Programmatic Statement for the educational play environment

Client / User

The clients of the educational play environment were the parishioners of St. Patrick’s Catholic Church. However, a select group assisted in the design process. The members were Fr. Jack Schindler, Pastor, Mrs. Mary Beth Bowling, Principal, and the students of the sixth and seventh grade class.

The primary users were the students of the St. Patrick’s Catholic School. For the school year of 1993-1994, St. Patrick’s had an enrollment of 241 students that ranged from kindergarten to seventh grade. There were 130 male students and 111 female students. In 1994-1995, St. Patrick’s School population is estimated to rise to approximately 300 students as the curriculum expands to include eighth grade.

At this time, no physically disabled children attended St. Patrick’s School, but the school was in compliance with the Americans with Disabilities Act and could easily accommodate such needs in the future. On the other hand, due to limited resources St. Patrick’s School did not have the capability to educate children who were mentally disabled.

Beyond the students using the educational play environment, the site provided opportunities for secondary use by children who live in the Lake Forest Subdivision south of the school’s property, or in nearby residential areas.

Educational Play Environment Description

- The educational play environment would promote a high quality of play and education by focusing on the physical, psychological, and social development of the students.

  Physical development
  
  a. The educational play environment would provide opportunities for the children to balance, bounce, climb, crawl, jump, run, tumble, slide, and swing.
  b. The educational play environment would allow children to play on designated hard surface areas, and on turf areas.
  c. The educational play environment would create spatial experiences for the children by moving their bodies through diverse situations.
Psychological development (Intellectual and Emotional development)

a. The educational play environment would use existing site features to teach scientific principles within Earth Science and Life Science.
b. In cases that a scientific principle can not be taught with the use of existing site features, a small scale version of what is needed would allow the students to learn scientific phenomena.
c. The educational play environment would allow the students to learn scientific principles through hands-on experiences.
d. The educational play environment would promote “free play” which allows children to explore, experiment, discover, and learn at their discretion.

Social development

a. The educational play environment would form social relationships by using “free play” conditions.

1. Unoccupied, unengaging acts: the child shifts readily from one action to another with no apparent purpose - sits a moment, stands around, touches something, and briefly looks at others.
2. Onlooking behavior: the child studiously observes others play and may speak to them, but does not personally engage in play.
3. Solitary independent play: the child plays alone with toys different from those used by nearby children, and he or she pays no attention to their activities.
4. Parallel play: the child plays alone but next to others who are using the same kind of equipment and are playing in essentially the same way.
5. Associative play: the child plays with other children, chatting about their common activity and borrowing and lending equipment, with everyone in the group involved in similar actions. There is no division of labor and no subordination of individual interests for the good of the group.
6. Cooperative play: a group of children organize to pursue a defined goal, as in creating a product (a sand castle, a make-believe airplane), dramatizing a life situation (imitating adults in occupations or in family situations), or playing a formal game. The
membership of the group is controlled by one or two children who assume leadership.
b. The educational play environment would provide space for classes to conduct outdoor lectures and class activities.

- The educational play environment would contain other amenities to insure a higher level of use. The additional design elements include:
  a. sitting areas
  b. picnic areas
  c. structure(s) that provide shade
  d. parking for 10-15 cars with a minimum of one (1) accessible space with a loading zone
- The educational play environment would insure that all of the children are supervised by the teacher, or any other additional faculty because of its spatial organization.
- The educational play environment would comply with the Americans with Disabilities Act by meeting suggested standards in A.D.A. guidelines (the key is diversity).
- The educational play environment would comply with all standards established by the United States Consumer Product Safety Commission (C.P.S.C.).
Criteria
The following lists of information are an expansion of each element found in the program.

Physical Development

Balance

How can a child balance?
- one foot
- two feet
- hands

What can a child balance?
- narrow objects
- flexible objects
- elevated objects
- moving objects

Where can a child balance?
To avoid groin injuries during falls, objects should be no higher than 12 inches. A protective surfacing must exist under balance objects to protect against falls.

Bounce

How can a child bounce?
- requires an object to reflect off

What can a child bounce?
- spring
- net
- rubber objects
- any flexible object with tension

Where can a child bounce?
Any area that would provide for a fall zone approximately 6 feet from the edges of the object.

Any area that does not have an overhead obstacle, such as trees, limbs, and shelter structures.
**Climb**

How can a child climb?
- with arms
- with legs
- with arms and legs

What can a child climb?
- ladder
- rocks
- blocks
- nets
- trees
- rope
- chair
- hill
- stairs

Any object that will allow vertical travel

Where can a child climb?
Climbing should allow children to descend as easily as they ascend. One way of implementing this recommendation is to provide an easier, alternate means of descent, such as another mode of access.

A protective surfacing must be provided to prevent injury from falls.

**Crawl**

How can a child crawl?
- with hands and knees
- by dragging body

Where can a child crawl?
- tunnel
- through small spaces
- under objects
- differently sized spaces to crawl in, under, over or through

Any area used for crawling should prevent entrapment situations. Therefore, all openings should be less than 3 inches, and / or greater than 9 inches.

Any area used for crawling should be open to allow for supervision of the children.

A protective surfacing should exist to avoid injury.
Jump

How can a child jump?
- two feet forward / backward
- alternating feet
- side-to-side

What can a child jump?
- water (into / over)
- sand (into / over)
- mounds
- Any type of object or obstacle.

Where can a child jump?
- From any elevated area to a lower area

The jump must occur on a protective ground surface (the higher the jump, the more surfacing needed)

Run

How can a child run?
- fast
- slow
- forwards
- backwards

Where can a child run?
- uphill / downhill
- open, flat terrain
- treacherous, unknown terrain

Slide

How can a child slide?
- on stomach, head / feet first
- on back, head / feet first
- on feet
- sitting forward / backward

What can a child slide?
- on wet grass
- on mud
- on plastic
- on ice
- on metal
- on water
- on rollers
- on any non-friction surface

Where can a child slide?
- on an incline that does not exceed 30 degrees and any change in the slope of the slide should not allow a child to lose contact with the sliding surface.

in uncongested areas of the play environment
Swing

How can a child swing?
with body stable on a pivoting object
with arms wrapped
with knees wrapped

What can a child swing?
rope
rope with seat
vines
tree limbs
bars
weeping branch
Any object that pivots.

Where can a child swing?
Any space that would have a fall zone equivalent to twice the swing height.

Any space that would provide a protective surface to prevent injury.

Tumble

How can a child tumble?
head first forward / backward
body roll on side (horizontal)

Where can a child tumble?
hill
sand
Any sloped area with a surface that would not injure a child.

Any flat area with a surface that would prevent injury.
Psychological Development

Existing Site Features

Vegetation

What kinds of vegetation?
- trees
- shrubs
- ground covers
- fungi

Where can the vegetation be found?
- Any area that has a variety of types of plants.
- Any area that would be separated from physical activities.
- Any area that would be accessible.

Water

What can a child discover in water?
- insects
- aquatic plant life
- algae
- bacteria

Where can a child discover water?
- Any area of water that would be accessible.
- Any area of water that would endanger a child, such as depth of water and velocity of water.
- Any area of water that would be located next to another educational area.
Soil and Rocks

What can a child learn?
- various soil types
- components of soil
- various types of minerals
- various types of rocks
- formation of soils and rocks

Any other topic of Earth Science that pertains to soil and rocks.

Where can a child learn about soil and rocks?
- Any area that would provide a variety of soils, rocks, and minerals.

Any area that would be accessible.

Any area that would be located next to other educational activity areas.

Atmosphere

What can a child learn?
- weather conditions
- astronomy

Where can a child learn about the atmosphere?
- Any area that would not have vegetation cover.

Any area that would be accessible.

Any area that would be located next to other educational activity areas.
**Wildlife**

What can a child learn?
- birds
- mammals
- insects

Any other forms of wildlife that might exist in the area of the educational play environment.

Where can a child learn about wildlife?
- Any area that would contain natural habitat for such wildlife.
- Any area that would be accessible.
- Any area that would be located next to other educational activity areas.

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**Small Scale Versions**

**Evolution and Fossils**

What can a child learn?
- life cycle
- survival of the fittest
- formation of fossils

Any other topics relating to evolution and fossils.

Where can a child learn about evolution and fossils?
- Because it would be a man-made element, it can occur anywhere.
- Any area that would be accessible.

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**Atoms**

What can a child learn?
- everything is composed of atoms
- parts of an atom

Where can a child learn about atoms?
- It can occur in any area due to its synthetic nature.
- Any area that would be accessible.
Cells

What can a child learn?
building blocks of life
parts of cells
types of cells

Where can a child learn about cells?
Because the element would be a
representation, it could occur anywhere
in the play environment.

Any area that would be accessible.

NOTE: In order to provide educational facilities to teach Earth Science and Life Science, only the location for such activities and accessible routes connecting the areas can be considered during the design. The amount of knowledge, and the ways of learning about the natural phenomena would be countless to possibly design specific facilities.
Social Development

Variety of Social Spaces
A variety of spaces for children to socialize is necessary. The six social relationships of “free play” require private, semi-private, and public spaces to insure proper development.

Note: Due to the scope of the project on a larger scale, the smaller social spaces were not physically designed, but they were taken into consideration while designing the larger social spaces.

☐ Small spaces for quiet play by one to five children.
   These spaces can serve as “places to escape to” that would allow children to withdraw from social interaction when desired.

☐ Private places supporting quiet exploration, that children can get into but adults cannot.
   These spaces could occur under low platforms, on different levels and / or screened by vegetation.

☐ Age-specific places as well as places where several age groups can play together.
   Preschool children like to play in their own groups, but in the company of older children; therefore, preschool areas should be included in space for older children.

☐ Semi-enclosed spaces for group play led by adults.

☐ Large grassy spaces for large group play.
   These social spaces must occur in open areas with minimal obstructions, both in the ground plane and in the above-ground plane.
Hard surfaced areas for court games and bike riding.
These spaces should be placed in open areas with connections to the adjacent activities.

Large group areas to facilitate gatherings of an entire class, a whole family, or a complete neighborhood for a wide range of activities.

Formal arrangement with the instructor or leader standing in front. This spatial layout would create a situation in which the leader would talk at the audience.
These spaces would be located in an area already formal, or on a slope that would naturally provide seating in one direction.

Formal arrangement with the instructor or leader completely surrounded by the audience.
This spatial layout would create a situation in which the leader would talk with the people.
These spaces would be located in an area already formal, but with site features to define the enclosed space.

Informal arrangement with the instructor or leader standing in front. This spatial layout would create a situation in which the leader would talk at the audience.
These spaces would be located in an area already informal, natural setting, or on a slope that would naturally provide seating in one direction.

Informal arrangement with the instructor or leader completely surrounded by the audience.
This spatial layout would create a situation in which the leader would talk with the people.
These spaces would be located in an area already informal, but with site features to define the enclosed space.

Picnic areas for classes, families, or neighbors to congregate in a passive setting.
These spaces should be separate from active recreational areas.
The spaces should provide natural shade from trees and open space.
Shelters should exist to provide the users with shade, to provide the users spaces to supervise the children, and to provide storage space for play props.

The shelters can be centralized among activity areas. This would occur on a primary circulation route in which a path would lead to the shelter and then move off onto tangents to adjacent areas.

The shelters can be decentralized among activity areas. This would occur on secondary circulation routes as the path flows from one activity area to another area.

The shelters should be located in open areas in which protection from trees or other existing features does not exist.

The shelters should be accessible.

Child-sized seating and adult-sized seating should exist throughout the educational play environment.

The benches should be located in three areas of the play environment:
- within the shelters
- in the center of an activity area
- around the edge of an activity area

Additional Program Element

A parking lot should be provided for the users of the educational play environment.

The parking lot must be located to minimize pedestrian and vehicular interaction.

The parking lot must be accessible, and it must be located next to the play environment.

Note: The information used for social criteria was originated from *Play for All Guidelines*.
Chapter 8

Site Analysis
Site Analysis for the educational play environment

The following site plans with icons analytically reviewed areas for design opportunities and constraints. The analysis directly reflected the program through the implementation of icons established by the criteria. The location of the icons was determined by the criteria in which particular questions were asked. For example, how can a child climb?, what can a child climb?, and where can a child climb? gave assistance in designating those areas most appropriate for a child to climb. This approach was used throughout the entire analysis stage in which each of the developmental areas (physical, psychological, and social) were applied to the proposed site for the educational play environment. The end result was a comprehensive analysis which was a culmination of the three individual analytical studies.

Physical Development Analysis

The majority of the physical activities were located in the “heart” of the site because it would be adjacent to the school, the open area would be easier to supervise, and the area provided an opportunity to introduce play structures (which would be a safer environment). Other areas could not accommodate as many physical activities, but they took advantage of the topography, and existing natural features as play pieces. The east end of the site could have been used for running activities.
Psychological Development Analysis

In the program statement, psychological development included intellectual development; therefore, when the site was analyzed for this particular area of development, the educational component of the project was taken into consideration. The educational aspect of the design included the development of spaces that would teach children about Earth Science and Life Science.

Referring to the criteria, the majority of learning activities needed to take advantage of natural site features. Thus, the areas north of Chenoweth Run Creek were best suited to accommodate those needs of the curriculum. The area, known as zone 1, provided the most opportunities to teach the children because of its diversity in spaces (vegetated areas with trees and large open spaces in between the tree cover). The area, referred to as zone 2, offered some opportunities to be used as an outdoor laboratory because of its dense vegetative growth, and seclusion from the main areas of the site. Just south of the creek and on the west end of the site, similar activities could have occurred, but it would have interacted with functions that were more appropriate for the space. And finally, the area on the north edge of the "heart" of the site created a wonderful opportunity to provide small scale versions of elements that could not be taught using natural features, such as cells and atoms. The location of such activities would be located closely to the other educational areas, and at the same time, it would be accessible for children to use without having to be accompanied by a teacher.
Social Development Analysis

The social elements of the program statement were analyzed, and then they were applied to areas of the site that reflected the criteria. Beginning on the west end, the space provided opportunities to implement an amphitheater that could function as an outdoor classroom. Another option for this area was to use it for picnics. The decision to use the space for picnics was based on the area's location (it was secluded from the main part of the site), and the existence of a shelter.

The existing foundation and chimney provided opportunities to develop that space into a seating area which could function as an outdoor classroom (the spatial layout would allow a teacher to talk with the children). Just south of the foundation, the slope of the hill allowed itself to be used as an instructional area in which the spatial layout would provide opportunities for the teacher to stand in front of the children and talk at them.

The openness of the "heart" of the site suggested that hard surface areas and turf areas could occur in the master plan. On the other hand, the far east end of the site provided more opportunities for these particular spaces due to the larger amount of square footage, and to the openness of the area with minimal obstructions from utility wires and vegetation.

The location for parking was most appropriate at the edge of an apron to the service drive. The apron would allow for ease of development.
Comprehensive Analysis

The comprehensive analysis was a culmination of the three previous analytical studies. The purpose of the overall analysis was to see the relationships of program elements with each other. As a result of completing such an extensive analysis of the site, the need to develop design concepts did not exist.

By assessing which activities occurred the most in a particular area, and by observing those activities that were most appropriate for surrounding areas, a function or activity was assigned. This approach was used for all areas of the site to conceptually design the educational play environment.
Chapter 9

Schematic Plans
The functional schematic plan was directly connected to the comprehensive analysis. The activities that occurred in each “bubble” were established by those program elements that occurred the most in each area. The area north of Chenoweth Run Creek was assigned as an educational area in which children could learn from existing site features. The passive area of the west end of the site was appropriate to be used as a picnic area.

The “heart” of the site was divided into three sections. The first area took advantage of the cabin foundation and chimney by using it for an outdoor instructional area, and for dramatic play. The second area was assigned to be used for educational models, such as atoms and cells. The third area was most appropriate for individual or small group play that could occur through the use of play structures.

The largest space devoted to one particular function occurred in the east end of the site. Small group or large group play was best suited for this area because large hard surface and large turf surface playing fields
Developmental Schematic Plan for the educational play environment

The developmental schematic plan was an overlay of the previous schematic plan in which the “bubbles” were identical. Each functional “bubble” was analyzed for its developmental contributions. The purpose of this plan was to exhibit that even though functions may appear to be separate from each other, they strongly relate to each other because of their developmental benefits.
Chapter 10

Master Plan
Master Plan for the educational play environment

The master plan is an axonometric view of the educational play environment looking north. The single lines in the foreground represent the footprint of St. Patrick's. The edge of the road was considered the project limit line.

- Educational areas for natural features
- Students' allotment gardens
- Hard surface areas (4) for large group play
- Hard surface track
- Turf area for large group play

- Picnic area
- Classroom and dramatic play areas
- Educational area with interpretive models
- Play structures
- "Time" bridge
- Parking lot
**General Design Notes for the educational play environment**

Based on the inventory zones, the site was divided into areas, and the divisions occurred at points where the natural features “pinched”. Following the site inventory, the zones were generically assigned particular activities. These activities were derived from the analysis and schematic plans. Once functions were decided for each area, a conceptual master plan was completed.

The next step was to create more spatial definition to the zones through the development of a master plan. The entire plan was based on the grid pattern in which the parallel and perpendicular axis were set in relation to the concrete retaining wall. The purpose of the grid was to create more order in the site, and to create more contrast with those elements that were existing and those that were proposed.

**Educational Areas for Natural Features**

The educational areas for natural features were situated north of Chenoweth Run Creek. When designing educational areas, only access to such areas can be planned because the ways to learn, and the topics to learn are countless when dealing with nature and its systems.

According to the analysis, more educational activities could occur on the east half. Therefore, a paved walk was implemented with gathering spaces for classes to conduct experiments. The area on the west half offered less educational opportunities. Therefore, a less defined path was installed.
Picnic Area  *(psychological and social development)*

The picnic area took advantage of the existing shelter, and of the secluded feeling of the space.

The space was encompassed by trees which separated it from the rest of the educational play environment (the separation of the area met the criteria for a passive space). In addition, the ravine and Chenoweth Run created transitions between surrounding areas with the use of bridges.

Concrete pads were added to increase the accessibility of the space, and to provide opportunities to place picnic tables outside of the shelters.

Along with the existing shelter, smaller shelters (10’ x 10’) were implemented to meet the needs of the children.

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The “Heart” of the educational play environment

The “heart” of the educational play environment contained three distinct areas, (1) Classroom and Dramatic Play Area, (2) Educational Area with Interpretive Models, (3) Play Structure Area. Each space had a unique responsibility in child development.
Classroom and Dramatic Play Area
(psychological and social development)

The existing cabin foundation and chimney were used to create an outdoor classroom space. The amphitheater layout would allow a teacher to talk with the children.

A raised stage area was provided to encourage dramatic play to occur. The space would allow children to act and perform for each other.

A sub-surface area provided diversity in spatial experiences which would add to a child’s possibilities in fantasy play.

A grouping of 5’ x 5’ play shelters were provided to add another realm of possibilities, and to create additional spaces at a child’s scale.

This particular area also defined spaces by using hard and soft surfacing along with raised planting beds.

Educational Area with Interpretive Models
(physical, psychological, and social development)

A canal was created to form an “island” which contained an archaeological dig site for children to play in sand and discover “history”. The island was connected by bridges, but the two that were connected to the south side of the site were unique. They could be activated by the children to dam the water. The standing water would allow the children to learn about aquatic plant life, and about any insects that may live in water.

A series of stepping stones also connected the island.
to the rest of the site. In the occasions of standing water, children could use the stepping stones to interact with the water on a more intimate level.

A maze was created out of vegetation to represent the various structural components of a cell. In the center of the maze was a shelter structure to represent the nucleus of a cell. The parts of a cell could be explained to the children from the top of the “time” bridge or from the school.

Two groups of foxholes were integrated in mounds to represent atoms. And each foxhole (or atom) was connected by a tunnel crawl which symbolized the bonds that occur between atoms. Therefore, each group of foxholes (or atoms) were actually an interpretation of molecules. And similar to the cell, the atoms and molecules could easily be explained to a class from the school on top of the hill.

**Play Structure Area**  
*(physical, psychological, and social development)*

The play structure area was defined by the “time” bridge which solved the problem of connecting the school to the educational play environment. The bridge was accessible with a slope of 6.6%. As the children would journey down the “time” bridge, they would follow timelines that would teach them about the evolution of plants, insects, rivers, and other natural phenomena.

An undulating water feature was designed for children to play in, and to teach them about water velocity.

A generic layout for play structures was considered, but individual play pieces were not considered due to the scope of the project. The purpose of the project was to create connection between the classroom and the outdoors.
Allotment Gardens
(physical, psychological and social development)

The allotment gardens created an opportunity for the children to become more involved with their surroundings, and to have a sense of ownership.

Each class would be assigned a plot of land in which they could become involved in the planting and maintenance of their individual areas. Beyond the physical involvement, the children would learn about plants and horticulture.

From a design standpoint, the gardens created a transition from the parking lot to the educational play environment.

Hard Surface Areas
(physical and social development)

The hard surface areas provided opportunities for large group activities to occur. Each area was a different size to add diversity to the possibilities of uses (because of the scope of the project, specific activities were not programmed).

A large shelter structure was implemented to provide shade for the children, and for those who may be supervising. The core of the shelter could be used for the storing of equipment. Mounds surrounded the areas for seating.
Hard Surface Track
*(physical and social development)*

The hard surface track was implemented into the design as a result of the children's responses. The children wanted a track to run on, and to ride bicycles, tricycles, etc.

An additional shelter structure was provided for those using the track, or turf area within the track.

The hard surface track also defined a turf area in the core.

Turf Area
*(physical and social development)*

The turf area was created by the edge of the track. The space was large enough to accommodate large group play. However, the scope of the project was to create a transition between the school and the educational play environment. Therefore, a specific function was not assigned to the turf area. Instead the proposed layout for the space would allow itself to be used in the manner that the user would choose.
Additional Views of the educational play environment

Due to the nature of axonometric drawings, some views of the master plan were restricted. Therefore, a plan has been provided. In addition, sections of the educational play environment were also provided to exhibit the vertical relationships between design elements.

Plan of the "Heart" of the educational play environment
Sections of the educational play environment

South

Section (A) through St. Patrick Church and the "heart"

North

Main shelter structure
"Cell" maze
Archaeological dig site
Chenoweth Run

South

Section (B) through "cell" maze and archaeological site

North
Section (C) through the classroom and dramatic play areas

South

Section (D) through the picnic area and classroom area

West
Chapter 11

Conclusion
The past school year has been a series of emotional "highs" and "lows". But, all of it was a result of personal exploration. My explorations helped me to discover more about child's play, and more about myself as a designer. I learned that my purpose as a designer was to create experiences, especially for children. I also realized that I enjoy challenging others to learn.

In the meantime, I reflect on my comprehensive project, and I ask myself if I achieved everything that I set out to do in August 1993. I believe that I did meet my expectations. In fact, I feel that I went far beyond my original goals.

The "backbone" of my project was to create a connection between the classroom and the outdoor play area. This was easily accomplished, but then I challenged myself to create an environment in which children could learn on their own about Earth and Life Science.

The educational play environment was designed to give children endless possibilities and opportunities to play and learn simultaneously. I just hope that what I have established will encourage people to reconsider the types of play spaces that we provide for our children. Afterall, our children are our future, and we can greatly influence them in their developmental years.
Chapter 12

Bibliography
Texts


**Periodicals**


**Documents**


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Franklin, Steve. Sabak, Wilson, Lingo Civil Engineers and Landscape Architects, Inc. Personal Interview. 19 October 1993.


Addresses of Contacts

Mr. Steve Franklin, Landscape Architect
Sabak, Wilson, Lingo Civil Engineers and Landscape Architects, Inc.
315 West Market Street
Louisville, Kentucky
(502) 584.6271

Mr. Leo Klarer, Architect
Grossman, Chapman, Klarer Architects, Inc.
517 Ormsby Avenue
Louisville, Kentucky 40203
(502) 635.5181

Mrs. Mary Beth Bowling, Principal
St. Patrick’s School
1000 North Beckley Station Road
Louisville, Kentucky 40245-4550
(502) 244.6083

Fr. Jack Schindler, Pastor
St. Patrick’s Church
1000 North Beckley Station Road
Louisville, Kentucky 40245-4550
(502) 244.7083

Ms. Susan Goltsman, educational play environment consultant
Moore Iacofano Goltsman, Inc.
1381 Queens Road
Berkeley, California 94708
(415) 845.7549
(415) 845.8750 (fax)