

Kamehameha Elementary School Hawaiian Garden

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Concept of the Hawaiian Garden

The garden was designed as a “look and touch” project for our 4th grade students as they studied our native Hawaiian plants and the concept of the “ahupua’a” in Hawaii. It provides a mini ecosystem for a variety of native plants which grow in the multiple climatic strands of our Hawaiian islands. From the ‘Ohi’a and palapalai ferns of the rain forests to the naupaka and ‘akia of our seashores. Pathways were created to allow the student or visitor access to each planting area so that they can touch, smell and see each plant up close.

Incorporated into this planting is a streambed demonstrating the importance of the kahawai (river) in the ahupua’a and planted in the little streambed is the kalo plant which is one of only two Polynesian introduced plants in the garden. We felt that the kalo played such a significant role in early Hawaii that it was important to provide a place for them in our native garden.

With the exception of the kalo and ‘awa, all of the other plantings are endemic or indigenous to Hawaii. This coincides with the 4th grade studies of our native Hawaiian plants and how they found their way to our islands. To be endemic or indigenous the plants had to have arrived in Hawaii by themselves without the aide of humans. The 4th graders learn that their only means of transportation was by “wind, wave or wing”. The garden is designed to demonstrate the diversity of plant material, from small ferns to large trees, that were able to arrive on our little islands through these three modes of transportation. The 4th graders will be able to pick the seeds of the pili grass and notice how the seed sticks to their clothes in the same way it would stick to the feathers of a bird. They are able to visualize the spores of the ferns, palapalai, hapu’u or kupukupu being carried by the wind, or the seeds of naupaka floating on the ocean, making their way to our islands.

The objective of the project is to provide students with a “hands on” opportunity to work with tools and to malama their ahupua’a, in effect becoming the konohiki (overseers or owners) of this little garden. It gives the students the opportunity to get some lepo (soil) under their nails while tending to the ‘aina, maybe providing us with our next generation of mahi’ai (farmers).

One project that has been discussed is to have the students research the names and how our ancestors used the plant material in their daily lives. We would then like them to create the signage for the plants of the garden. In this way the students would learn a great deal more about the plants while making a “visible” (the signs) contribution to the garden.

Another possibility would be to have the students utilize some of the plants as they would have been used by our ancestors. For example, they could use the berries of the ‘uki’uki to create the purple dye for kapa, or the leaves of the palapalai fern for a haku. They could create a poultice to stun fish (guppies in a jar would be an easy demonstration) with the leaves and stems of the ‘akia, or something as simple as using the stem of the ma’u ‘aki’aki as a toothpick. With these simple demonstrations, they would learn about the resourcefulness of our ancestors in using these plants in their daily lives.

The possibilities are many; we have provided an effective, educational tool with this project. Please visit, maintain and use the garden regularly.

Garden Maintenance

The Hawaiian Garden will be maintained on a weekly, monthly, quarterly and yearly basis to ensure that the garden will flourish and succeed overtime. It is of great importance that everyone does their part in order for the students, teachers, staff and parents enjoy and appreciate the beauty of the Hawaiian Garden.

Pondless Water Feature

- The pondless water feature will be turned on and off automatically by a timer. The times of operation will be set by the Kamehameha Elementary School Plumbing Maintenance staff.

Monthly

- The garden will be maintained monthly by the 4th grade class every year.
- Maintenance of the garden includes removing weeds, trimming plants and shrubs, **fertilizing** and removing algae from the waterfall, if necessary.
- The 4th grade ATP representative(s) will schedule the cleaning of the garden.
- The following is a guideline for the monthly weeding, water feature maintenance and trimming:
 - Require about 6 to 8 people.
 - For 6 people, it takes about 1 ½ hours to weed, trim and clean up.
 - Require gardening tools such as hedge shears, hand pruners and weeding tools. Steak knives can be used to pull the weeds.
 - Need garbage bags and/or plastic grocery bags for the weeds, trimmings and dead leaves.
 - Throw away all weeds, trimmings, dead leaves and any rubbish in the garbage bins located at the Kalama Dining Hall service entrance.
 - Need garden gloves. This is optional for some people.
 - Pull weeds at the roots. Be careful not break the plastic cover underneath.
 - Trim the plants and shrubs at a manageable height. Try to maintain the plants at the current cut marks. The garden is very small, and the goal is to keep each plant in its place, so do not be afraid to trim plants away from each other to keep them apart. You should be able to see the plant sign for each plant, shrub and tree. You will need a hedger and hand pruners for this part of the work.
 - **Insure that the water feature is flowing smoothly into the catch basin.** The children playing in the garden will sometimes dam up the end of the stream bed, not realizing that this causes the water to overflow the liner and empty the catch basin. This will cause the pump to overheat and could lead to permanent damage.
 - Wash hands in the bathroom, not in the waterfall. If the bathrooms are closed, call Security at 844-8332.

Garden Maintenance (continued)

Monthly

- Tools and Materials Required to perform the above tasks;
 1. Hedge shears
 2. Hand pruners
 3. Weeders
 4. Rubbish bags
 5. Small leaf rakes
 6. Gloves
 7. Sickle (for thinning the ferns out or used as a weeder)

Quarterly

- The garden will be maintained quarterly by the KS Physical Plant Facility staff.
- The fertilization of the plants will take place every quarter. **Osmocote 14-14-14** should be used on all of the plants as this is a slow release general garden fertilizer which will not burn the native plant material. Osmocote 14-14-14 can be found in any Garden Store.
- The spraying of weeds with herbicides will take place every quarter.

We have been using **Manage** to control nutgrass which has been a persistent problem. This must be done on a quarterly basis. Manage can be purchased from UAP Distribution Inc.

Hand weeding has been effective for other weeds, spraying of **Round Up** in path areas should only be done by KS Physical Plant Facility staff, but weeds have mostly been a problem in the planting beds and no herbicides should be used in those areas.

No pre-emergent herbicides have been used on this garden. We have chosen not to do so because some of the native plants, Ohia lehua in particular are sensitive to pre-emergents. In addition, many of the younger children play in the coral and cinder areas. Because of this, we have tried to keep chemical use to a bare minimum in our garden.

Spraying for insects will be done on an "as need" basis. We suggest that the only insecticide to be used on the garden will be **Sevin** for control of a broad spectrum of insects; however some of the plants may tolerate a lower rate of other chemicals to treat a specific problem. All spraying of insecticides should be done by the KS Physical Plant Facility staff only after school hours.

Sevin can be purchased from Hawaiian Fertilizer or UAP Distribution Inc.

- Any cost related to the fertilization and spraying of the garden will be absorbed by Kamehameha Elementary School and will be approved by the principal.

Yearly and Beyond

- The garden will be maintained yearly by the KS Physical Plant Facility staff.
- The KS Physical Plant Facility staff will check for any signs of wear and tear of the garden and replace materials as necessary, these checks should be done on a monthly basis:
 - Check for replacement of plant signs.
 - Check irrigation (drip) system if working properly.
 - Check pondless water feature if working properly.
 - Check and replace battery in irrigation box every 6 months.

Garden Maintenance (continued)

Yearly and Beyond

- Beyond the yearly maintenance, the condition of the garden will be monitored by the KS Physical Plant Facility staff and will check, but not limited to, the following:
 - Check for need to add red cinder or coral chips to bare areas.
 - Check for replacement of plant signs.
 - Replanting of trees.
 - Trimming of trees as they reach maturity and the parents and students are unable to reach the top branches.
 - Thinning out overgrown plants and shrubs, this should be minimized by the monthly attention provided by the parents and students.
 - Replacement of dead plants, shrubs and/or trees.
 - Replacement and/or repair of ground cover.
 - Replacement and/or repair of irrigation system.
 - Replacement and/or repair of pondless water feature.
- Any project which involves monetary expense will be approved by the principal of Kamehameha Elementary School.

Roles and Responsibilities

Kamehameha Elementary School (KES)

- KES is the owner of the Hawaiian Garden.
- Questions regarding the garden can be directed to the principal.
- Any cost related to the maintenance of the garden will be absorbed by Kamehameha Elementary School and the principal will have final decision and approval.

Kamehameha School (KS) Physical Plant Facility

- KS Physical Plant Facility staff is responsible for the fertilization and spraying of the plants on a quarterly basis. Only the specified type of chemicals will be used.
- KS Physical Plant Facility staff is responsible for the care of the garden on a yearly basis. The staff will check for, but not limited to replacement of soil, replacement of red cinder and coral chips, replacement and/or repair of plant signs, repairs to the irrigation (drip) system, changing the 9volt battery in the battery timer and keeping the pondless water feature in working condition.
- Beyond the yearly maintenance, the condition of the garden will be monitored by the KS Physical Plant Facility staff and will check, but not limited to, replanting of trees, trimming of trees, thinning out overgrown plants and shrubs and replacement and/or repair of ground cover, irrigation system and pondless water feature.

KES – 4th Grade Class

- The 4th grade class is responsible for the monthly maintenance of the Hawaiian Garden. The monthly maintenance includes the pulling of weeds, checking and cleaning of the water feature and trimming of plants. See the Garden Maintenance Section for more details.
- The 4th grade ATP representative(s) schedules the monthly cleaning at the beginning of the school year. For example, each classroom can be assigned a month for garden responsibility.
- The ATP representative(s) communicate to the 3rd grade class of their upcoming involvement with the Hawaiian Garden during the school year.
- The 4th grade class trains the 3rd grade class of how to care for the garden at the end of the current school year or the beginning of the following school year.
- The 4th grade ATP representative(s) are responsible to provide the garden manual and any other materials to help them care for the garden.
- School year is defined as August of the current year to August of the following year.
- The maintenance of the Hawaiian Garden qualifies as a community service for the class.

KS Parents and Alumni Relations (PAR)

- PAR is responsible for asking the 4th grade class to maintain the Hawaiian Garden every year at the annual Leadership Training.
- PAR is responsible for providing the Hawaiian Garden manual to the 4th grade class, if necessary.

List and Uses of Plants

List of Plants (in alphabetical order)

- 1) `Ahinahina
- 2) `Ahu`awa
- 3) Akia
- 4) Akoko
- 5) Alahe`e
- 6) `Amau`u
- 7) `Awa
- 8) Aweoweo
- 9) Carex
- 10) Delissea
- 11) `Ekaha
- 12) Hapu`u
- 13) Ho`awa
- 14) Ihi
- 15) Iliau
- 16) Iliē`e
- 17) Kalo
- 18) Kalo
- 19) Koki`o`ula – St. John's Hibiscus
- 20) Koki`o`ula
- 21) Kookoolau
- 22) Kulu`i
- 23) Kupukupu
- 24) Kupukupu
- 25) Lama
- 26) Ma`o
- 27) Ma`o Hau Hele

List and Uses of Plants (continued)

- 28) Mau`u `Aki`aki
- 29) Moa
- 30) Munroidendron
- 31) Naio
- 32) Nanea
- 33) Na`u
- 34) Naupaka Kahakai
- 35) Naupaka Kuahiwi
- 36) `Ohai
- 37) `Ohelo Kai
- 38) `Ohi`a Lehua
- 39) `Ohi`a Lehua
- 40) `Ohi`a Lehua
- 41) Palapalai
- 42) Pa`u-o`hi`aka
- 43) Pili Grass
- 44) Pokalakala
- 45) `Uki`uki
- 46) Ulei