

PROJECT CRITICAL PATH, continued

1. September → June

Soil Production: Students will harvest soil that they will create using worm composters to form the foundation of their green roof. Worm composters are low maintenance, odour free and efficient composting units that produce useable soil in three to five months.

In this portion of the program, students will learn about soil microbes, nutrient cycles and waste management.

3. February → April

Plant Germination: Students will begin to sow the seeds of their selected vegetation types. They will be encouraged to select plants they feel possess qualities that are desirable for a green roof and its successful growth. Once planted, germination and seedling maturation will occur indoors.

In this portion of the program, students will learn about plant lifecycles, agriculture and mineral cycles.

5. April → June

Monitoring and Care: Each afternoon, one student representative will be required to collect data from the green roofs and water the garden when necessary. Data collection will include ambient outdoor air temperature, the temperature on top of each roof, and the temperature within a compartment located within each of the two structures. From collected data, students (with assistance from teachers and graduate students) can determine how temperature differs between the green roof and traditional “houses.” To assist in data collection, automated temperature recorders will be deployed on each roof and inside the structures to ensure data quality and demonstrate technological advances in data recording.

In this portion of the program, students can learn how to collect data and begin to understand the effect of green roofs on temperature.

2. October → January

Green Roof Introduction: Students will be introduced to green roof technology and concepts of plants, diversity and their interdependency to each other. They will breakdown green roofs into their various components and as teams will be challenged to address the various elements of experiment design. The components of the experiment design include aspects such as:

- selection of location
- selection of plants
- soil types and matrices
- local climate history and predictions that impact plantings
- issues of insects and plant disease

In this portion of the program, students will be introduced to the concepts of an ecosystem and experiment design.

4. April

Roof construction: Two garden sheds will be provided for the project; one shed to serve as an unmodified control structure and the second to serve as the green roof structure. Students will transplant their maturing vegetation onto one of the sheds while the second will have a traditional covering of shingles or roof tiles.

In this portion of the program, students will learn the fundamentals of engineering and construction.

6. June

Field day: With the projected growth of the program over three years, the opportunity for several classes from one school to construct a green roof and compete for the most successful system can be achieved. The competition to produce the best green roof could be measured through the roof’s ability to retain water through rain simulated by a water sprinkler or watering can. The runoff collected with graduated cylinders would then provide a valid measurement of success. The evaluations of completed green roofs will also provide demonstrations of green roof technologies, such as rooting substrates used in industry. Successful student teams, in showcasing these technologies and maximizing the capacity of their green roof can be awarded prizes tied to wider environmental efforts, such as a tree planting.

