Outdoor Learning Environments in Iowa:

Assessing the Current State and Building Capacity for the Future

Report Prepared by:

Prairie Rivers of Iowa

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REAP

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The Iowa Department of Transportation administers the Living Roadway Trust Fund, including an annual, competitive grant program that provides funding for integrated roadside vegetation management (IRVM) activities to eligible cities, counties, and applicants with statewide impact. Since 1990, the LRTF has funded more than $17 million for research and demonstration projects, vegetation inventories, education and training programs, gateway landscaping, snow and erosion control, and roadside enhancement and maintenance.

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EXECUTIVE SUMMARY

This report summarizes the results of a year-long assessment of outdoor classrooms, or outdoor learning environments, as supported by funders such as the Iowa Living Roadway Trust Fund (LRTF). Additionally, research was conducted into best practices in the implementation of outdoor learning environments as described by academic and professional literature and sites across the country. Finally, a series of recommended "next steps" are provided to take the lessons learned from the research and prepare for reinvigorated outdoor learning environments funding programs in Iowa.

An outdoor learning environment can be defined as a *deliberately selected or designed outdoor setting, used and supported by many in the community, that provides an intentional space for exploration, inquiry, and learning to empower environmental literacy and education in any discipline. An outdoor classroom can be located at a school, at a community location like a library, in a park, as a thoughtfully-planned space adjacent to a natural area, or in other places where the outdoor setting can enhance educational opportunities for learners of any age.*

Research into outdoor classrooms in Iowa was based on two approaches, a written survey and site visits. Two groups of outdoor classroom sites were surveyed: 33 sites previously funded by the Iowa Living Roadway Trust Fund and 220 sites known to have been active. As the lists of outdoor classrooms were somewhat dated, response rates for both surveys were relatively low (24% for the LRTF sites and 12% for the other sites). Most sites in both surveys were based at K-12 schools, though some were housed at college settings, county parks, or other locations.

Results from the LRTF survey indicated that most outdoor classroom projects had become inactive, often because of staff turnover or lack of interest and support. Results from the wider survey were more varied, with the majority of outdoor classroom sites reported as still active. However, more than half reported that even when active, their sites were used only a few times a year or less. A series of successes and challenges were reported, including excitement at the potential of the projects, disappointment when community members or administrators do not value the hard work, and some confusion over why projects had not succeeded. Again, turnover and lack of support were indicated as major challenges.

Survey research was followed by in-person site visits to known outdoor classrooms funded by LRTF. In June and July 2014, 33 sites were visited, and most demonstrated, despite survey responses, some portion of the outdoor classroom area still present, if unused. Many of these outdoor classrooms tend to be prairie plantings of varying sizes, with some serving more of an apparent landscaping role and others used more for educational purposes. A wide range of outdoor learning environments, with areas for different types of uses, was not typically found.

Findings from this survey and site visit research indicate that successful outdoor learning environments in Iowa tend to have committed leaders striving to keep sites strong. However, when these leaders depart, the outdoor learning environments tend to struggle. Personnel and community support, money, and maintenance are seen as major challenges.

Next, a review of literature and best practices is provided, with several case studies interspersed. The literature indicates a broad consensus on what makes up an outdoor learning environment, with definitions ranging from the entire outdoor world to more specific types of learning areas. For example, Nature Explore, an organization that supports the development of outdoor learning environments, describes several key features that should be present. Successful outdoor learning environments, as described by the literature, tend to feature intentional spaces, intentional learning, and intentional community support. Unlike the surveyed locations in Iowa, outdoor learning environments can be located at a range of places, including parks, community locations, higher educational sites, and early childhood education and childcare centers.

Research on the development of outdoor learning environments puts a significant focus on preparation. Indeed, the literature suggests that outdoor learning environment projects should not proceed unless they can demonstrate the likelihood of strong support and well-developed learning integration. Especially for schools, integration with curricula and educational standards is necessary for long-term use and support. Rather than focusing solely on securing funds or donations of materials to create a site, implementers are advised to focus effort on ensuring sites will be well-maintained over time. User involvement throughout the design, implementation, and maintenance periods is important, as is building a strong community of supporters. Based on survey responses and site visits, these efforts could be stronger in Iowa.

The strongest outdoor learning environments are part of communities, both those centered around the site itself and those centered around environmental education more broadly.

The strongest outdoor classrooms have the support of administrators, local businesses, parents or volunteers, and users. Several examples of regional, statewide, or national networks provide some examples for potential ways that the network of outdoor learning environment implementers could be supported in Iowa.

Finally, a series of recommendations are made for potential next steps and considerations in the future development of Iowa outdoor learning environment programming. Addressed mainly to organizations funding outdoor learning environment creation and implementation, these suggestions include:

- Determining the types of learning environments and activities to support
- Considering how to define a successful outdoor learning environment
- Providing more consistent contact with and oversight of funded sites
- Funding, through different mechanisms, the different phases of a project's lifespan, from planning, to implementation, to maintenance and enhancement
- Preparing to work with outdoor learning environment sites of different types through appropriate strategies
- Supporting networks of outdoor learning environments by being a convener and technical assistance provider.

Excelsior Middle School, Marion

INTRODUCTION

Project Background

Outdoor learning environments, or *outdoor classrooms*, have a long history in Iowa. These locations provide educators (of many types, formal and informal) and students (again, of many types and ages) with opportunities to learn in a deliberate, intentional outdoor setting. Learning in these spaces is not limited to topics like nature and environmental science, though outdoor learning environments do support those areas in unique ways. Rather, learning across many subject areas can take place, ranging from spatial reasoning and motor skills development for young children to opportunities for older adults to experience their local communities in new ways.

This report examines the ways that outdoor learning environments can support educating Iowans of many ages and backgrounds. This research, conducted mostly in 2014 by Prairie Rivers of Iowa, examines the state of past outdoor classroom sites in Iowa, explores professional and academic literature related to creating and sustaining outdoor learning environments, seeks out best outdoor learning environment practices from current professionals, and drives possible future activities by those supporting outdoor learning environments in the state.

Prairie Rivers of Iowa is an Ames-based 501(c)(3) nonprofit organization committed to strengthening Iowa's communities and small businesses through the responsible stewardship of the state's natural resources. For more than fifteen years, the organization has been a key player at the intersection of education, community, and environment, in Central Iowa and statewide. Prairie Rivers of Iowa has a history of convening citizens, professionals, and other groups for the purposes of building new programs, establishing natural resources-based organizations and businesses, and supporting grassroots initiatives from idea to implementation. Currently, Prairie Rivers of Iowa manages a variety of programs and projects, including:

- A local foods initiative designed to create a dynamic local food system to empower citizens to improve their health and help local food producers grow financially and environmentally sustainable operations. This program includes a Central Iowa Garden Project, the Grow Your Small Market Farm farmer education program, and the Local Foods Cycle, an educational bike event connecting riders with local farms and chefs.

- Managing the Lincoln Highway Heritage Byway, Iowa's longest state-designated byway, for the Iowa Department of Transportation's Iowa Byways program. Prairie Rivers of Iowa promotes the byway and its communities to potential travelers, encourages heritage tourism, works with local groups to preserve and interpret significant assets of the Lincoln Highway, and pursues educational opportunities related to the Byway. From 2012-14, Prairie Rivers of Iowa received funding from Iowa's Resource Enhancement and Protection (REAP) program to conduct Kids on the Byway, an environmental and science education program connecting Central Iowa students and teachers with resources and professionals along the byway. Currently under development is a Corridor Management Plan, a long-term strategic planning document that will identify opportunities and activities for preserving the byway's resources and developing it as an economic vehicle for communities.
- A log products program, which provides sustainably-harvested Iowa oak logs for construction projects by public and private landowners. The program's specialty is supporting the construction of cabins through high-quality cabin logs provided at affordable prices through expertise in developing plans and arranging financing for projects, and for assistance at all steps in the design-build process. The program has supported the construction of several cabins for Iowa County Conservation Boards, which can raise revenues for these organizations in a very cost-effective way.
- An urban forestry program, which provides three fast-growing Central Iowa communities (Ames, Ankeny, and Waukee) with the tools necessary to better manage their forest resources, including developing management plans, demonstrating the value of urban forests, and networking and engaging volunteers. The program also focuses on increasing capacity of the Iowa Urban and Community Forestry Council to address current needs.
- Prairie Rivers of Iowa has also been a key player in the development and adoption of the Squaw Creek Watershed Management Plan. It provides administrative support for multiple natural resource-based organizations and businesses, and partners with related organizations on issues of regional and statewide importance.

In the fall of 2013, Prairie Rivers of Iowa submitted a grant proposal to the Iowa Department of Transportation-managed Living Roadway Trust Fund (LRTF) to conduct a limited pilot study of existing outdoor classroom locations that had previously been funded through that program. The results of this study (referred to in this document as "Phase One") informed the need for a fuller investigation into outdoor learning environments both in Iowa and beyond. This initial study found that many of the previously-funded outdoor classroom locations sat unused or unmaintained for a variety of reasons, including lack of institutional support, lack of expertise, or difficulty in recruiting volunteers or staff to maintain the site.

Therefore, Prairie Rivers of Iowa submitted two grant proposals, to the Living Roadway Trust Fund and the Resource Enhancement and Protection programs, to explore in more detail the existing outdoor classrooms in Iowa, to investigate best practices in outdoor learning environment creation, maintenance, and use, and to suggest possible avenues for future activities regarding the support of outdoor learning environments. This project, funded by REAP and LRTF, is summarized in this report.

Outdoor Learning Environment Concepts

From the onset of this project, it was determined that the definition of an "outdoor learning environment" would be left intentionally vague as best practices were explored, to avoid limiting the scope of research or potential suggestions and recommendations. Initially, an outdoor learning environment was defined as:

> *An outdoor setting, utilized by many in the community, that provides a space for exploration, inquiry, and learning to empower environmental literacy and natural resource intelligence. An outdoor classroom can be located at a school, at a community location like a library, in a park, as a thoughtfully-planned space adjacent to a natural area, or in other places where the outdoor setting can enhance educational opportunities for learners of any age.*

The term "outdoor learning environment" was selected, instead of the more popular "outdoor classroom" in order to draw attention to the many types of locations where such a space can be location. For many, an outdoor classroom suggests a school-based site. While many such spaces are located at schools, this is certainly not a requirement for a successful outdoor learning

environment, and some projects might be better suited at other places, such as city or county parks, libraries, or community centers. Additionally, the learning that takes place at an outdoor learning environment can, of course, be focused on environmental and science education. However, these spaces can also contribute successfully to learning in a wide variety of other disciplines. Far from being pleasant "add-ons" at a school, these sites can authentically deepen and enhance student learning in measureable ways, including learning related to school outcomes and state and national standards. While the term "outdoor classroom" may suggest a traditional K-12 school site, the "outdoor learning environment" may in fact support learning for pre-K students, college students, older adults, community members, and people of all ages through community programs. Over the course of this project, the above definition has been examined and refined, and will be discussed further, later in the report.

Clear Creek Amana High School, Tiffin

This document is designed to be a reference for project funders and, as such, much of the content relates to successfully supporting the development of high-quality outdoor learning environment locations. However, much of this work is useful for educators creating their own

outdoor learning environments. In the future, some of this work may be useful for current and prospective outdoor learning environment practitioners. Content that is especially relevant for their work will be marked throughout with a leaf icon: 

Project Activities

Project activities were conducted mainly in 2014, though some initial results of the 2013 pilot study are reported. First, research on the state of outdoor classrooms previously funded by LRTF as well as other known outdoor classroom locations was conducted to determine the current state of these sites. This research consisted of a survey developed and communicated to known site contacts, personal follow-up with a selection of contacts, and site visits. This portion of the project provides a baseline for understanding how outdoor classrooms have been conceptualized, created, and maintained in Iowa to-date.

Next, research was conducted into best practices for outdoor learning environment creation, implementation, and maintenance. This research took two forms: a literature review of professional and academic work and an investigation into the work of successful outdoor learning environment practitioners. This investigation was based on personal interviews, first-person accounts and logs, and presentations. As part of this portion of the project, staff attended the Nature Explore/Outdoor Classroom Project Leadership Institute in July 2014 at the Arbor Day Farm in Nebraska City, Nebraska.

Next, an advisory group of educators, facility managers, landscape architects, and others was assembled in order to serve as a sounding board and review committee for research and analysis, and to guide suggested research topics. This group met in August 2014, supported the project as-needed during the second half of the year, and provided additional review and suggestions in the final drafting of the report. It is hoped that many of these advisory group members will continue to support future activities for any next steps that arise as a result of this work.

Finally, all this research and analysis was put together in the creation of this final report, on methods for reaching out to potential outdoor learning environment implementers, and on strategies for supporting outdoor learning environments in Iowa moving forward.

CURRENT IOWA OUTDOOR LEARNING ENVIRONMENTS

In this section, the state of outdoor learning environments in Iowa is assessed, with a particular focus on those sites supported in the past by the Iowa Living Roadway Trust Fund (LRTF), as well as sites identified by other organizations, including the Iowa Department of Natural Resources. A brief review of research conducted under the "Phase One" pilot study in 2013 is provided, followed by more detailed results of the 2014 "Phase Two" research conducted as part of this project.

2013 Pilot Study ("Phase One")

In the fall of 2013, Prairie Rivers of Iowa acquired, through the Living Roadway Trust Fund, a list of outdoor classroom locations the program had previously supported financially. A list of outdoor classroom site visits conducted by program staff was provided. Additionally, a list of outdoor classrooms identified by the Iowa Department of Natural Resources was secured. Each of these lists was somewhat incomplete. The LRTF list of funded projects, while containing projects dating back to the early 1990s, was incomplete, and the site visits log had not been updated since 2006. The DNR list had similarly not been updated since the mid-2000s. The datedness of these lists proved somewhat challenging for securing survey responses, both in 2013 and 2014, and does inform the need for better recordkeeping and up-to-date contact lists for organizations supporting outdoor learning environments, especially those providing financial support or technical assistance.

From these lists, a total of 23 outdoor classroom sites from across Iowa were selected for investigation. Most sites on these lists were based at educational settings, primarily K-12 but also some college or university settings. For some of these sites supported by LRTF, this surveying process may have been the first time since the mid-2000s or earlier that they were contacted by a representative of the program to assess their status. General findings were not extremely positive. Of the 23 sites selected, eight outdoor classrooms were described by contacts at the site as definitely no longer in existence as intentional spaces. One, despite receiving LRTF funding prior to 2010, had still not been implemented. Ten were likely to have been discontinued, as school staff could not even identify a person with knowledge or oversight

of the outdoor classroom. Only four were identified by contacts at the site as being active and currently used by students and/or staff at the location.

Locations reported as no longer in use

For those sites identified as no longer in active use, some common reasons why were revealed. In many cases, the staff person who initially championed and led the development of the outdoor classroom location had retired or otherwise left the institution. After this departure, the outdoor classroom space fell into disuse. Another common theme was the replacement of the outdoor classroom location by the school, either for construction of new infrastructure or in favor of a landscape design that required less active maintenance. Other sites had fallen out of use because of lack of interest, lack of support by administrators or facility managers, or difficulty in finding personnel (staff or volunteers) to maintain the site.

Individuals surveyed were asked about the composition of the outdoor classroom location, how it was used and managed (currently or in the past), and about challenges to continuing to implement an outdoor classroom project at their site. For the most part, the contacts at outdoor classroom sites that were no longer in use reported the sites had been natural areas, either grassy or with native or prairie plants. Of these sites, other elements including an outdoor education area, seating, tactile items, or other resources were not reported as part of the outdoor classroom. Some, though not all, reported signage at the site.

Maintenance of these areas generally fell to the main person responsible, often in their free time and through out-of-pocket costs. Challenges reported included difficulty in succession or transition, mowing and other maintenance, lack of knowledge about how to maintain the site, keeping a watering schedule, classes misusing the site, a lack of time to support the site, and funding. Several reported difficulties in finding an appropriate location for their outdoor classroom; in multiple cases, the original identified site closer to the road was rejected in favor of a site closer to the building but less visible. The final sites were often locations with poor growing conditions.

Support by institutional leadership varied. Some administrators supported the site (even doing some of the maintenance) but at other sites, this support was more lukewarm. One teacher reported her husband and students as major supporters, but the city as only “semi-cooperative.”

Some did list volunteers, other staff, students, and supporters, though generally administrators were not mentioned.

Locations reported as still in use

Four locations in this sample were reported as being in use at the time of the survey. These included sites at two public K-12 schools (Boone Middle School and United Community School) and two college or university settings (Iowa State University and Hawkeye Community College). Each of these four sites was visited by Prairie Rivers of Iowa staff, and a site contact was interviewed. In general, these sites experienced greater support and use than the sites that had fallen into disuse. However, each faced its own challenges to continued vibrancy.

The Boone Middle School site reported strong community and administration support. At this site, the school had even identified positive student behavioral impacts resulting from the outdoor classroom location. Regular projects for certain grade levels or classes, plus community service and club projects, help to maintain the site, which has over five acres of trail, prairie, rock gardens and trees, with a stage area, fireplace, and bat house. However, challenges reported including continued funding, communicating the value of the site publicly, maintaining the site and struggles to prevent maintenance staff from mowing it, and the problem that many classes use the location simply as an outdoor space with seating, not as a location for authentically deepening student learning. At this site, the previous long-time outdoor classroom manager had recently retired, but the new contact was hopeful to continue the progress that had been made.

At United Community School, the 17-acre outdoor classroom was reported as roughly half prairie, and half Iowa indigenous trees. Visible from the school, the site features a bird blind, benches for students, and paved pathways. The site was reported as integrated into all science curricula at the school, including for plant identification and literature studies. The previous champion of this site, who had recently retired, had done most of the maintenance and enhancement of the site. Again, with new staff on board, the school was hopeful the site would continue to thrive. Challenges faced included funding (though the school has been successful in securing grants and holding other fundraisers), finding varied uses for the site, reassembling a committee that had not met for four years, replacing materials that were aging, and repairing some facilities, including signage. The United outdoor classroom was unique in having

articulated a formal philosophy, to "provide an ecosystem that represents Iowa 150 years ago with prairie grasses and forbs, a hardwood forest, and an evergreen forest that is native to this area."

United Community School, Boone County

The Iowa State University site differs from most other outdoor classrooms in the sample. Located away from the central campus area, the four-acre site is a research prairie developed and maintained by ecology graduate students. While serving as an experimental and practical learning site for restoration practices, the site was also used a handful of times by some university English classes as an outdoor creative space. Its primary focus, however, is on supporting research and learning for ecology and natural resource management students. While organizers of the site stress its value for their own learning and experience, they also reported struggles in making the site known to others in the Ecology, Evolution, and Organismal Biology Department, as well as forging relationships with individuals in other university departments.

They also reported the need for more assistance from other students or volunteers for reseeding and other maintenance tasks. A sign for this site was installed in 2013.

The Hawkeye Community College site, in Waterloo, is a long, narrow prairie area plus other spaces on campus, including abutting an arboretum. The site contact, a natural resources professor, reported using the site in all of her classes. Additionally, biology, photography, and diversity studies courses include visits to the site. More than 100 students per year were estimated to use the outdoor classroom, from the classes of 3-10 instructors. Student volunteers, a fire management class, and class volunteers help maintain the site. Despite the relatively high levels of use, no financial support is provided to the site by the college, and funding for upkeep and maintenance was reported as challenging.

2014 Survey and Site Visits

With the limited scope of the 2013 investigation and the results suggesting that most of the existing LRTF-funded outdoor classroom locations were no longer in use, a fuller examination of outdoor classroom locations in Iowa was needed. In 2014, a series of surveys were sent to all outdoor classroom sites collected on the various lists, and a larger range of outdoor classroom sites were visited and photographed in person. As in the 2013 research, out-of-date contact information limited the ability to successfully identify current site managers or those responsible for the outdoor classrooms. In general, the second round of primary research broadly supported the findings in the pilot study; if funded by LRTF, many sites had fallen into disuse. However, site visits provided additional nuance beyond the information survey responses provided.

Survey of Iowa outdoor classroom locations

Between May and October 2014, 253 outdoor classroom sites were surveyed on the status of their programs and spaces. As described above, these represent sites known to have been funded since 1990 by LRTF (33 sites) and sites on lists developed by other groups but retained by LRTF (220 sites). The same lists as in the prior pilot study were used, however in this round of surveying all sites were contacted. Relatively low response rates were a major challenge for this survey effort. Some contact names had been retired or otherwise no longer employed at the

institution location for years (in some cases, nearly two decades). In the future, more complete recordkeeping and more frequent contact with outdoor learning environment site leaders should assist funders and supporters in maintaining better connections with sites.

The surveys to LRTF-funded sites (mostly educational institutions) were distributed by mail to the hosting site location. Since the site contact names provided in LRTF records were mostly out of date, these surveys were addressed to principals or other appropriate administrators. For ease of response, the mailed survey also contained a short, easy-to-type URL for an equivalent online survey using the SurveyMonkey.com service. See Appendix A for a copy of the survey. Attempts were later made to reach contacts by phone to encourage survey submission and to set up site visits; these attempts were often not successful.

The surveys to other sites known, but not funded by LRTF, were also contacted during this same period. These surveys were also distributed by mail to the last known contact. Again, an online survey was also made available with a short and simple web address. For both surveys, an introductory letter explained the purpose of the survey and requested that the recipient, if not responsible for the outdoor classroom site (past or present), give the survey to the individual on site who was responsible.

Of the 33 surveys sent to previously-funded LRTF sites, eight were returned, for a response rate of 24%. Respondents (generally administrators, with a single teacher replying), reported that one of the outdoor classroom sites was still active, one was partially or somewhat inactive, and four were permanently inactive (two surveys were returned blank). Reported features for past or present outdoor classroom sites included native plantings (three sites), prairies (two sites), school garden (one site), and seating (one site). Despite the relatively low response rate, it is clear from the surveys returned that many educators are passionate about their outdoor learning environments—some have struggled to make them effective and others have found success, but there is significant belief that outdoor learning environments *can* be successful and meaningful for their users (this belief is also held by many of those responding to the second survey).

When asked, "Describe how your outdoor classroom is currently or was used by students and staff at your school," most responses indicated low levels of use. Not surprisingly, only the

schools with currently active outdoor classrooms reported much use, even in the past. Notable responses included:

- "Very few times. Not sure why it hasn't been used since I started in 2010."
- "Nobody from the school uses the location. I am currently working with Troy Siefert [LRTF program manager] to make the planting more attractive…The planting has very little support in the community."
- [The site is] used to teach restoration biology concepts, biodiversity, native plant identification, and field techniques."

Responding outdoor classroom managers reported their sites were used infrequently. Three reported the sites were used a few times a year, one reported a few times a month, and two reported rarely or never.

Each survey asked outdoor classroom managers about successes and challenges related to their outdoor classrooms. A series of statements were provided, along with a scale indicating agreement or disagreement (where 1=Strongly Agree, 3=Neither Agree nor Disagree, and 5=Strongly Disagree). A summary of responses is provided below:

Statement (number responses)	**Average**	**Standard Deviation**
The outdoor classroom is/was a valued part of our school location (n=5)	3.4	1.67
The outdoor classroom contributes/contributed to student learning objectives (n=5)	3.4	1.67
The outdoor classroom is/was integrated into our school curriculum (n=5)	3.6	1.67
Students enjoy/enjoyed their experiences in the outdoor classroom (n=5)	3.20	1.79
Students learn/learned a lot by participating in the outdoor classroom (n=5)	3.40	1.67
Students are/were included in decision-making and maintaining the outdoor classroom (n=4)	3.50	1.00
Teachers have/had the knowledge needed to use the outdoor classroom for teaching (n=5)	2.80	1.48
The person(s) responsible for it have/had the knowledge needed to maintain it (n=5)	2.80	1.48
Parents and community members support/supported the outdoor classroom (n=5)	4.00	1.00

Table 1. Agreement with Success Story Statements, LRTF-Funded Site Surveys

Notable detailed responses about outdoor classroom successes reported included:

- "No success."
- "It has become an integral part of research opportunities for my students during the ecosystems and biodiversity studies."

Survey recipients were also asked about the challenges faced by their outdoor classroom sites. Similarly, they were presented with a series of statements, and then reported their agreement on a scale (where 1=Strongly Agree, 3=Neither Agree nor Disagree, and 5=Strongly Disagree). The summary of responses is provided below:

Statement (number responses)	Average	Standard Deviation
The outdoor classroom receives/received full support from the principal/administration (n=4)	3.25	1.26
The outdoor classroom receives/received full support from grounds keeping staff (n=5)	3.00	1.58
The outdoor classroom receives/received full support from teachers and other staff (n=5)	3.8	1.30
The person(s) responsible for the outdoor classroom need/needed more help (n=4)	2.75	1.26
We need/needed more knowledge about planting, gardening, or maintenance (n=4)	3.00	1.41
We need/needed more knowledge about the environment or environmental education (n=4)	3.00	1.41
The plant material in our outdoor classroom struggled/struggles to thrive (n=4)	3.25	0.50
The outdoor classroom is/was too much work for us (n=5)	3.20	1.48
The outdoor classroom was underused by staff and students (n=5)	2.40	1.34
The outdoor classroom is/was not a big priority at our school (n=5)	3.20	1.48
The outdoor classroom needs/needed more money to be a success (n=5)	3.00	1.22
The outdoor classroom does not/did not contribute enough to educational goals (n=5)	2.60	1.14

Table 2. Agreement with Challenge Statements, LRTF-Funded Site Surveys

Notable detailed responses about challenges included:

- "Money to maintain – has not been well kept due to budget cuts."
- "The community despises the look of the outdoor classroom in the front of our school. Prefer it was placed out back. Not a good first impression."
- "Bull thistle and willow are highly invasive – however, this creates some great teachable moments and gets the kids involved with real life management issues in addition to showing."

Finally, survey takers were asked if they had any additional comments. Only two replied, but both responses are powerful:

- "How do I answer a community who wants the area mowed under when I say to them it is not our 'right away' [sic]."
- "It has been an amazing addition to my environmental science and AP environmental science courses. It has allowed me to teach authentic field techniques…This would not be possible without external funding."

Copies of all survey responses are listed in Appendix A.

The larger survey to all known outdoor classroom locations, not just to school sites receiving LRTF funding, achieved more responses but, again, a low response rate. Of 220 surveys distributed, 26 were returned (11.8%). One was returned blank. In this case, responses came from school administrators, teachers, county conservation personnel and naturalists, and others. 21 reported that their outdoor classroom locations were still active, three reported the sites were permanently inactive, and one reported the site was partially or somewhat inactive. Common features of these sites were: native plantings (76%), prairies (64%), gardens (40%), seating (52%), and nature trails (56%). Four sites reported interpretive panels or signage.

The descriptions of these outdoor classrooms were more varied. While the LRTF-funded sites typically reported some kind of prairie area, these other sites also reported greenhouses, ponds, or wetlands. Sizes ranged from less than an acre to 16-acre sites, with some county conservation personnel even reporting on entire parks as outdoor classrooms. Respondents reported success in finding funding from sources including Monsanto, Trees for Kids, Hy-Vee, local business and community donations, Pheasants Forever, LRTF, and the local Soil and Water Conservation District. Volunteer support was reported by some sites.

While on the surface these sites seem to be more active and successful than those participating in LRTF funding programs, usage of the sites is still low. Only 28% reported the outdoor classroom in use weekly or more frequently. 20% reported use a few times a month, and 52% reported use only a few times a year or less.

As in the first survey, these site contacts were also asked their agreement with a series of statements related to outdoor classroom successes (again, 1=Strongly Agree, 3=Neither Agree nor Disagree, and 5=Strongly Disagree).

Statement (number responses)	Average	Standard Deviation
The outdoor classroom is/was a valued part of our location (n=24)	1.83	1.09
The outdoor classroom contributes/contributed to our mission (n=24)	1.79	1.06
The outdoor classroom is/was integrated into our programs or activities (n=24)	2.04	1.08
Users enjoy/enjoyed their experiences in the outdoor classroom (n=24)	1.71	1.16
Users learn/learned a lot by participating in the outdoor classroom (n=24)	1.79	1.18
Users are/were included in decision-making and maintaining the outdoor classroom (n=24)	2.33	1.12
Staff have/had the knowledge needed to use the outdoor classroom for teaching (n=24)	2.38	1.13
The person(s) responsible for it have/had the knowledge needed to maintain it (n=24)	2.25	1.29
Community members support/supported the outdoor classroom (n=24)	2.08	1.10

Table 3. Agreement with Success Story Statements, Other Known Site Surveys

Specific successes reported included:

- "Many students I work with had never planted, weeded, watered, etc. anything in their lives. So this has been a learning experience for them! Students decide where they'll make new flower beds, how they'll get the plants,…where to plant them once the flowerbeds are in, etc. These projects have been supported by our local PTO!"
- "Huge success with school groups in that the HCCB provides the only hands-on natural resource science curriculum in the county for pre-k – 8th grade."
- "Native prairie grass seed, no till drill, and labor were donated by the Kossuth County Conservation Board and Union Slough National Wildlife Refuge. A local tiling and drainage company is donating labor, equipment, and materials for the pending shallow water excavation project in our outdoor classroom"

Survey takers were also asked about the challenges they faced in managing their outdoor classrooms, using the same 1-5 scale.

Statement (number responses)	Average	Standard Deviation
The outdoor classroom receives/received full support from the managers/administration (	1.83	1.09
The outdoor classroom receives/received full support from grounds keeping staff (n=24)	2.25	1.45
The outdoor classroom receives/received full support from other staff (n=24)	2.17	1.09
The person(s) responsible for the outdoor classroom need/needed more help (n=24)	2.71	1.37
We need/needed more knowledge about planting, gardening, or maintenance (n=24)	3.08	1.14
We need/needed more knowledge about the environment or environmental education (n=24)	3.00	1.14
The plant material in our outdoor classroom struggled/struggles to thrive (n=23)	3.57	1.20
The outdoor classroom is/was too much work for us (n=23)	3.26	1.21
The outdoor classroom was underused by staff and visitors (n=23)	2.96	1.61
The outdoor classroom is/was not a big priority at our location (n=22)	3.27	1.16
The outdoor classroom needs/needed more money to be a success (n=23)	2.91	1.16
The outdoor classroom does not/did not contribute enough to our goals (n=24)	3.83	1.09

Table 4. Agreement with Challenge Statements, Other Known Site Surveys

Notable specific challenges reported included:

- "In 2004-2005 the Jackson County Board of Supervisors began discussions to end the lease agreement with the non-profit/volunteer Demonstration Farm Board and return to a cash lease of the farm for profit for the county. With the advent of these discussions we

reduced our involvement with the Outdoor Classroom…" Note that this County Conservation Board opened an interpretive center where environmental education programming is now based.

- "Since my students and I are responsible for the majority of the classroom, I feel that one of the reasons many of the trees didn't make it is my fault. I'm a 'plant and flower' person, not a tree person. I have never planted trees and therefore many probably would have made it had someone with more knowledge taken care of that aspect of the classroom. So I'd love more assistance in this area!"
- "Our maintenance staff has ruined several areas of the project several times. We need maintenance staff with knowledge of native plants – they should be able to go to a training event for their pesticide retraining that also gives them knowledge of managing natives (that is what they do now, but with a turf grass conference)."
- "The biggest challenge that our outdoor classroom has faced is that many of the wonderful ladies that help with our gardening are older and cannot help keep the weeds down the way that they should be, our students have stepped up and helped with this challenge…"
- "It needs to be accepted as a worthwhile part of our educational system."
- "A group of students attended a school board meeting before we started to develop our outdoor classroom in the 1980's and shared our reasons and budget which was less, we showed proof of, than it would cost to mow that large area. That won them over, plus the knowledge and passion of the students for the project helped I am sure."
- "Vandalism has made it difficult to maintain. Teachers & staff who started the project have left, so the vision for ways it can be used is not clear. I believe we can use it more intentionally and would benefit from suggestions."

Finally, survey takers were asked if they had any additional comments. Many were insightful; a few are listed below:

- "I have seen several natural areas/outdoor classrooms fail due to lack of knowledge and support from administration and grounds crews. Many grounds crews have very little knowledge caring for these types of plant communities."

- "There is a chance that the largest part of our outdoor classroom (the wide-open area I wish offered more shade) will soon have a large Verizon tower placed dead center in the middle of it. I'm not happy about this, but also understand that the town desperately needs cell service."
- "It was great for our school and a good use of ILRTF money. Some of the new demands from ILRTF were not easy to comply with as a teacher – I did not have accountants and secretaries helping me with all of the new paper work and I would not apply for more money in the future because of this."
- "Our outdoor classroom is a work in progress. I look forward to continuing sharing our outdoor classroom with my students."
- "Our outdoor classroom has had much success, our students love to work and learn in the garden. Our community has come together to help plant it and maintain it."
- "Needs more support from top administration."
- "Young people finding no peace in their lives can do some when connection to when their people, their ancestors lived in peace and were totally connected to nature…These facts plus my own observation and experiences of students I have worked with in the natural world reveals the need for natural world outdoor classrooms to be available for all students at every age."
- "It's a wonderful area to see and use."

  Full survey responses are provided in Appendix A.

Site Visits

Since survey response rates from outdoor classroom sites funded by LRTF were low, Prairie Rivers of Iowa staff sought to increase the information known about these sites by conducting site visits. In June and July 2014, staff visited 33 sites that had received financial support from LRTF through its outdoor classroom funding program. A summary of these visits is provided here, while a full log of site visits with descriptions and photographs is provided in Appendix B.

As noted above, outdoor classroom sites funded by LRTF in the past have been generally been located at educational institutions, mostly public K-12 schools with some private schools

and college settings represented. Site visits have provided a better sense of the current state of LRTF-supported outdoor classrooms than the surveys do alone, for a number of reasons. First, low survey response rates suggest that many or most such outdoor classroom sites are inactive and therefore no longer present at their original locations. In fact, site visits demonstrate that the truth is more complicated. In addition to low survey response rates, Prairie Rivers of Iowa staff experienced frequent difficulties in identifying staff members at outdoor classroom sites familiar with the projects. Even administrators were often not aware of the outdoor classroom projects or thought they had been removed or discontinued, sometimes years in the past.

However, site visits demonstrated that most outdoor classroom installations were still physically present, and in some cases still being maintained in some fashion. This discrepancy suggests that well-designed outdoor spaces can survive (as often hoped!) without excessive maintenance work. More realistically, though, this also suggests that the remnants of once-active outdoor classroom sites do not inspire student or educator interaction, even if those remnants are still physically visible.

Hoover Middle School, Waterloo

Site visits reveal a relatively limited range of potential outdoor classroom types, based on what has been installed or maintained at these sites. Most sites feature some sort of prairie planting or native plant space, with paths around or through these areas for observation or mobility. Roughly half of the sites feature signage, though only a handful of those signs mention LRTF as a funder. Many "outdoor classrooms" instead appear to be more landscaping or gateway tools rather than sites for true authentic learning.

A good example of an outdoor classroom site is at Hoover Middle School in Waterloo. A small prairie on the south side of the school property, this site has good diversity and appears to be maintained, as it is in good condition. There is a small observatory in the area. In conversations with grounds staff there, Prairie Rivers of Iowa staff were told, "we just mow around it."

Kate Wickham Elementary in Coralville features a half-acre prairie on a hillside west of the school, but the site is beginning to see some encroachment of hardwoods and cool season grasses. Similarly, at Grinnell Middle School a prairie of about 1.5 acres is located in the southeastern part of the school property. This prairie area appears to be in decline and in need of maintenance. Signage marks the site but makes no mention of LRTF.

Kate Wickham Elementary School, Coralville

Grinnell Middle School

Some sites did reflect a broader concept of an outdoor classroom beyond simply a prairie area. LRTF funded a prairie planting at the Maharishi School in Fairfield, which remains diverse and well maintained. Nearby is an outdoor classroom site developed according to the principles of the Nature Explore outdoor classroom model, which will be discussed further in the next section of this report. This area feature paths and gardens, a variety of activity areas, and a combination of natural and constructed areas for different types of interaction.

Ames High School has a large and well-maintained prairie to the west side of the school. This is a large prairie, well-signed, with excellent diversity, seating, and walking trails, Students and volunteers do most of the work managing this area, which is used in environmental studies classes and by garden clubs, other students, and community members.

Maharishi School, Fairfield

Some sites, like Thomas Jefferson High School in Council Bluffs, can be described as outdoor seating or amphitheater areas. An urban school surrounded by business and commercial areas, this school features an outdoor seating area framed by trees, which also serves as an entryway to the school.

In general, visited sites tended to fall into five main types: large-scale plantings at Luther College, Ames High School, or United Community School; smaller-scale plantings, often in small beds or in areas adjacent to school buildings or playgrounds, especially at elementary and middle schools, such as Excelsior Middle School in Marion or Taylor Elementary in Cedar Rapids; landscape or gateway plantings that serve as more of a decorative element, such as at Clear Creek Amana High School in Tiffin; classrooms outdoors such as at Crescent Elementary or Thomas Jefferson High School in Council Bluffs; or medium-scale prairie plantings such as at Dowling Catholic in Des Moines or Red Oak High School.

Thomas Jefferson High School, Council Bluffs

Interpretation and Analysis of Findings

The surveys and site visits conducted as part of this project provide valuable information for informing the current status of outdoor classrooms in Iowa, especially those that have been funded by LRTF over the past 25 years. In general, it is clear that while some outdoor classroom sites are thriving, others are facing challenges either related to their physical state or their "human resources."

Looking at the survey results related to outdoor classroom sites funded by LRTF, it is clear that many of the sites have lost their leadership, mostly because of the departure of the original creator and champion of the site. Even for those locations for which site visits show the outdoor classroom is still maintained and healthy, in many cases staff members do not value or even acknowledge the site as a meaningful part of their campus. The extremely limited survey responses show ambivalence toward outdoor classrooms, with most responses to both the challenge and success statements falling firmly in the range of "Neither Agree nor Disagree."

Survey responses indicate a deep interest in outdoor classrooms, but at the same time concerns over money, community support of the projects, and site usage.

Responses to the larger round of surveying, beyond just those funded by LRTF, paint a slightly rosier picture, but one that should be considered more fully. In this case, a much larger proportion of respondents indicated their outdoor classroom sites were currently active; however, with less than a 12% response rate this may reveal that those who chose to respond self-selected as more interested or committed in their outdoor classroom projects. For outdoor classroom projects that have become inactive, it was likely much harder for an institution to find anyone to respond to the survey at all. Therefore, care should be taken not to assume that the large proportion of currently-successful sites represents the general population of outdoor classrooms. Rather, the successful outdoor classrooms may have simply replied, while the unsuccessful ones did not.

In any case, responses to this survey did differ from the first. Average responses seem to indicate more agreement with statements describing strengths of the outdoor classroom, as compared to the LRTF-funded site survey. Similarly, these site managers seemed to indicate less agreement with statements describing weaknesses. However, reading some of the detailed comments submitted by respondents provides deeper context: challenges dealing with grounds keeping crews, trouble finding volunteers, lack of value placed upon outdoor education and outdoor classrooms, vandalism and succession planning. One is even concerned about the level of reporting required by LRTF funding. Statements of these challenges have recurred again and again during this research project: the negative effects of unskilled grounds crews, burdens and expectations placed upon volunteers, lack of appreciation or use when original managers move on, and little or no funding for ongoing support.

Site visits presented additional context for the understanding of Iowa outdoor classrooms. Examining sites that had received funding from LRTF, it is clear that, whatever the definition of outdoor classrooms or outdoor learning environments, the *de facto* implementation of them tends to be a managed prairie area, perhaps with some signage or seating, at a school location. While these sites may have been used (or may still be used) for education and student interaction, in only a few cases do sites vary from this model. Of course, this may be based on what types of projects LRTF and other funders were willing to support in the past. However, the literature and

best practices explored in the following section will show that there are other models for developing outdoor learning environments that provide more variety and more opportunities for engagement.

In conclusion, site surveys and visits provide important detail for informing an examination of best practices in outdoor learning environment design. Knowing how outdoor classrooms have been conceptualized in Iowa to date, it is now possible to consider how they might be envisioned in the future. Some specific lessons to consider while examining these best practices are:

- Iowa outdoor classrooms that succeed tend to have committed leaders who work hard to keep their sites thriving. They feel passionately about their outdoor classroom sites, but those sites may struggle after they leave the hosting organization.
- Iowa outdoor classrooms that do not succeed tend to struggle with personnel (no plans for succession, difficulty recruiting volunteers), maintenance and physical implementation (weather, lack of knowledge of how to manage the space, grounds crew relationships), and community support (lack of support from administrators or funders, lack of money, lack of understanding by local citizens or taxpayers).
- Iowa outdoor classrooms as funded by LRTF in the past tend to be focused around native plant or prairie plantings. Some sites, while still in existence, do not even strike staff members as "outdoor classrooms" when contacted by researchers looking into the projects. This suggests an opportunity for expanding the knowledge of the concept of outdoor classrooms or outdoor learning environment in Iowa.
- As a connection between outdoor learning environment locations, funders and supporters like LRTF and REAP have an opportunity to provide real assistance and make meaningful contributions to outdoor learning environments, but need to have stronger recordkeeping and ongoing relationships with sites to do so.

LITERATURE REVIEW AND BEST PRACTICES

Keeping in mind the lessons learned from the investigation into outdoor learning environment locations in Iowa, a review of literature and best practices will be instrumental in helping to develop stronger sites and programming in the state. This review will explore best practices in creating and sustaining strong outdoor learning environments (including features of successful outdoor learning environments and strategies for maintaining them), building networks of outdoor learning environments (including enabling peers to meet and communicate with each other to share successes and questions), and opportunities for funders to support outdoor learning environments projects (including practices that funders can take to encourage success and long-lasting projects). This section will conclude with information about potential educational connections to district and state learning outcomes and objectives, which are critical to successful outdoor learning environment projects at public school locations. References for cited literature are provided at the conclusion of this report, and an annotated digital database of these and other resources is provided as Appendix C.

Creating and Sustaining Sound Outdoor Learning Environments

The investigation into outdoor classrooms in Iowa revealed three major areas of activity and success in outdoor classrooms, as well as three related areas of challenges: personal interaction and growth, with learners, staff, volunteers, and others; physical implementation and maintenance of the site; and community support and buy-in. All three appear to be necessary. Without involving learners and others, there is no educational point to the site and it becomes a natural area without a learning component. Without strong implementation and maintenance, the site may not last. Without community support, the value of the outdoor learning environment may be overlooked and the site put at risk by changing priorities, like new construction projects.

What are outdoor learning environments and what features can they have?

The site visits conducted as part of this research effort reveal that for many projects, including most of those funded previously by LRTF, an outdoor classroom can be conceptualized as a prairie planting with opportunities for interaction and learning by students at a school-based setting. However, a review of literature and best practices shows that there are

other ways to think about outdoor learning environments and the types of elements they can feature.

As discussed at the beginning of this report, defining an outdoor learning environment is no simple task. As with any educational effort, the most successful outdoor learning environments are those that meet the needs of their communities, including learners, educators, and managers. Jelmberg and Goodman (2008) consider a broad definition of "the outdoor classroom" as the outdoor, natural world available for learners of all ages to experience. From this perspective, essentially "the world is a classroom" approach, the editors highlight successful outdoor education programs from elementary school through college, including activities, games, and models to emulate. However, for the purposes of this report, the entire outdoors as a classroom, while valuable, is perhaps too broad a concept. Maher (2000) describes outdoor classrooms with ponds, wildflower beds, vegetable gardens, barnyard areas, dig sites, and forested areas. Mayes (2010) argues that outdoor classrooms can be developed even at locations with limited resources. She suggests sites like gardens, wildlife viewing stations, erosion projects, or geology studies can all be outdoor classrooms.

Similarly, Rich (2000) suggests that elaborate outdoor classrooms may not be appropriate for all sites, and the best are those that are scaled appropriately for the needs of educators, learners, and the community. He describes planning a butterfly habitat with his students as a way of observing the life cycles of different butterfly species. Wood (2006) provides a number of examples of outdoor classroom elements that can be constructed "on a shoestring budget." She suggests using cable spools from the utility company as tables, building simple and inexpensive bench-tables, creating a weather station using sections of pre-fabricated picket fence, or using inexpensive or donated rag rugs or buckets to create instant outdoor classrooms wherever appropriate, even if funds for permanent construction are not available. (p. 39).

Nature Explore, along with its affiliated organization the Dimensions Early Childhood Research Foundation, supports outdoor learning environment implementation and researches the benefits of such sites, especially in early childhood settings. It recommends a more formal and planned outdoor learning environment, with a variety of suggested features including, including an entry area, open area for large-motor activities, and spaces for climbing/crawling, "messy

materials" like sand or water, building, nature art, music and movement, garden or pathway through plantings, gathering, and storage (*Learning with Nature Idea Book*, 2007, p. 5).

The literature, therefore, varies on the specific types of features and locations of outdoor learning environments, depending on the needs of a site's users, the natural space itself, and the financial status of the sponsoring organization. However, in general, successful outdoor learning environments described in the literature tend to feature intentional spaces (whether actively designed or thoughtfully selected), intentional learning, and intentional support from a community.

Case Study: Live and Learn Early Learning Center

Live and Learn Early Learning Center

Live and Learn Early Learning Center is an early childhood education center based on a 25-acre farm in Lee, New Hampshire. Initially opened as a summer program, by the late 1970s the learning center had expanded to offer year-round programming. Live and Learn has a

mission "to educate children intellectually, physically, emotionally and socially by recognizing individual differences, promoting self-esteem, and fostering respect for others" (Live and Learn Early Learning Center website, 2014). Founder and director Johanna Booth-Miner describes founding the program in 1974, when she could not identify other outdoor early learning environments available for New Hampshire children. From the beginning, she included her farm as part of her early childhood center, and began challenging herself to complete improvements to the site every year.

On Booth-Miner's farm, about two acres are fenced in and offer a traditional outdoor classroom setting, with hiking trails, low ropes, a climbing area, movement area, and a "river works" area that provides hands-on interaction with water. Outside the fence, the other 23 acres of the farm are "technically a field trip," but are visited often, with about five additional acres of outdoor classroom-type areas spread around.

Live and Learn Early Learning Center

Booth Miner describes how she maintains her outdoor learning environment and environmental focus: "It takes a community and needs community buy-in. You need to live it every day." When hiring early childhood educators, she stresses the importance of her outdoor philosophy and makes it clear to prospective employees that the outdoor classroom area is an important part of the center. By including work on the outdoor classroom as part of staff job descriptions, she is able to ensure that works is done. Still, while staff members have intellectually bought in to the concepts, Booth-Miner admits she constantly needs to help teachers see the value and educational opportunities offered in outdoor settings. She advises not separating site construction projects from children. School-age children can assist with the design of a space, while younger children can give ideas that can be incorporated. For example, children can offer ways to leave a personal mark or "note" for future generations of attendees, including shells or handprints placed into the area. This helps build ownership among children as well as staff members.

Who uses outdoor learning environments?

Richard Louv, in his groundbreaking book, *Last Child in the Woods*, writes at length about the value of experiences in nature for the healthy development of children (and adults). He provocatively titles the lack of interaction with nature, common among youths in the United States, "nature deficit disorder." Louv describes the benefits of natural experiences, including health, emotional well-being, and creativity. Louv cites several barriers to getting youth outdoors, including a fear of risks like injury and litigation, a lack of knowledge among adults, and, critically, a lack of time available for natural experiences. He writes, "time in nature is not leisure time; it's an essential investment in our children's health (and also, by the way, in our own)" (p. 120). Outdoor learning environments can address each of these barriers: well-designed and supervised outdoor spaces should be safe, supported outdoor learning environments can help parents and teachers develop their environmental literacy, and thoughtful educational experiences can be educationally rigorous, as well as fun.

At the Iowa sites investigated, outdoor classrooms tended to be located at educational settings, mostly K-12 schools. Besides K-12 students, would other individuals benefit from outdoor learning environments? Some universities have created outdoor classroom sites, though

in Iowa these have tended to be either gateway projects or designed mostly for students in relevant courses of study. Mixson-Brookshire (2012), however, writes of the value of outdoor environments for all college students, including those transitioning to a higher education environment for the first time. She writes of the possibility of deep emotional connections between and within students resulting from outdoor experiences: "I learned that despite all my experience as a facilitator, my students still have the ability to surprise me with their maturity, compassion, and generosity…I had not factored the human spirit into my lessons—but maybe I need to" (p. 32).

Looking at younger students, Bailie (2012), in a multiple case study of preschools based at American nature centers, finds that the combination of early childhood education and environmental education can have powerful effects for reducing childhood obesity, environmental degradation, and youth aggression. These and other beneficial effects of outdoor education and experiences have, in fact, been found in multiple studies and across age ranges.

At the same time, Burke (2006) argues against simply assuming that environmental and outdoor learning experiences must automatically be beneficial for participants. Burke writes that a critical approach to outdoor education "requires us to address the fact that not all people's experiences of nature are, or have been, positive" (p. 91). Tt is necessary to consider the specific audience for an outdoor learning environment and for program developers to create opportunities for experiences that support the needs of participants. Just placing children and adults in an outdoor setting without understanding their needs is not sufficient for making a major impact.

Preparation for implementing an outdoor learning environment

Keeping in mind that the implementation of an outdoor learning environment must take into consideration the needs of the audience, whether pre-kindergarten, K-12, or college students, older adults, or general community members, there are several common preparatory steps to increase the likelihood of long-term success. Haines (2006), a professor at Towson University's Department of Biological Sciences, provides a good summary for the preparation that goes into developing an outdoor learning environment even before any physical work is begun. This preparation can take months, but they are months well spent resolving issues and potential concerns in advance. She recommends assessing potential sites before

moving forward with any public activities. She suggests considering the quality of potential sites by touring the site property and looking for areas that meet project needs or that could meet outdoor learning needs with modifications. For example, when considering a wildlife habitat project, "if food sources are lacking, a good project could be a winter habitat garden filled with native plants that provide food for animals during winter months" (p. 45). This makes the prospective work to create the outdoor learning environment part of its educational mission. She also suggests looking beyond the grounds of the school or hosting organization, to community property such as parks, streams, and neighborhoods.

Once several site assessments are completed, Haines suggests selecting a project to advance, seeking approval from managers or administrators, community members or parents, and maintenance staff (especially ensuring that no construction projects are planned for the area). By thoughtfully considering potential project sites and scopes in advance, discussions can focus on the specific merits and challenges of an idea, rather than on hypotheticals. After consideration of the academic merits of the project, Haines recommends stopping to ensure there is enough support to move forward (p. 46). This is a check against moving ahead with a project only supported by a few individuals, without resources to sustain the project over the long term. A thorough consideration of support, in specific terms, may also help planners determine the viability of a project after the initial enthusiasm wears off.

Haines also suggests a variety of ways to raise funds for supporting the implementation of the outdoor learning environment, beginning with developing appropriately-sized elements. Recommendations include asking for donations from local nurseries and landscapers, partnering with native plant organizations, asking parents or stakeholders for volunteer assistance or donations, and even approaching corporations and asking for small donations. She suggests that of the challenges facing implementing an outdoor learning environment, securing the funds or materials is usually not the greatest (p. 46). More significant are the challenges related to maintenance and involving students. She writes, "all too often, a fabulous [outdoor learning environment] disintegrates after one year because not enough thought was put into maintaining the area over time. Whatever the type and scope of your project, you must have a plan from the beginning that outlines how the area will be cared for and maintained" (pp. 46-47). Essential

questions to consider: who will care for plants, especially over the summer at a school site, if the grounds keeping staff knows how to care for the area, and who will weed, mulch, or clean.

Safety is also a critical factor for investigation prior to creating an outdoor learning environment, and Haines recommends consulting with local builders and authorities on ordinances, contacting other educators who have done similar projects, and visiting other sites to find out about safety and other issues before undertaking a project.

Finally, she suggests involving students or other participants from the beginning of the project, including the planning. They can contribute to site design, select locations for features, or do research on the Internet to find plant options. Experts or other knowledgeable practitioners should be consulted, again, to help guide students and ensure viable choices. Students or participants can also help persuade administrators, grounds crews, and the community through presentations, letters, or letters to local media. By including students in the planning, multiple academic content areas can also be addressed (pp. 47-48).

Case Study: California Lutheran Frederickson Family Early Childhood Center

Cal Lutheran Fredrickson Family Early Childhood Center

This university-based childcare center in Thousand Oaks, California, demonstrates the importance of planning for an outdoor learning environment. Elaine Davis, director of the "Cal

Lutheran" childcare center, describes a more than ten-year journey leading up to the development of their site. Initially located in a university-owned house, the childcare center did not offer much in the way of formal outdoor education.

Davis came across the concept of outdoor learning environments while visiting another area childcare center and began planning by asking, "how can we do as much as we can in the space we are in?" Her answer was to start with the existing talents of her staff and families were and then "let them fly!"

Like Booth-Miner in New Hampshire, Davis has a philosophy of using each year to improve her program in some way. The program began by identifying the types of elements they desired in an outdoor classroom and considering how to create them with the resources they had. For example, a parent created an outdoor play kitchen area by looking at another example and replicating it affordably. While the result was not exactly the same as the more costly model, it was more than satisfactory for the site. Davis also engaged in real staff building with her employees, sharing the memories they have of their childhoods outside when talking about the importance of their outdoor education work.

Cal Lutheran Fredrickson Family Early Childhood Center

She mentions that convincing the university that the outdoor learning environment area was worthwhile was a particularly hard sell. However, by documenting the value that parents, staff, and students found in outdoor learning, she was able to "make a believer out of them." By

drawing families in to the project, keeping them up-to-date on new ideas, and enlisting them as volunteers, she was able to build ownership of the outdoor learning environment among parents who, as paying customers, had significant influence on administrators.

This planning and long-term community building paid off over the last few years as the university began a project to build a new building for the childcare center. Davis and her staff were very purposeful in considering the role of outdoor learning environments at this new location. She worked with the landscape architect who was beginning to design the building, in order to introduce outdoor education concepts from the start. Finding that the landscape architect did not have any training in outdoor education, she piqued his interest by introducing him to an area of which he had previously been unaware. In fact, she recommends reaching out to landscape architects to get their professional support and design skills by offering outdoor learning environments as training grounds for them to develop new skills.

As a result, the childcare center's new home has a well-integrated outdoor learning environment and outdoor education is a key part of the site's daily programming. Most importantly, Davis and her staff have turned outdoor learning into a selling point for parents and members of the university community, making it more difficult for university administrators to do away with the outdoor learning environment without damaging the center's reputation. Through ten years of intentional planning and building, Cal Lutheran was prepared to take the next step to create a truly innovative outdoor learning environment when the opportunity presented itself in the form of a new center building.

Successfully implementing and physically maintaining the outdoor learning environment

After preparation, it is time to implement the outdoor learning environment. Successful implementation depends on a combination of factors, many of which should have been investigated during the planning stage. Already, the appropriate site, size, and elements of the outdoor learning environment should have been selected, along with planning for how to include the users of the site, including students, in the implementation.

Case Study: All Our Kin, Southern Connecticut

Dana Holahan is Professional Development Coordinator for All Our Kin, a Connecticut-based organization that supports childcare centers. She has developed an initiative that partners local high school agriculture and vocational technology classes with prospective outdoor learning environment sites to share knowledge of carpentry, planting, soil, and design. The high school students get a place to practice their work and the childcare centers get low-cost labor and materials. This model could be replicated in Iowa, connecting high school or college agriculture or vocational technology classes with sites in order to work on site development. In addition, Iowa's strong network of County Conservation Boards and naturalists provide another source of volunteer or professional expertise that can be shared during the implementation phase.

Childcare providers that participate in All Our Kin's outdoor learning environment program, which is two years old, must commit for two years. During the first year, All Our Kin provides intensive support to the childcare provider, connecting a trainer to the site as often as needed to support the provider's efforts to develop and implement their outdoor learning environment. In the second year, support backs down, with monthly check-ins. At the beginning of each year, an orientation workshop is held for participants, and at the conclusion of the year, a celebration is held. Participants take trips to see the outdoor learning environments built by their peers across the region. All Our Kin provides no direct monetary support to participating childcare providers, but does provide some materials for raised beds, seedlings, soil, and some small basic tools. Sites need to supplement what is provided through their own resources or fundraising efforts. Holahan believes there has been a difference among the childcare providers that have participated, with some moving on to raising chickens, composting, or trying to do as much as possible outdoors on any given day, including naps. Currently, 21 childcare providers participate in this program, and All Our Kin hopes that by the end of the second year, sites will be able to maintain their own outdoor learning environments without much help from the program.

Hinman (2005) recommends thinking about outdoor classrooms as thoughtful self-contained spaces. While they are outside, they should be created with features that reinforce their purpose. For example, boundaries to the outdoor learning environment itself

not only set off the site as a special area but also mark it as an intentional place. Tina Reeble, an educator at Nebraska-based Nature Explore, likens the implementation of an outdoor learning environment to the construction of a house, another self-contained space with defined borders. Just as in building a house, she says, the infrastructure of an outdoor learning environment should be created at the beginning, but each room does not need to be furnished. Through this metaphor, she describes how an outdoor classroom can be created to a reasonable size at the start, with an eye to expansion and growth in the future: major and costly work like setting off the entire area, grading or leveling, paving, or running other physical infrastructure need only be done once, while allowing for future growth when the time is right. She says to implement "for the possibility of the experience you want from the beginning, but you can grow into it later."

Ash and Luckey (1998) emphasize the importance of including the actual users of the site, especially children, in the creation and ongoing maintenance of the outdoor learning environment. At their Tennessee school, all 850 students were involved in the design, building, maintenance, and use of their outdoor learning environment. An advisory group made of up administration and a teacher from each subject area led the implementation and broke out tasks relevant for each discipline. This interdisciplinary approach ensured that the outdoor learning environment was not just for science or environmental education classes, but for all classes and disciplines. This also helped to make clear for students the rationale for studying topics that had previously been unclear; hands-on learning and creating made difficult concepts more concrete.

Kail (2006) takes on the important concept of maintenance. A 2003 study of Georgia outdoor classrooms found than 41% of schoolyard habitat projects in the state had been abandoned, with 80% of those falling out of use by their second year (p. 40). She encourages recognizing that organizations, especially schools, are by their fundamental nature dynamic. Students make progress through schools and then move on, taking parent volunteers with them. Organizations catering to certain age groups also see their audience transition or turn over with regularity. Therefore, recordkeeping, checklists, and other tools to manage workloads are extremely helpful. So, too, are outdoor environments that are easy to maintain. Starting off with container gardens or a 10-foot by 10-foot plot of native plants can provide a great natural experience and be reasonable to maintain. Plus, starting off small and growing incrementally

creates projects that constantly evolve and provide new opportunities for users, volunteers, and staff (p. 41).

Using the space as an educational resource

Haley (2012), in an assessment of an environmental education program in Colorado, finds that many outdoor learning projects begin with great intentions but vague ideas for how those projects fit in to the overall mission of the sponsoring organization or school. Without a careful consideration to how an outdoor learning environment will actually contribute to the core mission of an organization, it runs the risk of becoming abandoned in the face of other priorities.

Many practitioner and academic literature assume the primary purposes for implementing an outdoor learning environment are to create or enhance a strong ecological area and to provide high-quality environmental education (see, for example, Kail, 2006). While these are worthy goals, it is important to consider these ends in connection with the stated goals or aims of the organization that wishes to implement the outdoor learning environment. It is likely that the organization's goals will trump the goals of the outdoor learning environment unless the goals are complementary. Since this report deals with outdoor learning environments, the educational aims of these sites must match the educational goals of the implementing organizations.

Schools, for example, have many educational outcomes to address, not just environmental education. Libraries and community centers may include environmental science or education as part of their missions, but will have other goals, as well. Even County Conservation organizations have goals beyond only outdoor education. The better an outdoor learning environment can be aligned to organizational goals, the more likely it will be to receive ongoing support from decision-makers and funders.

However, research shows that outdoor learning environments can support education in a wide variety of areas, making the goal of connecting outdoor education outcomes with organizational outcomes quite possible. Wirth and Rosenow (2012) summarize a wide range of research documenting the benefits of outdoor interaction and education, beginning at an early age: creativity and observational skills are enhanced, students with Attention Deficit Hyperactivity Disorder show improvements in concentration, and outdoor spaces can become places for people to manage negative emotions and behaviors (pp. 42-43).

Other studies show impact outdoor learning can have on a range of educational outcomes across disciplines. Westervelt (2007), a public school teacher and naturalist with the Smithsonian Museum of Natural History Naturalist Center, documents placed-based experiential education efforts as improving outcomes for English-Language Learner students. Tatarchuk and Eick (2011) demonstrate that outdoor learning environment activities can be integrated with Language Arts curricula as well as with science learning goals, through the context of authentic inquiry. For elementary students, especially, science/outdoor education and reading are complementary and mutually-beneficial, especially as a science interest drives reading for many students (p. 39). Zandvliet (2012) finds that place-based education (which features relevant and authentic experiences, allows learners to express an opinion, enables learners to share ideas and control some of the learning activities, and in which students are actively involved), places high school learners closer to their preferred style of learning and increases comfort and attention (pp. 133-137). An outdoor learning environment is an ideal place-based learning site.

Many early childhood centers that feature outdoor learning environments subscribe to the Reggio Emilia educational philosophy. This approach, developed by educator Loris Malaguzzi in Northern Italy after World War II, states that children are full of knowledge, have rights, and should have major input into the direction of their own education. This results in experiential learning, as exploration of children's natural environment is critical. Malaguzzi believed that children have 100 or more "voices" and that each is worth hearing and supporting by the community (North American Reggio Emilia Alliance, 2014)

Curriculum Connections

While research shows the value of environmental and outdoor education, more than just this research is often necessary to garner support for outdoor learning environments, especially in schools. A careful connection to school and district curricula and goals is also needed, especially to ensure frequent use of outdoor learning environments as integral spaces.

In Iowa, the Iowa Core is a set of standards that guide public school instruction statewide. It lays out learning goals for math, science, English language arts, social studies, and 21st Century skills. According to its website, "The Iowa Core is a set of common expectations for school districts across the state. It is not a curriculum, so decisions about how to help students

meet learning goals remain in the hands of local schools and teachers" (Iowa Department of Education, 2014). Iowa Core standards are familiar to educators and can be accessed via the Iowa Department of Education website. They can be searched by grade level and subject area, and provide an inroad for connecting with local district and school curricula. For projects embarking on implementing an outdoor learning environment at a school with a curriculum tied to the Iowa Core, ensuring the site aligns to the standards is critical.

The Next Generation Science Standards are another set of standards that have been developed and released through a partnership between the National Research Council and the National Science Teachers Association. These standards, which feature "three dimensions" each (the core idea for the standard, the practice of science, and crosscutting concepts that connect the subject to other standards and grade levels) may be adopted by Iowa in the future. Therefore, it is also important that outdoor learning environment leaders understand these standards and how sites might support them (Next Generation Science Standards, 2014).

Case Study: Hooper Avenue School, Alhambra, California

Robin Polito-Shuffer is the principal of Hooper Avenue Elementary School, an urban public school in the Los Angeles Unified School District. Polito-Shuffer introduces her outdoor classroom by saying, "if I can do it here, you can do it anywhere!" The outdoor classroom at this school is an example of a successful site at a public school. While the outdoor classroom has faced challenges, the principal's has been instrumental in its success.

Hooper Avenue School

As at any school, teachers at Hooper Avenue have lots on their plates. However, the outdoor learning environment provides students their students with opportunities to be outside and learn in a calm and welcoming environment. With professional development and encouragement from the principal, teachers have been growing used to the outdoor classroom and using it more frequently. For example, in August 2013 teachers attended a music and nature workshop initiated by Polito-Shuffer, and several joined a committee that meets once or twice a month to work on the outdoor classroom. In order to involve students, the school's after-school program is responsible for all watering and various maintenance tasks. Bulletin boards showcase student work done in the outdoor classroom, and teachers have put together a list of supplies and lesson plans for use at the site. The Hooper Avenue School outdoor classroom has been successful because of the commitment of its administrator, her ongoing efforts to provide professional development to her staff, and the involvement of students.

Funding, Supporting, and Networking Outdoor Learning Environments

So far, planning an appropriate outdoor learning environment, implementing it, and incorporating a strong educational basis have been explored. However, the development of a local and regional community is still necessary for supporting these sites, both financially and through other means. In this section, the role of a local site community is discussed, and the development of a statewide outdoor learning environment support network is explored, using best practices as examples.

Case Study: Nature Explore

Nature Explore is a program developed in collaboration between the Arbor Day Foundation and the Dimensions Educational Research Foundation. This program provides educators with the resources they need to design high quality outdoor classrooms following evidence-based practices. Nature Explore offers a certification program for outdoor classrooms, mostly in early childhood education settings. Certified outdoor classrooms must meet requirements that are largely similar to those discussed throughout this report: well-designed outdoor spaces, staff development, and family engagement. Certification enables participating outdoor classroom locations to be promoted by Nature Explore and connects participants to a

network of other outdoor classroom implementers nationwide. 18 sites are certified in Iowa, mostly childcare centers. Of the LRTF-funded sites, only the Maharishi School is certified.

Nature Explore offers an annual leadership workshop for outdoor classroom practitioners, with tracks in design, leadership, and education. The organization strives to attract landscape architects and other designers to their workshops in order to spread best practices in outdoor classroom design. Julie Rose, an educator at Nature Explore, indicates that her work is similar to the work being done through this project in Iowa, summarizing, "at the end of the day, how do we keep that community [surrounding an outdoor learning environment] going?" Nature Explore is currently working on new initiatives to provide additional professional development to outdoor classroom participants, including a webinar series and efforts to develop outdoor learning environments in disadvantaged communities. Recognizing that there is still much research to be done to document the impacts of outdoor learning environments, they are supporting research by Sam Dennis, a landscape architecture professor at the University of Wisconsin. When his research is completed, it should provide more evidence to specifically document the effects outdoor learning environments have on learning outcomes.

Children at the music area of the Nature Explore Outdoor Classroom at the Arbor Day Tree Farm in Nebraska City, Nebraska

Nature Explore publishes several handbooks on outdoor classroom design, which are provided in the literature database. Its leadership workshop is also recommended for networking with other outdoor classroom practitioners and leaders nationwide.

Developing a community for an outdoor learning environment is a critical aspect of the development of the site. As Julie Rose of Nature Explore says, "if just one person does it all, then there's no other buy-in" and the project will eventually fade away. Many Iowa outdoor classroom locations have not succeeded for just this reason: only a single champion of the project was, in the end, interested enough to keep it going. While building a local community is challenging, it also offers the most support for maintaining a project and enabling it to survive, especially if its creator departs.

Recall Haines' (2006) recommendations to incorporate community in the earliest stages of planning. She advises prospective outdoor learning environment practitioners assess the level of support for a project at their location and move forward accordingly. This lesson, perhaps, is difficult for interested outdoor learning environment builders, especially if others do not share their enthusiasm. However, it is a lesson of importance—if others do not share in the enthusiasm, they will likely not share in the work. How, then, to persuade other stakeholders about the value of outdoor learning environments? First, interested creators are advised to connect with other sites and practitioners who have successfully implemented outdoor classrooms, to better understand how actual projects work. This, in part, is the rationale behind All Our Kin's information sharing workshops or time set aside at Nature Explore workshops for presenting progress over the last year. Investigating the educational impacts and opportunities to deepen learning according to the organization's mission can also help.

Finding others in the community willing to assist with some of the planning, design, implementation, and funding of the outdoor learning environment will also benefit prospective projects. Nature Explore's Julie Rose says that community building is one area in which her program should have been more proactive. "In retrospect," she says, "we would have wanted to ask sites to go out into their community to talk about it, get materials donated. Generally, we should have asked sites to take a more active role in creating their space" in their community. Therefore, she recommends casting a wide net in terms of the people outdoor learning

environment creators bring in to assist their project. From naturalists, County Conservation staff, landscape designers, managers at the local hardware store, to others, a wide range of expertise will help ensure the work gets done right. It also helps increase the likelihood of donations, volunteer support, and continuity, especially if staff or learners tend to transition away regularly.

Funding outdoor learning environments

Most of the literature and best practice case studies emphasize that many outdoor learning environments can be created relatively inexpensively, especially if they are well-planned and at the appropriate scale for the site and its capability. Haines, for example, describes a school that created a large habitat area, native plant garden, and 500-foot nature trail for $1,500 (2006, p. 46). Funding, donations, or volunteer support can come from:

- Local nurseries, landscaping, or hardware companies
- Native plant societies and organizations, including Iowa Prairie Network
- School PTO/PTA organizations
- Organization supporters, parents, stakeholders
- Local businesses, including those who employ parents or stakeholders
- Environmental education grants from programs like REAP or implementation grants from LRTF
- Private funders like the Captain Planet Foundation, the Children and Nature Network, Lowe's or Home Depot grant programs, National Gardening Association garden grants, and more (Mayes, 2010 and Haines, 2006).

A second method of building community comes at the state level and could be led by organizations like LRTF or other funders. This avenue creates statewide partnerships relationships between outdoor learning environment implementers and outside supporters, funders, and others. While academic literature has not deeply explored building statewide organizations, the experiences of organizations like Nature Explore and All Our Kin is instructive. An umbrella organization, connecting outdoor learning environment projects together, can make a meaningful impact on the success of those projects, allowing information sharing, providing project implementers with a forum for sharing their successes, maintaining a

community of like-minded professionals, and allowing for new knowledge and information to be shared widely.

Case Study: Outdoor Learning Symposium, Georgia

The Environmental Education Alliance of Georgia is a nonprofit organization with a mission to promote communication and enrichment among professional in the field of environmental education (Environmental Alliance of Georgia, 2010). In the mid-1990s, members of this group established the Outdoor Classroom Council, now known as the Council of Outdoor Learning, which sponsors a highly-regarded symposium on outdoor education and outdoor learning environment implementation. The symposium lasts a full day, with two additional days of optional workshops, some of which carry continuing education credit.

The symposium has grown from a small event to one attended by hundreds of educators, from Georgia and beyond. Many schools and organizations send staff members year after year and, as the symposium has grown, separate tracks have been established to meet the needs of attendees. In 2014, the tracks were Engineering Design, Citizen Science, and Outdoor Learning Resources. 20 sessions and workshops were offered, ranging from marine ecology, to journaling, to grants research, to managing invasive species. Surveys have found that the preferred day for this symposium is a Friday, with the optional sessions over the weekend. The council has made a concerted effort to keep the registration fee low; the $50 fee has not risen since at least 2006. Marketing and promotions are important for the Environmental Alliance of Georgia, not only to inform potential attendees about the group and the conference but also to raise awareness of environmental education throughout the state. Working with the governor's office, the symposium date has been declared "Outdoor Classroom Education Day in Georgia" and awards to outdoor classroom creators and other educators are given at the event and publicized (Garland, 2006, pp. 33-34). This symposium is a model for an outdoor education workshop and provides many lessons for replicating such an event in Iowa.

POTENTIAL NEXT STEPS AND CONSIDERATIONS

Based on the review of current outdoor learning environments in Iowa, the investigation into best practices and academic/professional literature, and questions raised throughout this report, a series of potential next steps are presented for the consideration of Iowa outdoor classroom funders and external supporters (such as the Iowa Living Roadway Trust Fund). These potential steps are divided into discussions of intended outdoor learning environment project outcomes, potential funding strategies and requirements, strategies for collaboration, and possible methods of long-term support for outdoor learning environments in Iowa. This section concludes with a discussion of areas of future research.

Outdoor Learning Environment Project Outcomes

This report has described successful outdoor learning environments as locations made up of intentional spaces, with intentional learning and intentional support. Each of these is critical for the ongoing viability of an outdoor learning environment and each factor promotes the others. Similarly, each outdoor learning environment needs a strong base of technical and logistical expertise to physically select, create, or maintain the space, a good sense of how to use the space to further educational and community goals, and a community of individuals contributing to the success of the space.

Organizations funding or providing external support for outdoor learning environments must consider what role they wish to play and which types of outdoor learning environments and activities they wish to support. By now, it is clear that outdoor learning environments can take many shapes, from native plantings to facilities with natural areas, gathering places, building and experimentation areas, and music. Activities in outdoor learning environments can range from nature walks to site maintenance to age-appropriate scientific inquiry, and from environmental education to outdoor experiences that support learning in many disciplines. Users may be children attending early childhood education centers, K-12 or university students, or community members of all ages at county parks, community centers, nature centers, or other places.

Those organizations considering funding for outdoor learning environments must consider the types of projects they wish to support. Considerations include:

- Which types of organizations will be eligible for funding? To date, most LRTF funding has supported outdoor classrooms based at public or private K-12 or college settings. However, it is worth considering or affirming the eligibility of pre-K sites, (which offer many powerful opportunities for reaching children at an early age and instilling a respect for the environment), community-based sites such as libraries and community centers (which offer opportunities to reach children and adults outside of a formal school setting), and local partners like County Conservation Boards (which have expertise and interest to share with learners and may have access to more appropriate outdoor learning environment sites). Rather than pre-determining the sites that can apply for support for an outdoor learning environment site, perhaps broad criteria can be applied to ensure applicants meet certain eligibility guidelines. For example, applicants might be required to document they are a public, private, or charter school, a public library, a 501(c)(3) nonprofit organization, or a licensed childcare provider. This would encourage application from a range of institutions without limiting outdoor learning environment support to traditional school sites.
- Which types of activities will be eligible for funding? Broadly, outdoor learning environment creation and implementation consists of the planning, creation, and maintenance of the site and the planning, development, and refinement of the educational opportunities to be offered at the site. Will funding support both the physical site as well as the educational components? Currently, LRTF funding has generally supported the physical aspects of outdoor classroom development, while other funding sources (including REAP and private/nonprofit funders) have supported educational aspects. However, it is clear that underutilized outdoor learning environments tend to fail. Therefore, the educational purpose of the outdoor learning environment should not be separated completely from its physical composition. It is recommended that funders support the educational mission of these sites, through funding and/or through professional development and other resources for building educator capacity, in addition to the physical sites themselves. Potential strategies for these types of support will be discussed in further detail below.

Organizations funding or providing external support for outdoor learning environments must consider how to define a successful outdoor learning environment. The initial work of this research project attempted to determine whether previously-funded outdoor classroom sites were still in active use, potential ten years or more after funding was last provided. However, in the future a stronger measuring stick for successful outdoor learning environment projects will be needed. This will not only help outdoor learning environment educators document the progress they are making, but also help to identify the impacts that funding programs are having statewide. At the same time, this report shows that outdoor learning environment projects do not necessarily reach their full potential in only one year, or on the first attempt. Some strategies to increase effectiveness will be proposed below, but it will be necessary to define success in a more nuanced way. Some suggestions include:

- Evaluating outdoor learning environments according to the activities described in applicants' proposals for funding or plans. Even if weather, natural conditions, or other individuals do not cooperate as expected, continuing to support outdoor classroom creators should assist in overcoming these challenges and moving toward stronger outcomes in the future.
- Evaluating success based on aspects of the physical characteristics of the site, its educational components, and its community support. Choosing to evaluate outdoor learning environment success based only on the design, health, or prosperity of outdoor sites takes into account the means, but not the ends, of such projects. Recipients of funding support could be asked to provide a report on the physical improvements to the site, the educational uses of the space, and of the development of a community around the outdoor learning environment. Support or education on how to accurately prepare reports, including securing assistance when needed, could also be provided. Requiring feedback in all these areas will help to discourage projects used mainly for landscaping or with a very ambiguous educational purpose, and will also encourage good practices in ensuring that the creator of the outdoor learning environment is not its only champion. Preparing the project to survive the departure of its founder is a valuable marker of success.

- Supporting reasonable changes in plans. People creating outdoor learning environments at community-based sites are often going above and beyond their usual job description. This may result in some aspects of the initial plan being modified. This is not necessarily a negative: changes may in fact create a project more in line with the scale the hosting institution can manage. However, strategies for funding planning efforts may help to protect against major changes by assisting sites in developing reasonable projects from the start.

To help projects succeed, more consistent contact and oversight of funded outdoor learning environment locations is needed to ensure sites are receiving the support they need in a timely manner. In the past, organizations like LRTF conducted occasional reviews of outdoor classroom sites to observe the physical state of the site and, if possible, communicate with the outdoor classroom manager. Written and in-person communication should become a more central part of this initiative, enabling project sites to report challenges and successes in a supportive environment. Like in the All our Kin and Nature Explore case studies, outdoor classroom creators do better when they have opportunities to share with funders what is working and what is not working. This also prevents surprises when projects do not go as planned. Some ways to ensure this contact and oversight:

- Requiring written reports for each funded project at the end of the funding period, including photographs and honest reflections on the project.
- Striving for the staff of funders to visit each site location at least once per year to see sites firsthand and better understand the realities of outdoor learning environments around the state.
- Providing opportunities for outdoor learning environment staff to reach out to funders in a welcoming way. Some surveys indicate that site managers have worked with the LRTF program manager to improve their sites; this could be encouraged among more sites, as appropriate, by offering easy ways to communicate regularly. Some options might include regular "office hours" when funding staff are available to take phone or Skype calls each month (perhaps mid-afternoon after school hours on a weekday), scheduled site visits (described in grant applications so they are seen as a part of the project and not as a threatening check-in), and networking sites together to assist each other, with

funding staff monitoring and contributing as necessary. This interaction might also help keep reporting requirements from becoming a bureaucratic layer that saps energy from the actual project.

- Keeping accurate records of all funded sites and identifying ways to keep informed about previously-funded sites even if they are not receiving financial support in a given time period. Some sites, for example, might request financial support for plant materials but then not request additional support in subsequent years. The resulting enhancement to the outdoor learning environment may not be visible during the initial funding cycle. However, to understand the benefits of supporting these projects, contact should be maintained even after the funding has ended. Perhaps a site visit or contact at least every other year would be sufficient, though more frequent communication would be advised. Allowing past funding recipients to remain as a part of the network of outdoor learning environments would be particularly valuable for funders and for prospective project sites. The development of such a network will be addressed below.

Potential Funding Strategies and Requirements

To effectively address some of the concerns that have been raised through this research project, it is recommended that modifications be made to outdoor learning environment funding strategies as well as to the requirements that project creators need to meet to secure and retain funding. These strategies can be used to promote good practices and encourage outdoor learning environment projects to incorporate these practices into their planning and ongoing activities.

Funding for outdoor learning environment should take into account the different phases of a project's lifespan. As has been described in this report, in order to develop a successful outdoor learning environment, its creators must devote adequate attention to detailed planning, to the construction or implementation of the site and its associated programs, and to ongoing maintenance and operations. It is recommended that outdoor classroom funding be dedicated to each of these areas.

- Planning grants: Smaller planning grants could be provided as seed funding to ensure good practices are followed by sites developing outdoor learning environments. These "mini-grants" might offer a streamlined application process and support the initial

investigations into how to most effectively implement an outdoor learning environment. As described in Haines (2006), after outdoor learning environment implementers identify some possible sites and projects, there is much preliminary work to be done before actually starting any physical work. For example, seeking the support of administrators or managers, grounds crews, and community members all contribute to a successful site and should come before the outdoor learning environment is installed. How the site will be integrated educationally into the organization's mission could also be addressed in this preliminary phase.

Supporters often value seeing others already on-board with a project, and this planning grant might have a second benefit, beyond providing dedicated time for planning. This grant would be to demonstrate to supporters, both inside and outside an organization, that the idea to create an outdoor learning environment is a good one. For instance, a teacher interested in creating an outdoor learning environment at a school might solidify his or her case by demonstrating that there are funds available for the proper planning, or an early childhood educator seeking support and donations from the community might use the planning grant as a way to convince potential contributors that the program is worthwhile.

Furthermore, a planning grant would be a useful way to direct applicants to a proper understanding of how prepared they are for an outdoor learning environment. As the Iowa survey research shows, many outdoor classroom implementers lacked knowledge about the time and resources needed to maintain a thriving site. For those groups committed but just starting out, a planning grant would provide support and encouragement without requiring an immediate site implementation. In this way, the grant could help maintain a good idea and its associated enthusiasm without causing a group to move too quickly. Planning grant recipients could also be invited to training sessions, workshops, or half day short courses to provide concrete training on outdoor learning environment implementation skills they could use in the future.

Ideally, funders will have resources and expertise to share with groups that receive planning grants, during this phase. This will be further explored under "Strategies for Collaboration," below.

- Implementation grants: These grants could fill the same purpose as a traditional implementation grant for an outdoor learning environment has in the past. The purchase of plant materials, supplies for construction of outdoor learning environments, construction equipment rentals, and labor could be included. For these grants, documentation would be needed to demonstrate that the recommended pre-planning activities have taken place. Perhaps the successful completion of a planning grant projection might provide additional benefit to applicants for an implementation grant, in the form of higher scoring on some grant sections.

  Regardless, the implementation grants should require compliance with best practices in outdoor classroom design and implementation, including: documentation (via signature) of project support from appropriate administrators, supervisors, and grounds keeping or facilities managers; demonstration of an outdoor learning environment project that is supported by a wider community of stakeholders, such as parents, volunteers, community businesses or donors; evidence of the involvement of professionals (with past experience in relevant projects) to support proper natural resource management, including Extension or County Conservation staff, landscape designers or landscape architects, or naturalists; and a detailed description of the educational purpose and connections to the organization's mission, including strategies for including users (regardless of age) in the initial development and ongoing maintenance of the site. Earlier, one recipient of previous outdoor classroom funding was cited in a survey response indicating some financial reporting requirements were too burdensome. For new implementation grants, care should be taken to ensure that grant recipients can complete reports accurately, even if they do not have access to finance or bookkeeping staff.
- Maintenance and enhancement grants: For those outdoor learning environments that are active and used, maintenance and enhancement grants could support regular or unexpected needs while providing site managers with ongoing encouragement. These grants, likely smaller than implementation grants, would also demonstrate to administrators or supervisors that the outdoor learning environment project is on the right track and continuing to be worthwhile. Like implementation grants, applicants for these

would need to document the support of administrators and the wider community, ensuring stable projects that have more champions than just their founders. Similarly, maintenance funding would require documenting how users or students have been involved in the planning and management of the site, as well as what educational initiatives have been undertaken and which outcomes met.

Enhancement support could assist in the growth of the outdoor learning environment. If implementers have followed the advice of Nature Explore's Tina Reeble and planned for the future from the start, there will be obvious projects to pursue once initial aspects of the outdoor learning environment are proceeding smoothly. At the same time, this funding could also be used to support successful programs that have met with unforeseen challenges, such as uncontrollable weather events or building construction projects that modify the site. Having a source of support during these challenging times could make the difference between an outdoor learning environment project that overcomes obstacles and one that ceases operating in the face of its challenges.

Strategies for Collaboration

Just as an individual outdoor learning environment project needs more than one champion to be successful, the broader network of outdoor learning environment supporters needs to be strong in order to offer the types of assistance needed to help craft long-lasting sites. In addition, *funders need to be prepared to work with and support outdoor learning environment sites based at various types of locations using specific strategies*. This section will briefly address some of the types of partners and strategies for partnering with them successfully.

Formal Educators and Educational Settings

Working with formal educators and in formal educational settings, especially K-12 schools, requires much care and understanding. Teachers, while some of the strongest champions of the development of outdoor learning environments, are not the only people who need to be involved at a school to make a project a success. Administrators, grounds crews, and parents and community members all need to be involved in order to give a project the best chance for success. Even still, especially in a public school setting, district priorities may not

include outdoor learning environments simply because there are outdoor learning environment sites at schools. For example, construction or renovation projects may alter the design of a school site or claim an area previously filled by an outdoor learning environment, as some Iowa sites surveyed have shown.

To reduce the chance of this happening, some strategies are needed: "There has got to be professional development for adults," Tina Reeble, of Nature Explore, says. Teachers need to know how to use the space effectively and see how to tie the learning that is done in the outdoor learning environment to students' grade-level educational outcomes. They also need support in how to build a community around the outdoor learning environment, which not only makes their work easier but helps to make the site an asset for the school and harder for administrators to remove. Administrators and grounds crews need their own professional development: administrators should learn about successful projects and see how sites at their schools can support learning objectives, and grounds crews need training on what outdoor learning environments are and how to manage them. These professional development needs can be addressed in several ways, but two specific suggestions are regular workshops on topics relevant to each of these groups (with funding supporting attendance by teachers, administrators, and grounds keeping supervisors) and an annual conference of outdoor learning environment project personnel, allowing the sharing of experiences and best practices, and the provision of additional professional development.

Informal Educators, Early Childhood Educators, Other Professionals, and Community Settings

Research shows that children who engage in outdoor and environmental education from an earlier age experience not only educational benefits, but behavioral benefits, as well. Traditionally, Iowa outdoor learning environments have not been as prevalent at early childhood education centers, child care, and pre-K sites, but this is an opportunity that should not be ignored. Much of the research directly linking outdoor classrooms and outdoor learning environments, especially produced by the Dimensions Educational Research Foundation, is indeed focused on the benefits to young children. Nature Explore and the Outdoor Classroom Project have created a range of materials for early childhood providers to assist them in creating

age-appropriate and engaging outdoor learning environments. Due to the nature of these types of organizations, there is often more flexibility in creating and maintaining an outdoor learning space than there is at a K-12 school setting. However, the same strategies of professional development, building a community around the site, and creating strong educational connections apply. Therefore, it is recommended that funders reach out specifically toward early childhood educators to introduce outdoor learning environments and encourage their creation at locations across the state.

Similarly, there are a multitude of locations where an outdoor classroom might be very beneficial to community members (from children through adults). Libraries, community centers, and other sites often have the flexibility and authority to implement a space and they frequently have committed volunteers or other stakeholders willing to support the work and build a community around it. Public introductory workshops, targeted marketing materials to these groups, or presentations at professional development meetings attended by managers of these types of organizations are all ways to reach out to them and begin a conversation about developing outdoor learning environments.

Across Iowa, there are also numerous organizations that can support the development of outdoor learning environments in partnership with another group. County Conservation Boards, for example, offer great untapped potential for developing strong and well-designed outdoor learning environments. Such sites could even be located at county parks if convenient for visitors to reach and if educators can commit to including students frequently. Julie Rose, of Nature Explore, believes that working with county parks staff to develop outdoor learning environments is a winning idea. She describes a Fish and Wildlife Service location in Kalispell, Montana, which hosts an outdoor classroom but that is filled with "busloads of students," since organizers were able to build a community around the site. Again, conservation staff may need professional development to understand the implications of working with educators and students, especially those in K-12 schools, to ensure an understanding of how the site will be used and which educational outcomes it should support.

Furthermore, professionals at Iowa State Extension offices, Area Education Agencies, Iowa Prairie Network, Iowa Association of Naturalists, Master Gardeners, high school or college vocational training programs, and other groups can be highly committed partners with outdoor

learning environment sites. Since each site requires a unique approach depending on its setting, age of participants, and learning goals, these groups can bring their expertise to the project, providing the "missing pieces" that educators may not have. It is recommended that funders create a detailed list of resources and referrals for each county in order to assist outdoor learning environment implementers in finding the support they need. If outside support will be required as part of a planning or implementation grant, this information will be especially valuable for project planners. In addition, developing a list of vendors that have worked with outdoor learning environment projects in the past will assist projects in finding sources of materials that will meet their budget and quantity needs.

Finally, Iowa outdoor learning environment funders, having demonstrated a commitment to deepening the quality of outdoor education in Iowa, should make inroads with other networks across the country in order to network and share practices at the system level. One partner that has expressed interest in working with LRTF, for example, is Nature Explore, based in Nebraska. A collaboration between the Arbor Day Foundation and the Dimensions Educational Research Foundation, Nature Explore provides support and networking, especially for early childhood outdoor learning environments. With its strong connections to the Arbor Day Foundation, the Fish and Wildlife Service, the National Park Service, and other national funders, Nature Explore is a natural partner, and one very convenient to Iowa. Beginning a discussion with Nature Explore to help enhance the statewide outdoor learning environment culture in Iowa may be valuable.

Long-Term Support for Outdoor Learning Environments

Iowa outdoor learning environment funders have a significant role to play in supporting outdoor education, beyond simply providing funding for site planning, implementation, and management. *Funding organizations should support networks of outdoor learning environments by being a convener and technical assistance provider*. First, as described above, there is an opportunity to assist with project networking in several ways: by connecting outdoor learning environment sites to each other for sharing of best practices, by connecting sites with resources for design, maintenance, and education (including professionals like naturalists, landscape architects, or environment educators), and by connecting community groups to the idea of

outdoor learning environments to spread the concept to organizations where it has not yet taken root. Methods include

- The virtual "office hours" described earlier, offering projects the opportunity to discuss their concerns and needs in a regular forum.
- The development of a detailed web site with resources for prospective outdoor learning environment creators, including: images and case studies of successful Iowa sites, contact information for peers who are willing to mentor new project creators, links to vendors and sources of natural or other materials, and connections to professional literature and research to help site planners strengthen their ideas and proposals. Providing this information in advance should also assist in reducing the number of applications for funding for projects that have not met the baseline requirements or that are not yet positioned for success.
- The creation of an email list or group through which outdoor learning environments can share with each other and ask questions to others about how to solve problems. Subscription to this group could be a requirement of grant funding, but would also be a way for successful project managers to share their expertise and receive positive feedback on their work, while allowing newer project managers to realize they are not alone and have access to a network of peers.

Second, regular professional development should be a part of the outdoor learning environment model in Iowa. As introduced above, one suggestion is for an annual conference or workshop (full or half-day) of outdoor learning environment project managers. This event could include professional presentations on topics of interest to outdoor learning environment practitioners, ranging from physical implementation to volunteer management. If other recommendations are followed, including more frequent communication with and between sites, then potential topics or areas of need should be evident by the requests of site managers. This workshop could also include time for sharing the accomplishments of each outdoor learning environment over the past year; such "celebrations" are used with success by programs like All Our Kin, the Environmental Education Alliance of Georgia, and Nature Explore, serving to share good ideas and practices as well as reenergize project stakeholders. It is also recommended to

explore partnering with an educational institution to investigate whether continuing education credits could be offered for workshop attendance.

Attendance at such workshops could potentially be a requirement of continued funding or support, as is the practice of All Our Kin. Funding could support attendance, and could even be a required portion of the budget proposal. Including tracks at this workshop for administrators and grounds keeping staff members could also enable these different project members to leave with a stronger sense of the role of outdoor learning environments in their work. Potential partners for creating and implementing this workshop include the Iowa Conservation Education Coalition, the Iowa Association of Naturalists, the Iowa Association of County Conservation Boards, and others.

Alternatively, content could be provided at existing professional meetings, such as meetings for school administrators or facilities managers. All Our Kin, for example, partners high school agriculture and technology courses with outdoor learning environment sites, providing inexpensive labor in exchange for work experience. The program piggybacks some of its trainings onto high school agriculture workshops happening anyway. While this approach allows for reaching many potential partners at once, it also risks not reaching all outdoor learning environment implementers. Perhaps a combination of outreach to share new information at existing professional gatherings and the creation of a new outdoor learning environment gathering for existing projects would be most effective.

Finally, the recommendations and research presented in this report should be taken and reformatted as an appropriate handbook for outdoor learning environment sites (current and prospective). While this report includes significant information of value to site managers, its main audience is funders. Therefore, a briefer and more targeted handbook should be created in order to share these lessons more widely. This could be presented in person at workshops or be available for download and perusal on the website with other resources.

Areas of Future Research

Throughout this report, several areas of future research have been identified. First, it is recommended that a professional educator produce an analysis of connections between outdoor learning environments and Iowa Core standards (in all content areas) and Next Generation

Science Standards for all grade levels, in order to make explicit all the areas where such projects can support educational outcomes. This may strengthen the support that outdoor learning environments receive in K-12 settings.

Next, an identification of resources across the state for prospective and current outdoor learning environment creators should be compiled, including local contacts and roles, vendors, statewide organizations providing relevant assistance, and more. This database of contacts can assist funders in providing appropriate help to sites and also enable site managers to reach out for help in their own communities.

CONCLUSION

At the start of this report, a definition of an outdoor learning environment was provided: *An outdoor setting, utilized by many in the community, that provides a space for exploration, inquiry, and learning to empower environmental literacy and natural resource intelligence. An outdoor classroom can be located at a school, at a community location like a library, in a park, as a thoughtfully-planned space adjacent to a natural area, or in other places where the outdoor setting can enhance educational opportunities for learners of any age*.

Through the research conducted in Iowa, the examination of best practices and academic literature, and reflections on potential next steps, this definition can be modified to better encompass the promise of outdoor learning environments in Iowa. An outdoor learning environment is *a deliberately selected or designed outdoor setting, used and supported by many in the community, that provides an intentional space for exploration, inquiry, and learning to empower environmental literacy and education in any discipline. An outdoor classroom can be located at a school, at a community location like a library, in a park, as a thoughtfully-planned space adjacent to a natural area, or in other places where the outdoor setting can enhance educational opportunities for learners of any age*.

It is with this open, yet refined, definition that the work of supporting outdoor learning environments in Iowa continues toward new hopes, new challenges, and new successes.

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