PFLANZBAR

A greenhouse for the unibz community garden to grow and observe plants in an ideal environment.

A project by
Sara Arisci
Ivana Bertola
In one of our first meetings with the VIVO Garden group we got to know that one of the main wishes about garden components would be a greenhouse. This made us think about its different uses and benefits. This involved research about different structures of greenhouses and how these depend on the plants, which will be grown and kept within the object. Furthermore we also investigated about the germination process of plants; what they need, how they grow, and how an ideal environment can be created. This influenced the way in which we built the greenhouse, how we imagined it to be used; its function and the type of plant we wanted to focus on.

ABSTRACT

In one of our first meetings with the VIVO Garden group we got to know that one of the main wishes about garden components would be a greenhouse. This made us think about its different uses and benefits. This involved research about different structures of greenhouses and how these depend on the plants, which will be grown and kept within the object. Furthermore we also investigated about the germination process of plants; what they need, how they grow, and how an ideal environment can be created. This influenced the way in which we built the greenhouse, how we imagined it to be used; its function and the type of plant we wanted to focus on.
As we found out that sowing and the growth of small plants can be quite tricky we hoped to facilitate this process through the greenhouse. By building different levels within the construction we wanted to underline the different levels of plant growth. Starting from the bottom with sowing the seed up to the next two levels where you can translocate the plants according to their height and the amount of sunlight needed. The plants on the other hand get certain mobility within the greenhouse but also when transplanted into the beds. The levels of the greenhouse are adjustable by removing the horizontal elements to give more space to certain plants if needed. The greenhouse can therefore - to a certain extend – also adapt to the plants needs.
As just mentioned one of the central ideas about the greenhouse was to give the garden group a tool to prepare their own seedlings and young adult plants, which can later be transplanted into the beds. The protected environment created by the greenhouse can so facilitate the first step of the plant growing for the gardening activity. This protected environment within the greenhouse might give the chance to have a successful starting point to the garden activity. Moreover the greenhouse should be an object or place where germination and the growth of plants can be observed. The shape and the positioning of the greenhouse should therefore be favourable for this observation. By enabling that people can walk around the greenhouse the plants and their growth can be observed from all angles. This might also provide a sensation of exhibition and installation of something one can be part of.
best places where to put a greenhouse in the Uni.
The greenhouse will be used and maintained by the garden group. However, there are some features, which can also make other students and people from outside the university participate in the process of plant growing. People benefit from observation from the greenhouse and the processes within it. A thermometer and hydrometer are installed in the greenhouse to provide a help to facilitate the growing process of the plants. This is a way in which also people from outside of the garden group and the university can take part by controlling that there are ideal growth circumstances in the greenhouse and contact someone through the contact details if something is not going alright.
Advantages of a greenhouse

Artificial microclimate

Protection from environmental impacts

multiple plant growing possibilities

Plant isolation from insects and diseases

All year gardening

Transplant availability and success
SOW & GROW

Germination process and plant growth needs of plants

Research on structure

Adapting structure to plants which will be kept inside

Sowing and growing/germination process of plants is not easy

ideas about possible functionality of the greenhouse

Greenhouse as facilitation tool for gardening

how to create ideal plant environments

Focus on seedlings and young adult plants

SOW & GROW

Germination

SEED

SEEDLING

YOUNG ADULT

PLANT

water

air

sun

minerals

soil

seeds

radical

grows downwards

seed coat

food and protection for seed

shoot

grows upwards

sprout

leaves

enable photosynthesis

stem

flower

makes seeds

bud

grows into flower

buds

food and protection for flower

soil

stores water and provides plants with minerals and nutrients

minerals and nutrients
Germination

ADULT PLANT
ability to reproduce through spores and flowers

YOUNG ADULT PLANT
small plant with flowers to start pollination

SEEDLING
small plant with a few leaves

SPROUT
when shoot from seed hits the surface

SEED
starts to grow into a plant through imbibition/water
To enable ideal growth circumstances for the plants it was necessary to find out how we could build a greenhouse where an ideal environment can be created.
DIMENSIONS AND SHAPES

The greenhouse has a pointed roof. This is not only a aesthetic decision but much more a functional one. This shape allows a better air temperature circulation and distribution. The dimensions have influenced the design of the construction. The ones we used are the minimum dimensions to build a functional greenhouse.
MATERIALS

For the basic structure we used wood. The fundamental transparent parts of the greenhouse were made with polycarbonate. Polycarbonate is a material, which has similar features like glass. However, it might be more appropriate for a public space as it cannot be broken very easily and therefore have a more durable but also secure product.
WATERING CAN

The watering can is useful for the greenhouse because it fulfils two functions; 1) watering the plants and 2) store heat and therefore balance the temperature within the closed space.
THERMOMETER AND HYDROMETER

These objects are necessary to control the circumstances of the plant environment.
VENTILATION
We have two different types of ventilation within the greenhouse; one is the top window on the roof of the construction and the other ones are the holes on the top of each side.
GREENHOUSE INFORMATION PANEL
These provide the participants of the garden group an aid of how to look after the plants and what they have to consider for making the growth of each plant successful.
We design also some pictograms for the communications of some special features (like the thermometer, hydrometer and the information panel). These pictograms are design all in the same grid, that is 8 cm x 8 cm. This allows to have at the end clear and equals images.
Keywords
Community, Co-Design, Co-Production, Open Design, DIY, Dealienation

Teaching Team
Kris Krois (Communication–Interaction–Services)
Karl Pircher (Object–Spaces–Services)
Lisa Borgenheimer (Informationdesign)
Andrea de Chirico (Design & Materials)
Werner Stefano Villa (Digital Design & Fabrication)
Sabina Frei (Moderation & Participation)

Time Span

Partners
Roberto de Felice (Garden expert)
VIVO Garden group (Student Initiative unibz)