

# Urawa High School 'Eco-renovation' Project

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## 1 Preface

A project of 'eco-renovation' is going on in our Urawa High School. This is sponsored by the Ministry of the Environment and the Administrative Department of Saitama prefecture. School buildings are renovated into ecology conscious structures and are expected to contribute to the national and international project of reduction of carbon dioxide. This is a part of Japanese national project lasting from 2008 to 2010.

The main concept of this scheme is to create a comfortable interior environment with less cost and less load on nature.

## 2 Contents of building renovation

It took the whole summer to reconstruct the inside and outside of the buildings. In order to save time and materials, this renovation will not destroy the old buildings and build up new ones, but rather renew the existing structure. The parts of reconstruction are:

### #1 Classroom walls, floors and ceiling are repaired

-The school buildings are old and need to be repaired. The tiles of the floor were peeled and the ceiling had many tiny holes. Thermal energy is easily transmitted through the walls. Judging by the simple concrete walls and single pane of windows, it seems that they did not consider thermal energy thirty years ago when they first planned the building. Floors are covered with a new material, the upper half of the wall is repainted while the bottom half is covered with wood boards. The materials of the ceiling were removed and covered with insulation. Lights on the ceiling of the corridor were exchanged with an energy-efficient type.

### #2 Walls between corridor and classroom are exchanged

-The single pane window between the corridor and classroom let heat pass through very easily inside and vice versa. To protect against heat transmission, single window panes are replaced, and walls themselves are exchanged with those with double glass panes. The under half of the walls are also covered with wood board which is expected to increase the efficiency of insulation.

### #3 The electricity which each classroom consumes is controlled by a main computer.

-The Environment Committee has a plan for competitions among homerooms for

conserving electricity and kerosene. Credit for the idea of the competition is owed to a proposition from a student, who thought it would make us students more conscious about environment. The opinion was adopted in the previous committee consisting of construction staff, administration staff, school teachers, students and parents, and was made into a part of the project as a whole. We can check the consumption of electricity of each classroom on the main computer display as well as on the main indicator board. The winning homeroom, which uses the least energy, will be endowed with an eco-button( we call it the 'eco-badge') as a token of leadership and ecology consciousness.

#4 Solar panels are fixed to the outer side of the wall and on the rooftop of the building  
-With these panels, heat and sunlight coming into classrooms are not only cut in summer but also electricity can be generated. They are expected to generate up to 30kilowatts on sunny days.

#5 The surface of the inside and outside of the wall are repaired and repainted. And so are the walls and ceilings of the corridors and stairs. The floors of these places are laid with new materials which are expected to make less sound and to give less shock against our feet.

#6 Classroom windows have small flap windows for air flow.

-Flap windows were fitted into the under part of the windows. With these windows open all night long in summer, cool air can flow into the classroom to delay the first rise of the temperature in the morning and to suppress the highest temperature during day.

#7 Toilet are entirely reconstructed.

-The bathroom was a big problem. To solve it, all parts were renovated, including the floor, wall, lights, faucet, bowl and urinal. They are all now clean and comfortable. The main point of the renovation is that every part will contribute to saving energy and water.

#8 Rooftop of the entrance is made into green garden.

-Under the garden, the temperature is known to be 2 or 3 degrees Celsius lower than that of open air by the effect of soil insulation and evaporation from leaves of plants. By use of this effect we can get a cooler environment under the garden. This garden shall be a comfortable place for students.

#9 "Eco stations" are installed at the entrance on the second floor.

-There are three long and narrow rooms made for introduction of the whole project. In

one corner, the contents of this renewal will be exhibited to show visitors this project. On the outer wall is hung an indicator demonstrating the effect of this renewed building.

With this renovation, it is expected that we can reduce CO<sub>2</sub> by 40 tons every year, which is almost the same amount about 6 hectares forest could absorb a year. And this will cut 21300 dollars off the cost every year

### 3 Students' Activities

Along this buildings renewal, we students and the alumni association have been working on various activities. The student council of our school formed an environmental committee this year, which has 9 special parts for planning the following activities:

- #1 Planning lectures on environmental problems and inviting specialists researching environmental problems.
- #2 Planning competition among homerooms for conserving electricity and kerosene
- # 3 Visiting companies or universities and making reports about them
- #4 Proposing the ways we can recycle waste articles.
- #5 Organizing students for participation in the operation for preservation of the school forest named '100 years forest of UHS'.
- #6 Planning measurements and experiments, doing and seeing
- #7 Nurturing plants to be utilized for preservation of environment
- #8 Planning international communication
- #9 The general affairs department

Urawa High School Eco-renovation and Environmental education project is a model case of "School renovation and environmental education project" by the ministry of the Environment. As this is the first and only high school case in Japan, it will attract public attention from all over the nation. We students will make an effort to succeed in this project.