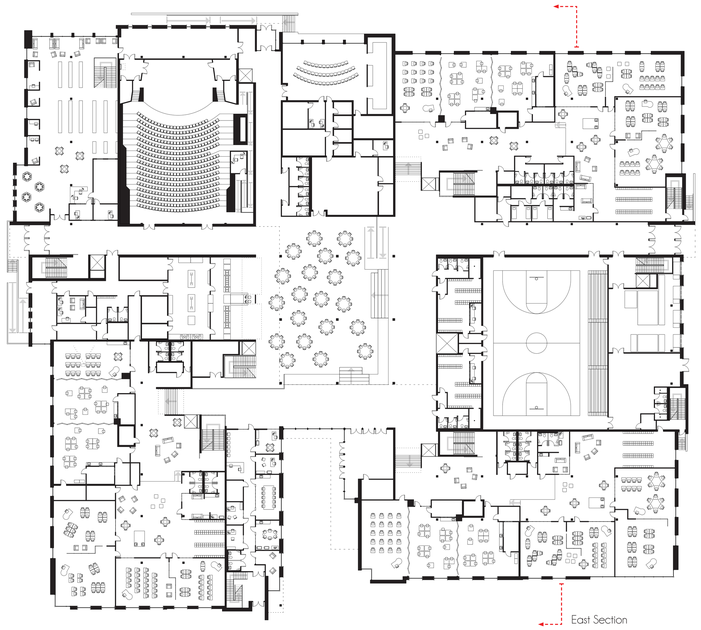
Second Floor Plan

1. House 1
2. House 2
3. House 3
4. Auditorium
5. Library
6. Computer Lab
7. Walkway
8. Special Education
9. Life Sciences Classrooms
10. Green House
11. Outdoor Green Terrace
12. Mechanical
13. Aerobics and Fitness Lab

Two Story Space



First Floor Plan

1. House 1
2. House 2
3. House 3
4. Music
5. Auditorium
6. Library
7. Kitchen
8. Social Commons and Cafeteria
9. Administration
10. Main Entry
11. Locker Room
12. Gymnasium
13. Gym Storage
14. Mechanical
15. Clinic

Paradigm of Performance

A precedent of ecological and educational excellence for the city of Minot , ND

LyleWitham

Typology: Middle School

Arch 772 - Design Thesis, Spring 2012
Adviser: Reign Scheaen
Software: Rhino 3D, Maxwell Renders,
Adobe Illustrator, Adobe Photoshop

Enlarged First Floor Plan of House 2

The Creation Suite

The creation suite is a specialized cluster of classrooms found in each main House of the middle school. This cluster combines art and shop curriculums with an additional classroom equipped with multimedia presentation equipment and interactive distance learning software. Curriculums are meant to be mixed in the Creation Suite, allowing for tech-enhanced art projects, or art-enhanced tech projects. The goal is to provide a space that fully enables young adults to express their creative ideas. Additionally, the third classroom allows for other classes such as science or math to pair with the art and shop room temporarily, generating even more creative possibilities. The space created when all three classrooms combine may even be used as a performance venue or gathering hall.

Diagram of three possible spatial configurations in the Creation Suite.

Flexible Classroom Design

A dynamic learning environment is in part made possible through the use of furniture and equipment that is easily moved and manipulated, enabling classrooms to accommodate a wide variety of learning activities and styles. Also, this ability to change one's surroundings allows a student to feel a sense of ownership over his or her learning experience.

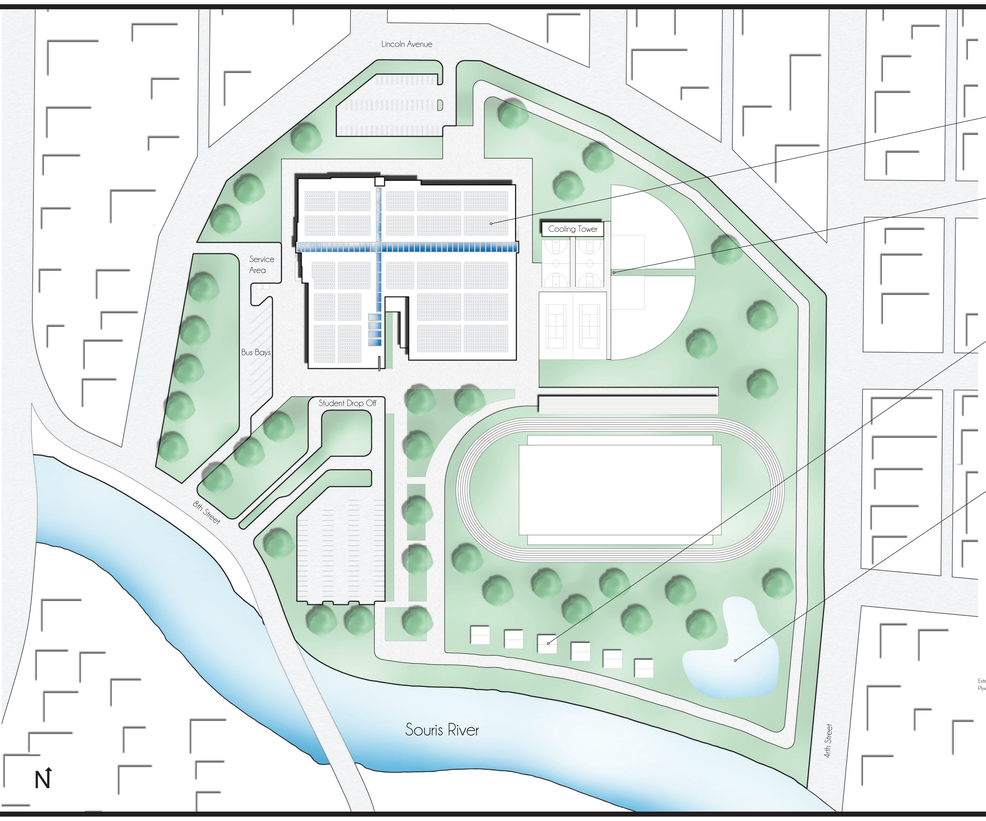
Spatial Design Concept

Flexibility. Adaptivity. Creativity. These ideas are instrumental to the design of this facility, and have been used to break down the "boundaries" of the learning environment. One example of how this is done is by creating large and multipurposed circulation spaces, allowing classes and activities to spill out of the classroom. This overflow effect is made possible by removing unnecessary visual and physical barriers between learning spaces.

Historically, K-12 classrooms have been designed to only support teacher-led lecture based learning within a uniformly divided and static architectural setting. This is an outdated method of teaching, and fails to equally educate students of varying and diverse intelligences. This outmoded style dates back to the industrial revolution when free public education was first implemented, and it is no longer adequate for providing for the twenty-first century learner.

Modern educational psychologists, practitioners, and designers now promote a highly flexible model of education based on creating a multifaceted learning experience. In addition to using traditional methods, art, music, movement, and performance are integrally incorporated into the learning curriculum. Teaching in this way, an educational facility is able to embrace and promote the creative potential of its students by tapping into a broader range of talents and dispositions. Architecture plays a major role in the success and feasibility of this new teaching style. It is paramount to create a comfortable pedagogical atmosphere that allows students and educators the freedom to customize their environment to their needs and wants.

The enlarged floor plan of House 2 to the left shows classrooms clustered in groups of two or three, and separated by moveable furniture and partitions. These adaptive classrooms create dynamic teaching opportunities by allowing teachers and students to freely collaborate and intermingle while maintaining a clear sense of organization and order. Classroom expansion into the "learning street" is shown with the use of folding glass walls, allowing for physical and acoustical separation when desired while maintaining passive supervision over the students.

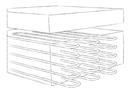


Design acting as a 3d Ecological Textbook

Roof Mounted PV Panels

The school's large, flat, and open roof surface is the perfect location for a large photovoltaic array. 59,000 square feet of roof surface area is dedicated to these panels, which generates 43% percent of the building's annual electricity. This represents a monetary savings of $64,000 a year, giving the school more freedom to invest in programs and materials.

Geothermal Piping under Athletic Fields



A geothermal tube system routes incoming air through a series of underground pipes. The seasonally stable sub-surface temperature of the earth moderates incoming air temperature, reducing the energy needed to heat and cool the building. The geothermal tubes are located adjacent to the building's mechanical system under the site's baseball, basketball, and tennis courts.

Solar Garden

Property that was damaged by the 2011 flood of the Souris river has been redeveloped as a small park space.

Within this park, archetypal house-shaped stabiles offer a symbolic reference to the homes destroyed during the 2011 flood while also providing a scenic location for picnics and social gatherings along the north bank of the Souris river. Additionally, PV panels mounted on these structures demonstrate how a photovoltaic house system can work, promoting the use of such systems in the city of Minot. A simple digital display shows how much energy the PV panels produce on a weekly, monthly, and yearly basis, and calculates the consequent monetary savings.

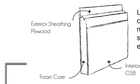
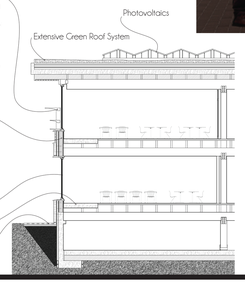
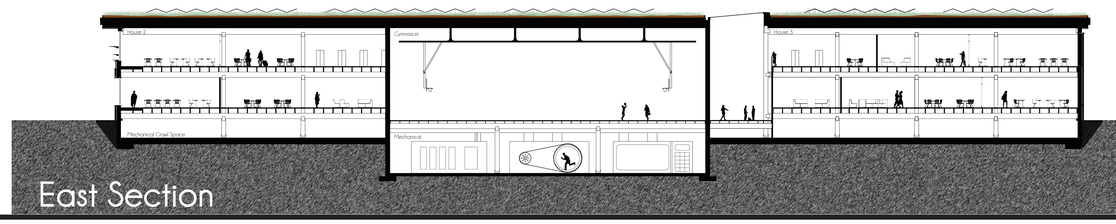
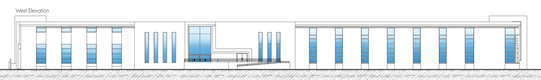
Pond

A small pond provides improved water retention on the site and is a place for classrooms to go for outdoor lab exercises. In warmer months, south easterly winds will blow across the pond and help cool the air around the running track.

Light Shelf and Dockable Planter System

Horizontal light shelves are used on the school's east, west, and south faces. The device reduces the need for electric lighting by reflecting sun light deep into the learning spaces. Additionally, a dockable planter box can be attached to the light shelf. These boxes soften incoming light by creating borders of vegetation along the window openings.

Structural Insulated Panel Construction



Light weight, prefabricated SIP panels contribute to an extremely high R-value, minimal air infiltration, and excellent structural performance in the building envelope.