A Learning Center for Cowan School
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Abstract:

There is a disconnection between the environment and to the children. They are taught about the environment in books and movies in school, but they have no connection to this and many times the important issues are missed or interrupted incorrectly. This project addresses this subject in the design of an outdoor learning center for Cowan Schools. The Focus of the project is the creation of habitats for plants and animals and the learning labs that can occur in these habitats to help stimulate learning in school.
Topical Area: Outdoor learning centers.

Definition of Problem
The failure of teachers to stimulate interest, a dislike of certain required courses by students, the failure of education institutions to provide for an effective individualization of instruction, and a general apathy on the part of citizens to participate in activities and become involved indicates a need for broad-based revitalization and curriculum enriched in our general academic schools (Lewis 1).
The application of outdoor education methods and experiences has a broad implication for the revitalization of instruction and social development (Lewis 1).

Assumptions
• There is a need and want by the school and surrounding community for the development of a nature center.
• The nature center will be incorporated into the educational program at Cowan.
• Cowan will develop a broad based curriculum to support the learning center.
• The local community will take part in the development of the learning center.
Brief Introduction and Background

What is outdoor education?

- L.B. Sharp says that, "Outdoor Education is a method of education. It includes the use of the out-of-doors for the study of all areas of the curriculum when the subject matter can best be learned out-of-doors (Lewis 3)."

- John W. Hug says, "Outdoor education is not a separate discipline or subject area of study such as history, arithmetic, or other subject matter areas (Lewis 5)."

- George W. Donaldson thinks that through outdoor education, learning becomes a mutual process and experience for both pupil and teachers (Lewis 5).

- Outdoor education is a direct, simple method of learning that extends the curriculum to the out-of-doors for the purpose of learning. It is based on the discovery approach to learning and it appeals to the use of the senses, audio, visual, taste, touch, and smell, for observation and perception (Lewis 9).

Data and Methodology

The data that I have collect is divided into two parts but have overlapping tendencies. The first part is that of educational uses and the design of the nature center. I need to collect information on the design of trails and functions that are suitable for learning. I also have collected information on how to provide personal safety to the users of the area.
The second part of the information that I gathered came from soil survey. The design of site and what the soil will allow to grow is fundamental for the nature center. The soil will impact the design and construction of facilities and trials.

Most of the data that I collected comes from the library in the forms of books and periodicals. Another source for the data comes from personal contacts the school board and teachers.

**Client/User**

The client for this project is Cowan School. This school is recognized as one of the Professional Development Schools with in the state. These are schools who have innovative methods, motivated teachers, and effective administrators. Other users of the site include the children who attend the school and the surrounding neighborhood.

**Elements wanted by Client**

Client desires for the site includes: Accessibility to other schools/clubs, broad base curriculum for grades from K to 12, Community involvement, Construction of a nature center, and a Cross-country course.

**Client Concerns**

Client concerns are the design of the nature center, farmer's tillage of the adjacent fields, funding, and Security of the site. Additional concern are how it is the site going to be use on the weekends and summer.
Contacts:
- **Mike Garringer** (School Principal) (765) 289-7129
- **Candi Smithson** (Science Teacher) (765) 289-7128

Goals of the project:
- Provide an educational environment for children in grades K-12. The teachers will develop the educational program for the schools with help from Oakhurst staff.
  - Creation of outdoor classrooms.
  - Creation of a trial system.
    - For learning.
    - For exercise.
- Provide a safe area for the children to learn in.
  - Provide alternate solutions to reduce the vandalism occurring.
  - Provide elements of safety to protect children.
- Restoration of a wetlands, woodlands, and prairie.

Location
Cowan Schools are located of 500 south. The site is located on the northern part of the Cowan School property. Farm fields to the West, North, and East border the site. To get to the site one must enter from the south and go through the schools athletic fields.
Inventory

The site is about 14 acres. The majority of the site is currently cultivated field that the neighboring farmer uses with permission from the school. There is a 1.2 acre wooded area in the northeast part of the site. The site also has a .3 acre pond. The rest of the site is mowed grass leading from the entry to the pond. By the pond is a small picnic shelter. This shelter is in poor condition, the roof is falling apart and vandalism is occurring to it. However the foundation slab is still in good condition. A lane of trees and undergrowth also borders the site. Along the pond and the wooded area are some large white pines.

There are two different types of soil that occur on the site. The first is Crosby Silt Loam found at the northern part of the site. This soil is somewhat poorly drained and well suited for farming, woodlands and wetlands. In the use of trials and buildings the rating for the soil is moderate due to high water table and can be overcome with good planning. The other is Brookston Soil, this is found on the majority of the site. This soil is very poorly drained and well suited for crops, hardwoods, conifers, and grasses and legumes. The soil is also well suited for wetlands. The quality rating for the trails and buildings for this soil type are sever, due to the high water table and the tendency to ponding.

Garbage is accumulating on the site due to two things. The first is that the school is dumping garbage; old gym mats and other large items in the northeastern part of the site. The other garbage on the site is from of vandalism of the existing picnic shelter and the trash that people just throw into the
pond and undergrowth. Most of this is paper, plastic, and beer cans.

Surrounding the site are farm fields to the west, north, and east. To the south of the site are the track and field event fields for the school. The only walking entrance goes by these fields and along a seven-foot high chain fence with barbed wire on the top. Along the south and west of the site runs a drainage ditch. This flows from the southeast to the northwest. The ditch is dirty and unsanitary, it collects the runoff from farms, the railway and from the town of Cowan.

Program Elements

Theses are the elements identified by the school that must occur on the site for the project to succeed. These elements are:

- Nature Center
- Outdoor Classrooms
- Trail System
- Gathering Space
- Habitats
  - Pond
  - Stream Wetland
  - Wetland Woodland
  - Hardwood
  - Pinewoods
  - Prairie
Analysis

Do to the lack of connection to the school, it is desirable to remove some of the trees and undergrowth from the southern boarder of the site to create a visual link to the elementary school. The other trees and undergrowth along the west, north, and east boarders provide a screen from the surrounding farms.

Due to the soils, Brookston and Crosby, found on the site a lowland prairie and a hardwood forest can be established within the site. The Crosby soil will allow a larger selection of woodland types but is contained in a small area to the north of the site. The soils also limit the types of building occurring on the site. The high water table of both soils trials and buildings must be designed with this in mind to prevent future problems. Due to this it is ideal if the existing picnic shelter's foundation could be used in the creation of a new nature center or another picnic shelter.

The drainage ditch that runs along the south and west side of the site is to polluted to allow children with direct contact but, has the opportunity to show how wastewater can be recycled through the use of a wetlands.

The existing woodland on the site provides the opportunity to show a wooded wetland setting for children to study. This can be further enhanced by the creation of a boardwalk that will allow access to the middle of the woods with minimal impact to the soils or existing plant life.

The allowing of the school to dump its unwanted material is creating an unsafe environment for children to be around. This material must be removed to provide for a safe environment. It is also
sending a bad message to the school children saying it is OK to dump your junk in to woods.

**Conceptual**

The development of conceptual ideas stems from the idea of opposing platforms. The first side is solely based on the educational need of the school. The other side is what the surrounding community might want in a nature center for the community. Form these two opposing side, three other concepts where born from the combination of the two opposing ideas in different proportions.

Platform one is solely the educational experience. This plan is based on the educational curriculum that the school is working on. The two main items of importance is a nature enter and outdoor learning labs. To give the greatest diversity of these labs, it was decided that there be a wide range of habitats in the nature area. These include a pond, wetland woods, wetlands, prairie, hardwood, and pinewoods. Additional learning ideas were theme trails and an experimental Garden. The focus of the site is the nature center, and from it everything radiates out from it. This creates a direct connection to the labs and other part of the center, for the best educational experience.

Platform two is based on activities that the surrounding community would take advantage of and bring more outside interest to the nature center. This focused on two types of user group, one the individual and the other being group use. Individual uses include fishing, walking/jogging, and picnics. Group uses include camping, hiking, a challenge course, and picnicking. The item that can join all of these
activities is the nature center close to the entry of the site.

The educational plan is mostly based on the educational platform. This concept maximizes the educational experience for the users. First it has a centralized nature center. This is done so that the labs have a direct relation to the nature center and it also creates a gathering point for activities. Next this concepts maximizes the number of labs areas throughout the site. This comes down to one lab in each habitat, giving each lab its own identity. An addition to the site is a farm field habitat. This brings in the ability for children to see how farming works and what are its affects on the land. The prairie habitat is divided into two areas, each area having its own identity. One prairie is managed and the other is not. The nature center is located at the edge of the pinewoods and the managed prairie. This gives the nature center a natural setting. The challenge course is located between the nature center and the picnic shelter, allowing everyone to have easy access to the area.

The community plan is based on what the surrounding community would like for a nature center and not solely based on the school. Key elements for this include fishing, exercise trails, a nature center, hiking trails, a camping area, a challenge course, and a picnicking area. The school is still able to use the site through the nature center to conduct its classes but the school doesn't have the surrounding labs like in the first concept. The site consists of one large system prairie and large wooded area. The wooded area consists of a hardwood area, pinewood area, and the wetland woodland area. The trail system
meanders through the different areas throughout the site.

From looking at these two opposing concepts, it was seen that there needed to be a compromise between the two ideas, so that both the community and school could take ownership of the learning center. So from these two ideas, were generated a series of five more concepts. These Concepts are the combination of the Educational and the Community concepts together in different degrees. The program elements of the nature center, learning labs, and the varying habitats are present through all of the alternative concepts.

Concept One: This concept places the nature center in the center of the site with one learning lab in each of the habitats. The farm field is placed on the site so students can experience first hand the effects farming can have on the soils. The challenge course is placed near the pond and picnic area for ease of access to the community.

Concept Two: This concept maximizes the number of learning labs in each habitat. The creek is brought back to its original path and the track field is the boundary for the learning center. Again the nature center is in the center of the site acting as the focal point for the center. The farming area is tucked back behind a set of trees so as not to distract from the view from the schools to the learning center.
Concept Three: This concept starts to take in more of the community needs by adding the camping area and a separate picnic area. The nature center is located by the entrance of the site, so that it is close to the schools and can help inform the people when they enter the site. This plan brings in another wooded area that can set apart from the one to the north, thus creating a patch. Also the woodland corridor is expanded along the west of the site and on the northern part of the site.

Concept Four: This concept again moves the creek back to its original location across the site. This also has a large picnic and recreation area south of the pond and east of the creek. The nature center is located at the entrance of the site again for the benefit of the users of the site. The woodlands are increased to the north of the site to include the animal corridors that exist and the proposed camping areas.
Concept Five: This concept has the minimal learning labs. All of the labs serve a double duty of two of the habitats that border them. The camping area and challenge course are located close together, so that the interaction between the two closer related. Again the picnicking area is enlarge to accommodate other activities like Frisbee and volleyball.
Master Plan

The master plan was developed from the school choosing two of the concepts (#1 and #3) and combining elements from each one. The elements that make up the learning center are all of those in the program elements plus several that improved in the quality of the site. Some of the elements with in the conceptual have been changed and others replaced. We did away with the idea of the camp ground do to liability. We added a council ring in its place as a gathering area and an area that can be used by everyone as an area for group campfires. The elements that make up the master plan are:

- **Habitats**
  - Upland Prairie
  - Lowland Prairie
  - Hardwoods
  - Wetland Woodlands
  - Pine Woods
  - Pond
  - Wetland Stream
- **Boardwalk & Learning**
- **Soils Trail**
- **Council Circle**
- **Challenge Course**
- **Nature Center**
- **Farm Field**
- **Entry Bridge**

The driving force behind the design of the master plan is the placement and function of the habitats. These habitats serve as the base for the
learning process, this is ware outdoor classrooms are located. These habitats form patches in the landscape that will serve to increase the plant and animal diversity of the site. The size, number, and locations of these patches will have different affects on the plant and animal communities. The size of the patches created will increase the edge habitat and increase the number of edge spices that will occur on the site. The interior habitat is also increased on the site, again increasing the number of plant and animal species occurring on the site. These patches that occur on the site are also linked up to other patches that occur to the north, west, and east of the site by a wooded corridor and by the stream corridor. The more patches that occur on the site will decrease the chance of extinction of animals and plants and will increase the richness of the species of plants and animals. The location of these patches in the environment will help in the reduction of extinction of species and will help in the recolonization of other patches that link up to the learning center (Dramstad 15-25).

The shapes of patches, as defined by their boundaries, can be manipulated to accomplish the ecological objective of the project (Dramstad 27). The boundaries or edges of these patches with high structural diversity (natural forms), vertically or horizontally, are richer in animal species. These edges are more likely to have animal movement across it. These edges will also encourage a more predator/pray interaction among species to keep populations in check (Dramstad 27-31).
Habitats

Hardwoods are characterized by:
- rolling terrain
- poorly to well drained soils
- some plant types:
  Maples (red & sugar), American Hornbeam, Hickory, Oaks
Wetland Woodlands: are characterized by:
  rolling terrain
  poorly drained soils
  some plant types:
    Maples (silver & sugar), Birch, American Hornbeam, Hickory, Oaks
Managed Woodlands: are characterized by:
- rolling terrain
- poorly to well drained soils
- Few large trees and little underbrush
- some plant types:
  - Maples (Red & Sugar), American Hornbeam, Hickory, Oaks

Prairies: are characterized by:
- flat to rolling terrain
- poorly to well drained soils
- no Trees
- some plant types:
  - big blue stem, little blue stem
  - Prairie wild rye
  - Prairie switch grass
Pinewoods: are characterized by:
- flat to rolling terrain
- poorly to well drained soils
- some plant types:
  - white pine, australian pine.
Wetland Streams: are characterized by:
- poorly drained soils
- some plant types:
  - common bulrush, hosta fortunei
  - prairie cordgrass
Learning Areas

Boardwalk
This walk goes though the wetland woodlands. This walk was placed here to protect the soils and flora of this area. The deck area is the place where teachers can conduct their class and provides an overlook of the area. The boardwalk serves to keep the children dry and allows handicap accessibility to the council circle.
Pond

This lab allows the children to interact with the pond in a safe manor. For this point the children can observe the different plants and wildlife of the pond and do water sampling. The rock outcropping allows the children to get close to the water and stay dry and does not encourage them to dive in like a dock or platform might.
Wetland Stream

This area is constructed in a similar way as the pond with the rock outcropping. The main difference of these areas is in the plantings and functions.
Prairie

This space is on a raised area in the lower prairie so children can see what occurring around them. The center of this area is a sundial. The space has large stones around the parameter for seating. The focus of the lab is on the sun and the seasons.
Orienteering

This lab is structured around the idea of orientation and maps. Here teachers can teach children about maps, orientation, and on hiking. This point will serve as the base point for the beginning of an orientation course that leads to other learning labs.
Challenge Course

The challenge course is here to encourage social interaction and teamwork among the students. The obstacles are designed to encourage mental development and physical fitness. Areas within the course will include an open space, trust-fall platform, bridge course, tire ring, tire bridge, zip-line, and a wall. The course is to be designed for groups of five to eight. The most important thing is that in each one of these events, the teacher can hold onto a student if help is needed.

The open space will be used for group activities. One activity is for the children to get in a circle and sit on each other's knees. If it is done right, everyone will support each other's weight and no one will fall. Another is for the students to sit on the ground, link arms, and try to stand up without their hands.

The trust-fall would be from a raised platform about a foot off the ground. One student would fall backwards of the platform and his teammates would catch him or her.

The bridge is an activity where the students cross from one platform to another without touching the ground. To accomplish this they must place wood boards provided to them and place them from one peg to another, till they reach the other platform. Each peg is placed at a different distance apart and the boards are of different length, so the group must decide which board to use when.

The next event is the tire ring. Each group must get a tire around a pole in the ground that is at six feet for younger kids and ten for older ones.
Next the team must traverse a tire swing bridge to a platform about five feet of the ground. From here they take a zip-line to get back to the ground.

The last event would be a wall with no ropes or handholds. Each team must climb the wall. One wall would be six feet for younger students and ten feet for the older ones.
Nature Center
The primary purpose of the nature center is here to support the teachers. This is ware the teachers can store supplies and other materials for the outdoor classrooms here. Classes may also be conducted within the building if the weather turn bad. The nature center will serve the community by informing them of opportunities that the site offers to them. This may include information on things to see, upcoming events, and brochures on plants and animals found in the area.

Farm Field
This area will be used to teach children about the ways of farming and to be a comparison for test on what farming does to the soils and can compare them to soils in the other habitats on the site.
Bridge

This is a formal entry to the site. This will allow the students and community to know that they are entering a special place. From here they will be able to see the nature center and pond. The first impression of the site will be made here.
Council Circle

This spot is a gathering space within the learning center. The community or school groups may use this area to have campfires and gatherings.
Educational Ideas

Bug collection. This apparatus allows students to capture and identify insects for their classes (Schaefer 49).

Track Finder. This allows students to identify animal tracks that cross the sandpit (Schaefer 50).

Other ideas that may be learned about are:

The oxygen cycle in a pond (Archer-Wills 110)

Animal habitats (Schaefer 36) Natural Secession (Schaefer 37).
Summary

This project is the beginning for Cowan Schools. The design proposed is the bases for witch the schoolteachers, principals, and school board are looking to improve the development of the children who go to Cowan. From here the school is looking into grants and funding to bring this project into being a reality. From here there is a need to begin development of curriculum that can occur on the site. Once this is done a reevaluation of the design needs to be done, so that the design meets the demands of the schools. Some additional things that have been thought about do o this project is the beginning of a Ecology Club and the possibility of a ecology class in the school.
Bibliography


Appendix A

The products of Comprehensive Project:
  - Boards:
    - Inventory
    - Analysis
    - Conceptual (2)
    - Master Plan
    - Learning Labs
    - Details (2)
  - Paper
  - PowerPoint Presentation
  - Presentations
    - Ball State Faculty April 24, 1998
    - Cowan School Board May 6, 1998
Appendix B
Nature Study Guide
Spring Mill Nature Center

We hope to share an enjoyable learning experience with you and your class. Spring Mill Nature Center is also included for your convenience. We look forward to seeing you and your class and making arrangements for special requests. A gate pass will be issued for group tours and to make advance reservations for special requests. Call ahead for multi-hour tours with an instructor at the center. This is just to mention a few of the many activities and educational programs available for your group. Spring Mill Nature Center is a nature center that is open to the public and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group. The center is located in Tippecanoe County, Indiana, and has several educational programs and activities available for your group.

Thank you for inquiring about the Spring Mill Nature Center. We would like your feedback and suggestions for improving our facility and services. We encourage you to visit the center as a family or group and to explore the nature center and its facilities. We also encourage you to contact us with any questions or comments you may have about our services. We look forward to seeing you and your class at the center.

To the Teacher:

812-691-4465 (Office)
812-849-4429 (Fax)
812-849-4455 (Cell)
Box 326
Spring Mill State Park

Patrick R. Salmon, Director

Indiana Department of Natural Resources
Birds: warm-blooded animals with lungs, feathers, wings and beaks. These animals hatch eggs and provide care to their young. Ducks, hawks and songbirds are in this group.

Reptiles: cold-blooded animals with legs, dry, scaly skin and claws when they are present. They lay eggs in leathery shells and do not take care of their young after they hatch. Examples of this group include lizards, snakes and turtles.

Amphibians: cold-blooded animals which live at least part of their lives in aquatic environments and possess gills, scales and fins and breathe oxygen from the water.

Fish: cold-blooded animals spending their entire lives in aquatic environments and temperature regardless of the temperature of its surroundings.

Warm-blooded: (thermoregulation), an animal which can maintain a constant body temperature regardless of the temperature of its surroundings.

Cold-blooded: (theroregulation), an animal whose body temperature is determined by the temperature of its surroundings.

Natural: something that occurs without human intervention or help.

and prey: a mouse may hunt for an insect while an owl hunts for the mouse.

Predator: an animal which hunts another animal for food.

Prey: an animal which is hunted for food. Note that an animal can be both predator and prey.

Habitat: the surroundings in which an organism lives. The habitat provides space, food, water and shelter to an organism. There are aquatic (water) and terrestrial (land) habitats. Examples of each are lakes and forests, respectively, but there are many different types of habitats in each of these categories as well. What other types of habitats do you see?

1. TERMS FOR DISCUSSION

Pre-Visit Activities

Discuss the following terms with the class to improve their understanding of the Nature Center and their ability to think about the nature center and what they expect to see there. Also discuss some of the following benefits. Ask the class what they think a nature center is and what they expect to see there. Also discuss some of their ideas with the class.
2. ACTIVITIES

Now close your eyes. What sounds do you hear? Is any one sound predominant? This could be done once in an urban area and once again in the country (for comparison).

Now do an inventory of the classroom. What things come from nature? Choose and describe an object and draw it as it was in its natural habitat.

Do an inventory of natural objects found on the playground or in your backyard. What plants or animals can you find? What benefits do you get from the living things you find? Do you benefit the plants and animals in any way?

Taking care of our environment is a benefit of living with nature. We are responsible for the living things we share a living space with. We cannot just be content to sit and watch or to play. We must act to help the things we depend on.

MAMMALS: Warm-blooded animals with lungs and fur or hair, having young that are born alive and provide milk as nourishment to them. Humans are one example.
What things do you see that you would observe in the turtles' natural habitat? Where would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them? What are the turtles' natural habitats where they would you find them?

DESCRIPTIO

SPECIES

List the different species (kinds) of turtles present in the pool.

1. 
2. 
3. 
4. 

TURTLE DIFFERENCES

1. 
2. 
3. 
4. 

TURTLE SIMILARITIES

1. 
2. 
3. 
4. 

Each other?

List characteristics that all turtles have in common. Are they different from study guide to the nature center
1. Which of these animals are predators? Prey? or both? What do you think each of these animals may eat?

7. Name the animals found in the display case across from the stained glass window.

6. Describe what you imagine a living to be like.

5. List some characteristics that all birds have in common. How are birds different?

What do you think lizards are? Can you think of anything that eats lizards? How do lizards defend themselves?
I. List some of the game species in the downstairs display area.

II. Caves are special habitats. Can you name animals that live in caves? How are they specialized for this environment?

10. The forest floor exhibit contains live reptiles and amphibians from this area. Can you name an example of each in the exhibit?

9. The nature center has a very big bird feeder just outside the window. Looking over the lake, do you recognize any of the birds that might be there? List the names of birds you see looking them up in this book placed at the window.

8. Look at the small displays in front of the window overlooking the lake. Which one is your favorite? Why do you like it best? Try to draw a picture of it.