible due to mountaintop removal and valley fills. In particular, children lack local access to the experience of nature and the ability to interact with their environment within an educational setting. Combining outdoor classrooms with place-based and project-based learning presents an opportunity for schools and the communities surrounding them to learn about, understand and experience nature. Identifying opportunities and devoting space for outdoor learning, especially in STEM fields, is a concern of local educators who desire project-based learning opportunities to increase student interest, motivation and performance. Students would then have the ability to learn about ecological systems in relation to the industrial developments surrounding them. Projects located on school grounds and other areas in and around a community offer the ability to improve environmental quality, health and quality of life while delivering open-space amenities and hands-on educational opportunities.

3.2 Participatory Action Research/Place-based Learning/Project-based Learning

With the goal of providing a transformative experience and building momentum for project implementation participatory action research (PAR) as a model for engagement was deemed the most appropriate approach. Involving local school children and educators sought to develop a sense of ownership and build stewardship of the site towards positive change (Arnstein, 1969). PAR, in this case, aimed to provide workable solutions to site development as well as develop local capacity (Riel, 2010). Within this particular environment, the Mountain Top Removal mining region, increasing awareness of abusive land practices and environmental impacts served as a core outcome for developing the outdoor classroom. The ‘place’ of Wyoming County served as the context for the design and the context for developing learning opportunities. The place-based learning paradigm promotes the framing of curriculum around the local community and environment to teach concepts in language arts, mathematics, social
studies, science and other subjects. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students’ appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. With the local trend of enclosure of privately held lands opportunities for community capacity building are lacking in Wyoming County. Enhancements of community vitality and environmental quality through the active engagement of local citizens and community organizations was an identified potential outcome for the project. A core goal of the outdoor classroom was to help disconnected communities come together to learn, socialize and recreate.

Workshops held with local educators, from the two county high schools and a community college, identified specific project-based curriculum opportunities for the Wyoming County outdoor classroom. Themes for the project included a wide range of educational opportunities generated by participants. Biodiversity through restoration of multiple habitat/plant community types; Education through hands on science and entrepreneurship; Engagement with local experts, non-profits, government, and industry; Stewardship by building through tiered activities and longitudinal projects; Openness by creating a place for all ages from elementary school age through lifelong learning for seniors; Cultivation of the site promoting programs in entrepreneurship and conservation; and Observation of inherent ecological processes including disturbance and succession. Science curriculum opportunities were pinpointed in relation to the existing landscapes found on site. A rich palette of plant communities was observed during site visits including: riparian forest, streamside wetlands, floodplain forest, mixed-hemlock forest, aquatic communities, and meadow. These communities, through management, would provide a diverse set of frames for observing soil, water, vegetation relationships; succession; and alpha and beta biodiversity among others. Horticulture and cultivation of native plant species by implementing a nursery was also suggested, filling a need in local landscape restoration projects. An integrated approach to STEM education focused on real-world, authentic problems was central to curriculum development. The impetus for this approach is supported by research in project-based learning demonstrating that projects can increase student interest in science, technology, engineering, and math (STEM) because projects involve students in solving authentic problems, working with others, and building real solutions (artifacts) (Fortus, Krajcikb, Dershimerb, Marx, & Mamlok-Naamand, 2005).

Hands-on science involving children throughout the process was at the core of program development for the outdoor classroom. Classroom “visioning, design and construction processes can involve children in meaningful, developmentally appropriate ways with a multitude of benefits. Involvement contributes to their self-esteem, builds awareness of their role in a democratic society, and enriches their understanding of the people and professions within their community” (Hart, 1992). Developing the program for the site design with educators and students through meetings and discussions identified specific activities for engagement, both within the curriculum and with the adjacent community. Activities brainstormed in stakeholder meetings and with students included first building a knowledge base of site characteristics and elements that would be built upon year after year. Curricular undertakings would include: plant identification, labeling, and interpretation of native communities; insect identification and collection in the diverse habitats; active restoration of plant communities and removal of invasive species; habitat enhancements for biodiversity; stream clean up and restoration focused on water quality and aquatic biodiversity; conservation related to local forests management through arboriculture and developing a native plant nursery focused on restoration and species protection especially for eastern hemlock; creation of a micro-economy based on local food and value added products for distribution to market; community-driven planting, maintenance and harvest as a capacity-building exercise. All of these activities would include local experts, community and non-profit organizations with the local students being at the organizational center.

4 SITE UNDERSTANDING IN THE DESIGN PROCESS

4.1 Overview

Working with local youth in an intensive two-day design workshop required inventive approaches to the design process. Project leaders determined that a reading, making, interpretation, and abstraction framework would draw meaningful contributions from participants and allow for the spatial design of the site with a predetermined curriculum-driven program. Three tracks were introduced to faculty led student teams: ecology, culture, and ritual. Track one, understanding the site through ecology, brought students on a plant walk identifying the existing diversity of vegetation and plant community structure. Soil was gathered to create pigments and drawings, documenting the tonal characteristics of the site. Plant prints recorded
textures and patterns for interpretation (Froggett, 2009). Track two, understanding the site culturally drew from local and regional patterns, interpreting and abstracting maps, and recognizing natural and cultural patterns in the near landscape. Track three, understanding the site through ritual included the creation of a path and space through movement, dance and music; revealing routes of unconscious movement, and a gathering of stones and other materials defined the edges of the found space (Reason, 2001). The products of the first day’s labors then were showcased within the 4H camp setting. Discussion and interpretation of the produced artifacts led to a team-based (MacKinnon, 2009) determination of forms, patterns, and experiences to be included in the design of the space.

4.2 Understanding Site Ecology

A central goal in the design of the outdoor classroom space is to demonstrate and track ecological resilience in the fragmented landscapes of Wyoming County and to provide a model of positive land management practices. The outdoor education initiatives in Wyoming County strive not only to heal the fragmented landscapes through restoring ecological functions but to use design as an education tool to visibly demonstrate these processes. Wetland and water quality processes, pollinator and food growth and sustainable energy interconnect through design to illustrate how these processes function holistically rather than as separate entities. Links between landscape science and landscape design are required to achieve many societal needs in regards to landscape ecology success. It is often through design language that landscape pattern is understood by society, influencing the human propensity to effect landscape change (JI, 1992; Gobster P, 2007; Nassauer, 2008). However, ecological sustainability is only realized to the extent for which societal disposition is aligned with the perceived value of ecosystem services (Nassauer, 2008). If people are not aware of the benefits that a landscape provides them they are less likely to be moved to care for these systems.

Not only does restoration of ecosystem services add value by building ecological function into the landscape, but it is through community engagement, understanding cultural norms and education where the greatest contributions towards resiliency are achieved (Lister, 2009). Palmer and Mappin (2004) assert that ecological restoration must be supplemented by ecological design that will blend familiar components of indigenous ecosystems with cultural patterns. Understanding culture through community engagement and environmental education are important components to the success and sustainability of ecosystem service resiliency.

Participation with the students to gain an intimate understanding of their personal relationship to ecology is a critical component in early inventory initiatives and throughout the design and implementation of these systems. It is not only important to think of culture as a source of ecological impact, but to understand what motivates a community’s behavior. This in turn shall help integrate human effects into landscape understanding and action (Nassauer, 2009). In order to gain a deeper understanding of the culture of an adolescent in an Appalachian mining community, we spent time with the students and teachers in their environment. At the 4-H camp, we were exposed to the daily activities and the learning spaces accessible to the children. This in turn provided insight to many of the societal issues and cultural norms that shaped their daily life. Students also spent time at the future home of their outdoor education site where elements such as plant material, water system and invertebrate connections were explored through nature walks, art pieces, poetry and music. Here students harmonized with their natural environment learning about landscapes by being immersed in the space and having a physical relationship with not only the biotic factors or living resources, but how they function together as a physical landscape unit (Figure 2). This holistic understanding is an important connection to make, as it is not the individual elements or processes that make the landscape valuable, but rather the complex, self-organizing networks.
In order for restoration of ecosystem services to be successful they must respond to a multifold of variables with social, physical and biological interactions that are unique to each community. It has been shown that the most successful and instrumental ecosystem restorations initiatives are able to facilitate hands-on learning and require citizen participation in ecological processes (Lister, 2009). Active participation from the students will ensure that ecosystem services are provided in a way that recognizes societal needs and respects societal values and culture. The needs and life experiences of a child living in Wyoming County, West Virginia is significantly different than that of one in New York City. In order to ensure that design and educational spaces responded to the needs of Appalachian adolescents, the students engaged in a design charrette process and in the act of production (Figures 3 & 4).

Figure 2: High school students were led through a variety of activities at the project site along Indian Creek, Guyandotte River Watershed, Wyoming County, WV (2011). Photo by the author.

Figure 3: High school students produced abstract compositions drawn from the ecology of the site using sand and water (2011). Photo by the author.
Figure 4: Abstract compositions were also created using found plant materials and forms (2011). Photo by the author.

This process enabled them to explore creative approaches to incorporating their activity and educational needs that seamlessly integrated into the ecology of the landscape. The goal of the charrette is to empower the students and allow them to feel like they were participants in the process rather than just merely observers and consumers (Lister, 2009), providing them with a sense of ownership, pride and understanding. Students completed their own vision for site development with the assistance of students and faculty. Science, design, culture and participation are elements that must be linked in order to achieve successful ecological resilience in a landscape. It is through education that responds to environment and place in a dynamic way that will lead to sustainable ecological rehabilitation of the landscape.

4.3 Understanding the Cultural Landscape Context

As a cultural landscape, reflecting the integration of human developments with the natural environment (Sauer, 1963), the project site gave several clues to its history that were framed and interpreted with the students. Students observed the former meander of the stream that had been redirected to the rock outcrop slope allowing for agricultural development in the floodplain. A concrete footing and open well was identified through site surveys and various infrastructural utility patterns could be read. The relationship of the former homestead to the roadway and the stream was also clear as the winding route followed the slope break at the edge of the floodplain. As a component of the exercises, faculty interpreted and guided students’ eyes (Lewis, 1982) to reveal the patterns as expressing the local culture’s values, economic conditions, social structure, crafts and traditions. Specific structures were identified that connected the design project to the vernacular construction techniques of locals and the ways in which local materials are used. Adjacent types of cultural landscapes included agricultural systems; industrial developments; housing developments; front yards and back yards; paths, and roads (Jackson, 1984). Investigating USGS topographic maps revealed larger patterns of development (Figure 5) in relation to the ridge and valley landform cut from the Allegheny Plateau, the mining, settlement and road patterns in relation to the Indian Creek watershed. These patterns were then pulled from the maps to create abstract compositions demonstrating cultural landscape observations.
4.4 Understanding the Site through Ritual and Song

Students from the 4H camp had not visited the site prior to the design workshop. Given the short timetable for site investigation, quickly followed by a participatory design charrette, there was a need for faculty to establish trust in the process as well as maintain student interest. In order to evoke an interest in site exploration, establish student’s place-based narrative and evoke community-building to facilitate participatory site design, faculty developed intertwined creative activities with science-based lessons. This pedagogical approach was meant to use culturally accessible creative process as a platform from which to introduce site relevant ecological and experiential lessons that would influence later site design while also building communal relationships between the participants. The premise for these activities references “mimesis” as a means of establishing “rehabitation” (McGinnis, 2000). According to McGinnis (2000), the “act of mimesis” via “ritual, performance, art and theater” serves to “renew and restore” community. During the days prior to the event, the students had been immersed in traditional camp community-building activities that included the sharing of personal stories and group sing-a-longs. ‘Call and response’ song structure and storytelling lyrical form is typical to both ‘camp songs’ and Appalachian old-time gospel shape-note music. The familiarity of this type of music allowed faculty, trained in the fine arts and music to begin site intervention using this lens of connecting students to place via song. Cherokee stories, of “The Stone People” and “The Standing People” as delivered by the author Jamie Sams (1990) were shared as a means of widening students’ perspective of land to a more indigenous understanding as being integral to the nature of reality. Site activities were choreographed via ritual as an experience of performance, tying McGinnis’ frame for establishing a bioregional community with oral tradition (Reisman, 1966).

The first introduction to the site was a gathering in the familiar camp circle to share personal stories, this time using the guiding question of ‘tell us about your special, or even secret or sacred place you go to in the outdoors that makes you feel at home.’ After the sharing, the instructor introduced the Cherokee Stone People which framed indigenous principles of ancestry and connectedness to the land. This story provided a point of departure from story to sound as students were asked to close their eyes and imagine being in their ‘special’ place in the outdoors and imagine that place while the instructor begins a slow-steady heartbeat-like drumming. The instructor asked that each student listen to the drum, the ambient sounds of the site, and find their heartbeat (Figure 6). Upon doing so, they joined the drumming by simply beating their chest with the drum. Once all students are engaged the instructor asked the students to take up an instrument and join the drum walk.
Following the instructor, the students were led through the two dominant ecotones present on the site: a centrally located ‘old field’ succession grassland and a floodplain forest edge. Students were asked not to talk but sing, walk and listen and watch for the plant and animal inhabitants of the site. As the group walked single-file through the site’s tall grasses, they were surrounded by a flurry of hand-sized butterflies. The instructor sang: “We are a circle, within a circle/with no beginning/and never ending” (Hamouris, 1986). Gathering the students in the center of the site the instructor then drew the group into a circle where another story sharing takes place. Weaving in a lesson in grassland ecology, sharing the interconnected relationship of fire to the prairie, specifically the depth of the root mass of a prairie plant. This lesson was followed by an introduction to site phenomenology discussing the role of the butterflies in pollination and the potential of the succession field as a community garden space. Students were asked to listen and locate the birds in the vicinity. As birds were located and their calls between individuals of one species identified, the instructor explained the role of edges in maintaining animal habitat. Students and instructor then discussed their comfort-level in the open land and used the drum and chant as a means of transitioning from the field into the floodplain forest. Here, the instructor shared the story of “The Standing People” and “The Grandmother Tree”. This story provided a means of discussing indicator species, trophic levels as related to plant families and plant communities. The lesson concludes at the base of a century old sycamore where students shared one last song: “She changes everything she touches/and everything she touches/changes (touches, changes)/we are changers/everything we touch can change.” (Livingstone, 2005)

The students were led out of the forest along the river to a road cut. The instructor shifted the lesson from a story and chant site walk to site documentation through art production. Given the students’ varying drawing skills, the instructor developed abstraction activities of pastel chalk rubbings, drawn found objects with site vegetative and soil-based pigments and rudimentary papermaking. These right-brained activities were balanced with field-study methods of pressing and documenting plant materials to reveal endemic patterns for design inspiration.

Collected patterns for inspiration that were used in the design during the day two charrette included rubbings- textures from soils, plants, rocks, insects, and creek life; mud drawings- tromp, stood on, dip, mineral (windblown); collage- plant materials collection and composition; and abstract drawings- dendritic drainage of surrounding slopes; music patterns, rhythms and scales; serpentine forms from the stream; circles of unity and assemblage, time, seasons, and the meadow dance. Specific environments created emotional responses in the participants. These responses were drawn upon when creating the design for the outdoor classroom site: woods- seclusion, enclosure, safety; meadow- calm; weeds- danger, fear and running free; streamside- flowing, freedom, fish, movement; and single tree- spirituality and transcendence.
4.5  Design Process- Developing a Plan

The elements of design inspiration were drawn upon when completing the design for the outdoor classroom. A discussion of abstraction and the design process introduced three student teams to their activities. With guidance from landscape architecture faculty and students, each team developed a plan for the site (Figure 7) that included elements of place: boundary, threshold, path, terminus, and eddies. They were to find in the products of the previous day’s exercises a pattern that would guide overall spatial organization and develop a legible structure for integration of previously determined programmatic requirements. Students drew and labeled their plans and presented them to the larger camp population for feedback (Figure 8). A final plan (Figure 9) was developed by faculty and presented to the key stakeholder groups for review and comment.

Figure 7: High school students working on their site design solutions with faculty and students at the 4H camp (2011). Photo by the author.

Figure 8: High school students presenting their site design solutions at the 4H camp (2011). Photo by the author.
5 CONCLUSIONS AND REFLECTIONS

Partnership, planning, mitigation, design and development of strategies to deal with troubled sites in underserved ‘survivor’ communities can be expected to empower local citizens towards a future of investment in healthy living and enhanced quality of life (Thering, 2007). As outdoor classrooms these places can function in education through building advocacy and stewardship in area youth and in building community capacity through engagement both in the design process and programming of the spaces. There is a critical statewide need to promote outdoor, place-based and project-based education venues based on local ecology and culture. Through participatory action research, this project sought to cultivate stewardship in local youth while creating positive space for learning and the experience of nature. The design process and local partnerships created during this project may serve as a model for a statewide project in promoting outdoor education, STEM, and sustainability through participatory action research.

Figure 9: Indian Creek Outdoor Classroom: Concept Plan (2011). Photo by the author.

The process, as developed and facilitated by faculty members, was an experiment in place-based participatory design. The Indian Creek Outdoor Classroom concept plan reflects the depth of programming envisioned with local educators. Through the ‘site understanding’ activities students and faculty cultivated a deep understanding of site conditions and opportunities that were integrated in the plan. The layered approach considering ecology, cultural patterns, and ritual established the knowledge base from which to work. Without previous familiarity of the ‘place’ of the design, working through the layers allowed students and faculty the experience necessary to generate context specific solutions in the design. As a process, tied to place-based, experiential and project-based learning, this case study provides a repeatable mode of inquiry, a model that may be applied to other contexts.

The outdoor classroom, as envisioned by local educators and students, was not implemented. Just months after completion of the design a major gas pipeline was installed through the site destroying much of the highly diverse riparian forest wetlands and meadow plant community. The funder of the design process did not share the vision of the educators and students, imagining a very different solution to site development. The design team involved the funder in the initial planning in developing curriculum as well as welcoming him during the exercises on both days of the design process- on site and at camp. In retrospect, the faculty team and extension agents could have established a stronger connection between
the goals of the funder and the products of the design process, though through his observation and participation during initial meetings we viewed his support as implicit. If the funder’s views had been shared, the design process would have been compromised and the visioning of students limited. This may have, however, resulted in a product that the funder could have supported and invested in. Navigating the political landscape, especially in terms of land ownership and controls in this part of southern West Virginia, is complex. Working with industrial corporations in the region is necessary as they are the principal land owners and have communicated interest in enhancing local environments to support community needs. In measuring this project’s result within the context of Arnstein’s “ladder of citizen participation” (Arnstein, 1969) faculty members did not reach citizen control but rather established partnership that continues today. The rung of the ladder for delegated power remains occupied by industrial land owners. Design outreach projects completed previous to and after this example have had mixed results. Working on projects in which the primary stakeholder (in this case identified as the local educators and students) does not fully control the land has resulted in several projects discontinued after conceptual design. Other projects, considered successful after having been constructed, have been executed through non-profit organizations whose membership maintained control of the designed sites. As design outreach is a core mission of the landscape architecture program at West Virginia University, faculty members continue to refine and evolve their processes of engagement continually seeking the approaches that lead to project realization.

6 REFERENCES


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