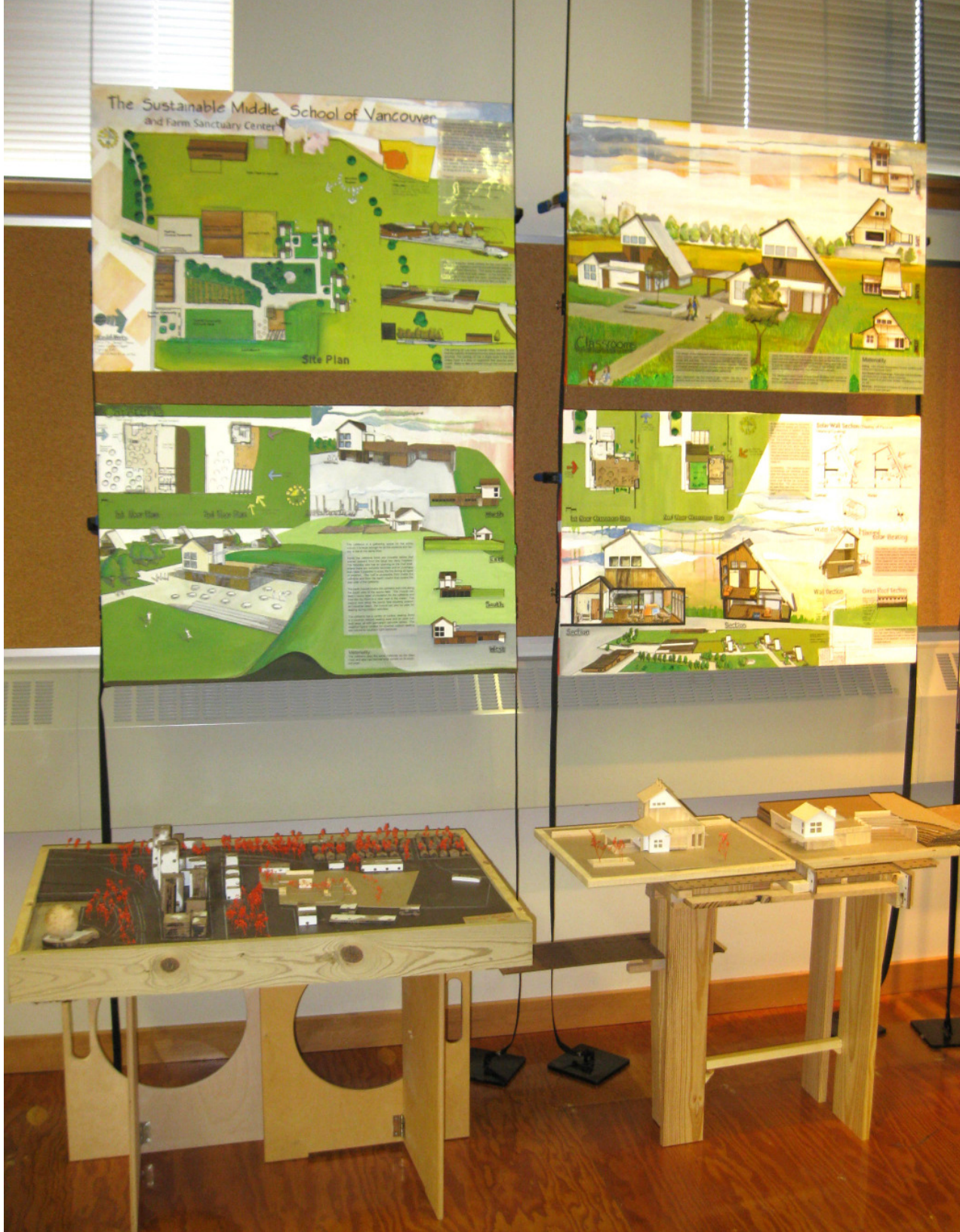
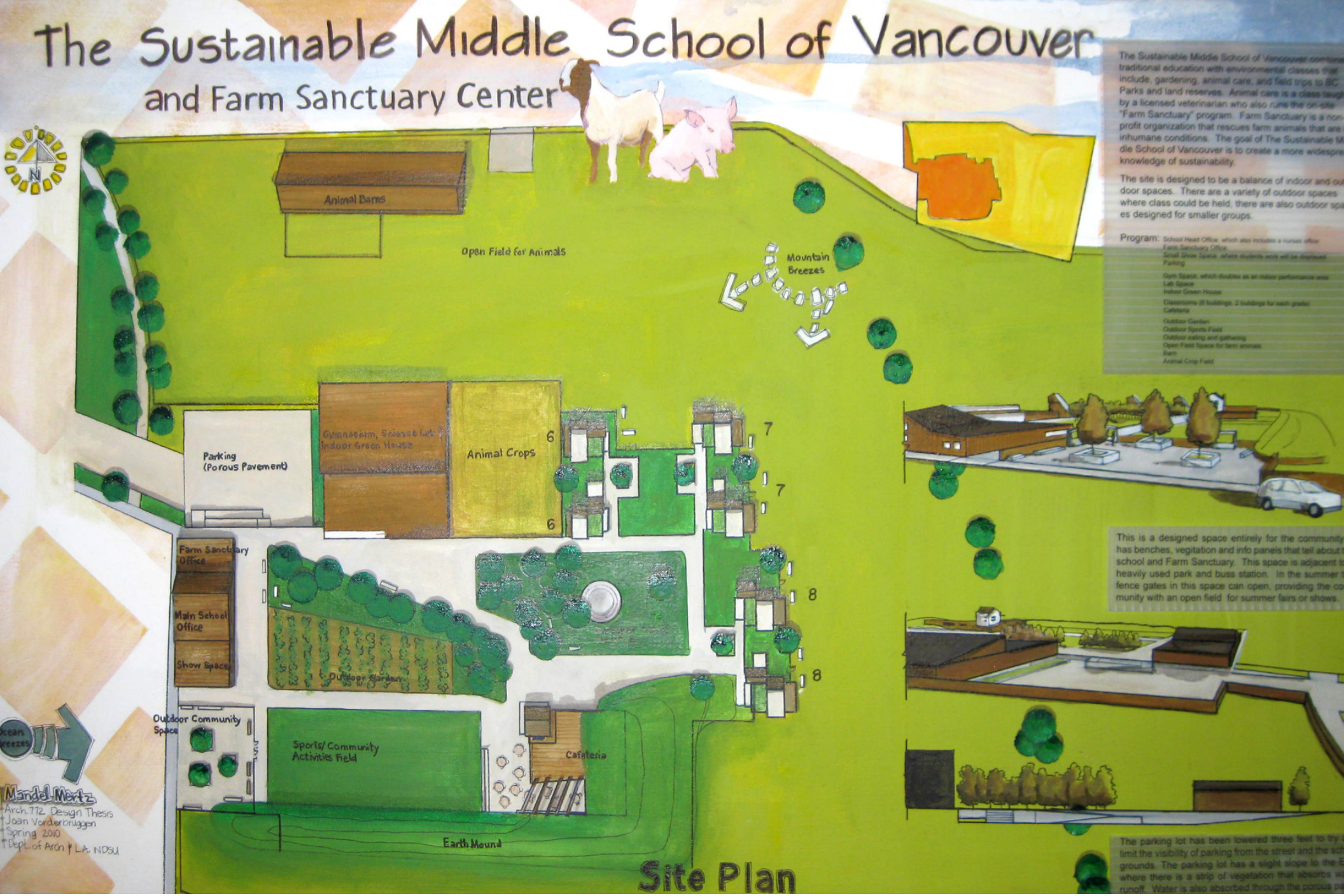
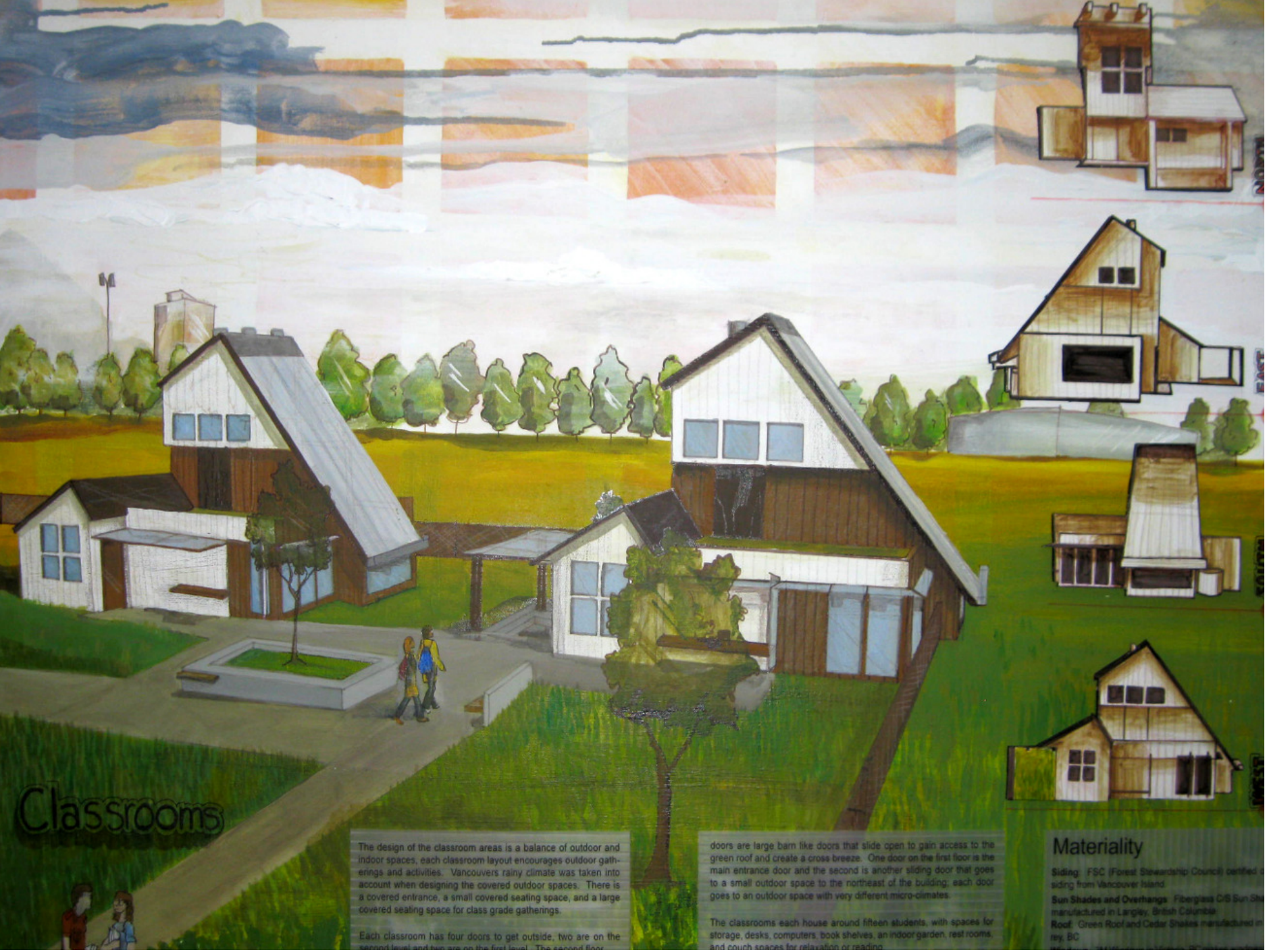
# Final Thesis Display

Thesis by Mandel Mertz

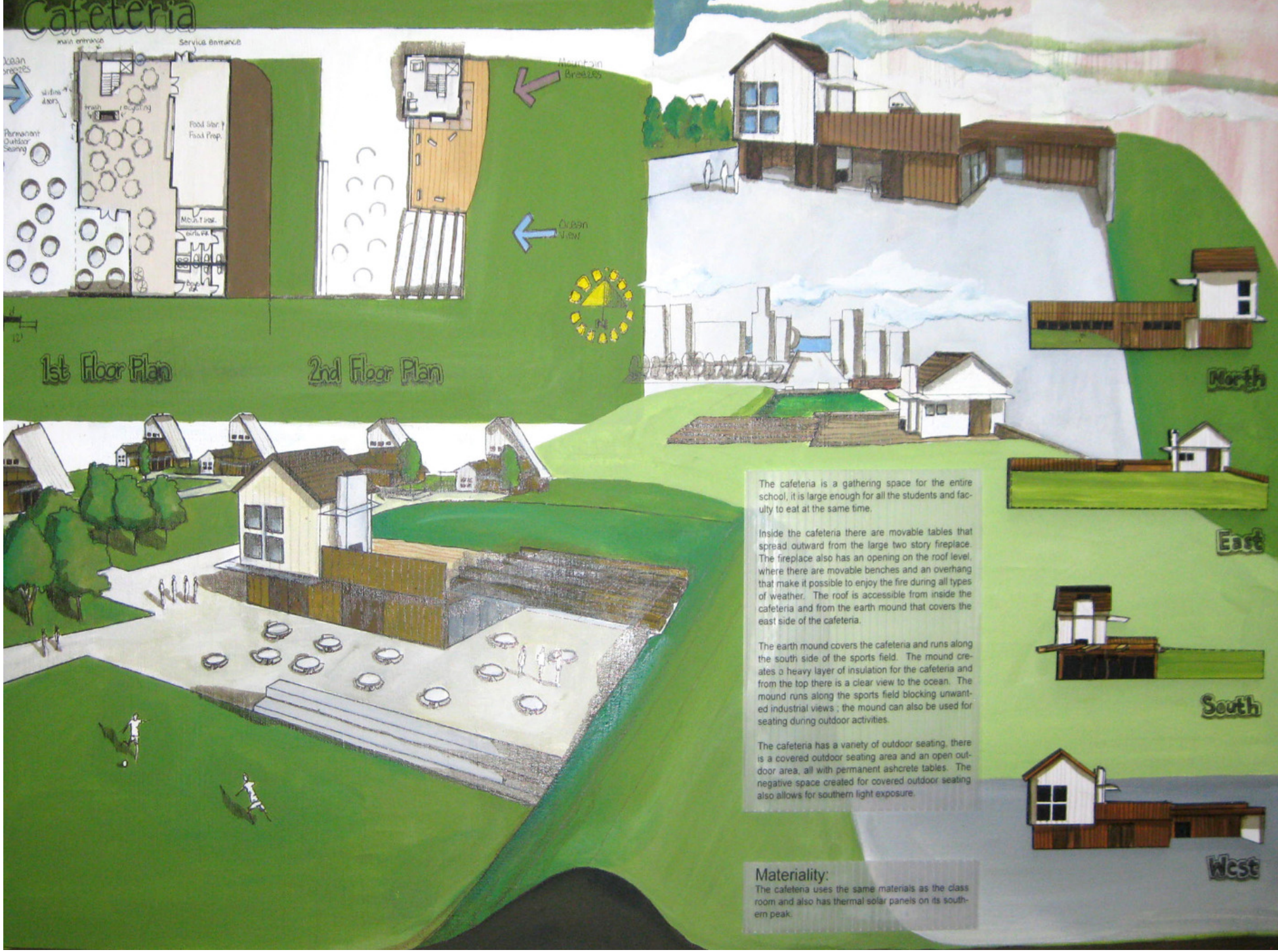



The Sustainable Middle School of Vancouver
and Farm Sanctuary Center
Animal Barns
Open Field for Animals
Mountain Breezes
Parking (Porous Pavement)
Gymnasium, Science Lab, Indoor Green House
Animal Crops
6
7
8
Farm Sanctuary Office
Main School Office
Show Space
Outdoor Garden
Outdoor Community Space
Sports/ Community Activities Field
Cafeteria
Earth Mound
Ocean Breezes
Mandel Mertz
Arch. 772 Design Thesis
Joan Vorderbruggen
Spring 2010
Dept. of Arch. / L.A. NDSU
Site Plan
The Sustainable Middle School of Vancouver combines traditional education with environmental classes that include, gardening, animal care, and field trips to BC Parks and land reserves. Animal care is a class taught by a licensed veterinarian who also runs the on-site "Farm Sanctuary" program. Farm Sanctuary is a non-profit organization that rescues farm animals that are in inhumane conditions. The goal of The Sustainable Middle School of Vancouver is to create a more widespread knowledge of sustainability.
The site is designed to be a balance of indoor and outdoor spaces. There are a variety of outdoor spaces where class could be held, there are also outdoor spaces designed for smaller groups.
Program:
School Head Office, which also includes a nurses office
Farm Sanctuary Office
Small Show Space, where students work will be displayed
Parking
Gym Space, which doubles as an indoor performance area
Lab Space
Indoor Green House
Classrooms (8 buildings, 2 buildings for each grade)
Cafeteria
Outdoor Garden
Outdoor Sports Field
Outdoor eating and gathering
Open Field Space for farm animals
Barn
Animal Crop Field
This is a designed space entirely for the community. It has benches, vegitation and info panels that tell about the school and Farm Sanctuary. This space is adjacent to a heavily used park and buss station. In the summer the fence gates in this space can open, providing the community with an open field for summer fairs or shows.
The parking lot has been lowered three feet to try to limit the visibility of parking from the street and the school grounds. The parking lot has a slight slope to the [illegible] where there is a strip of vegetation that absorbs water runoff. Water is also absorbed through the porous pavement

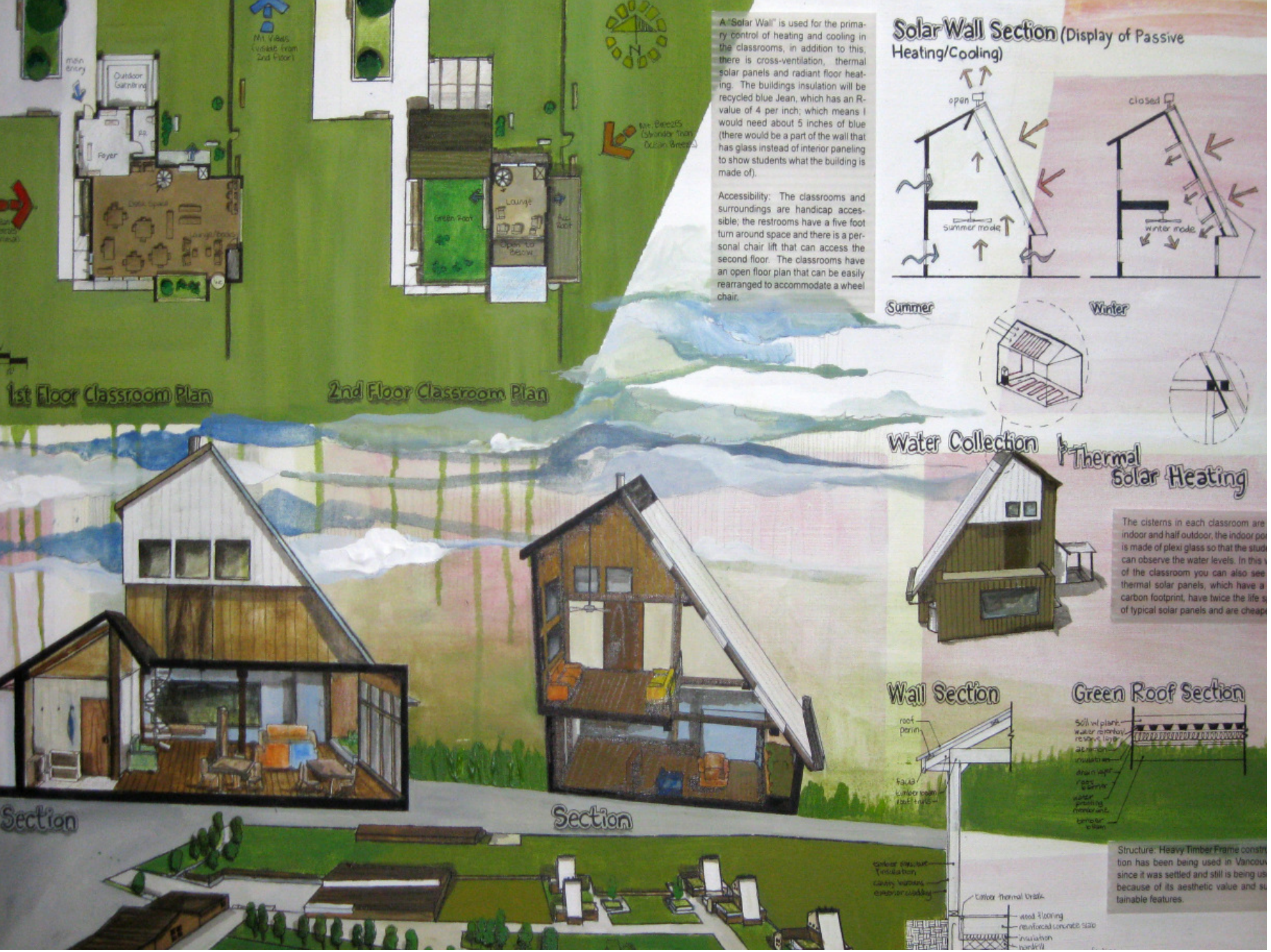
Board 1


Classrooms
The design of the classroom areas is a balance of outdoor and indoor spaces, each classroom layout encourages outdoor gatherings and activities. Vancouvers rainy climate was taken into account when designing the covered outdoor spaces. There is a covered entrance, a small covered seating space, and a large covered seating space for class grade gatherings.
Each classroom has four doors to get outside, two are on the
doors are large barn like doors that slide open to gain access to the green roof and create a cross breeze. One door on the first floor is the main entrance door and the second is another sliding door that goes to a small outdoor space to the northeast of the building; each door goes to an outdoor space with very different micro-climates.
The classrooms each house around fifteen students, with spaces for storage, desks, computers, book shelves, an indoor garden, rest rooms, and couch spaces for relaxation or reading.
Materiality
Siding: FSC (Forest Stewardship Council) certified
siding from Vancouver Island
Sun Shades and Overhangs: Fiberglass C/S Sun
manufactured in Langley, British Columbia
Roof: Green Roof and Cedar Shakes manufactured in
ney, BC

# Board 2


Cafeteria
Main entrance
Service Entrance
Ocean Breezes
Sliding doors
Trash
Recycling
Permanent Outdoor Seating
Food Storage
Food Prep.
Mountain Breezes
Ocean View
1st Floor Plan
2nd Floor Plan
North
East
South
West
The cafeteria is a gathering space for the entire school, it is large enough for all the students and faculty to eat at the same time.
Inside the cafeteria there are movable tables that spread outward from the large two story fireplace. The fireplace also has an opening on the roof level, where there are movable benches and an overhang that make it possible to enjoy the fire during all types of weather. The roof is accessible from inside the cafeteria and from the earth mound that covers the east side of the cafeteria.
The earth mound covers the cafeteria and runs along the south side of the sports field. The mound creates a heavy layer of insulation for the cafeteria and from the top there is a clear view to the ocean. The mound runs along the sports field blocking unwanted industrial views ; the mound can also be used for seating during outdoor activities.
The cafeteria has a variety of outdoor seating, there is a covered outdoor seating area and an open outdoor area, all with permanent ashcrete tables. The negative space created for covered outdoor seating also allows for southern light exposure.
Materiality:
The cafeteria uses the same materials as the class room and also has thermal solar panels on its southern peak.

Board 3


A "Solar Wall" is used for the primary control of heating and cooling in the classrooms, in addition to this, there is cross-ventilation, thermal solar panels and radiant floor heating. The buildings insulation will be recycled blue Jean, which has an R-value of 4 per inch; which means I would need about 5 inches of blue (there would be a part of the wall that has glass instead of interior paneling to show students what the building is made of).
Accessibility: The classrooms and surroundings are handicap accessible; the restrooms have a five foot turn around space and there is a personal chair lift that can access the second floor. The classrooms have an open floor plan that can be easily rearranged to accommodate a wheel chair.
Solar Wall Section (Display of Passive Heating/Cooling)
open
closed
summer mode
winter mode
Summer
Winter
1st Floor Classroom Plan
2nd Floor Classroom Plan
Water Collection
Thermal Solar Heating
The cisterns in each classroom are
indoor and half outdoor, the indoor po
is made of plexi glass so that the stud
can observe the water levels. In this
of the classroom you can also see
thermal solar panels, which have a
carbon footprint, have twice the life s
of typical solar panels and are cheap
Wall Section
Green Roof Section
Section
Section
Structure: Heavy Timber Frame constr
tion has been being used in Vancou
since it was settled and still is being us
because of its aesthetic value and su
tainable features.

# Board 4