

# 地に足がつかない高校生活(物理)

## High School Life Without Ground (Physics)

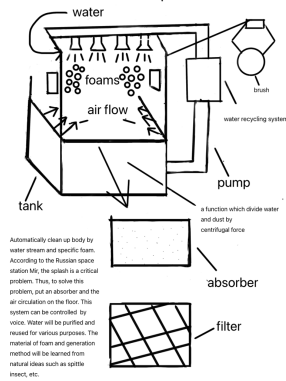
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### ABSTRACT

In this session, this paper studies the functional requirements for LEO habitation systems to implement perfect high school life. The systems below are necessary technologies and utilization methods to achieve ideal functions. We are very happy if JASMA professors would kindly give us many suggestions.

### 2.1 Relaxation System



### 2.4 Gravity generation System

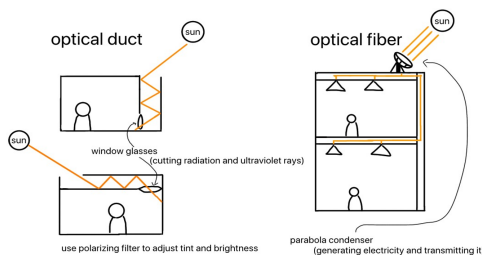
#### Gravity generation System

Gravity control is essential for every part of high school life in space. Even on the current space station, it is too inconvenient to live in high school if all living spaces are weightless. Therefore, we hypothesized that it would be possible to create artificial-gravity by centrifugal force in some areas, and studied the advantages and applications of a system that can change the magnitude of the force going to the floor freely.

In addition, researcher should be able to conduct experiments under low gravity for future lunar and Mars missions, such as lunar vehicles and robots. In an environment where the acceleration of gravity can be varied, it is convenient to be able to experiment of the same weight and under the equal condition without increasing the mass.

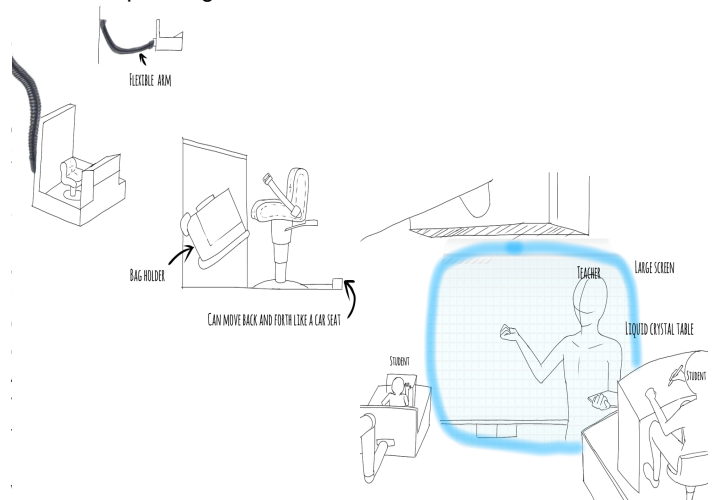
The table shows an example of changing the gravitational acceleration of space depending on which application it is used for.

### 2.2 Illuminations System



Illumination in space should use sunlight as much as possible.  
 \* Sunlight in space includes strong radiation and ultraviolet rays. So, they should be cut by window glasses.  
 When the sun hides behind the earth, reflected sunlight with geostationary satellites or constellation satellites can be used.  
 \* The LED lighting that can produce pseudo sunlight should be developed. Thinking of the relationship of circadian rhythm, the light is adjusted according to daily life and situations.  
 About the directions of illumination, the relation to the gravity should be considered.  
 For example, the light should indicate the gravity direction (i.e., from ceiling and illuminate overall if in zero gravity).

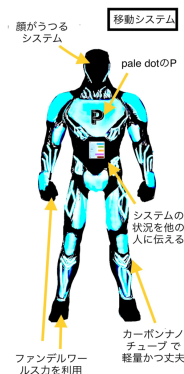
### 2.5 School planning



### 2.3 Flying Object System

#### Flying Object System

- In order to produce new style Spacesuits by referring to the functions of anime superheroes. Gecko can move comfortably on the vertical wall. This mechanism is Van der Waals force. So, using this power on shoes and gloves, let astronauts move comfortably. Spacesuit should be stored compactly as small as a suitcase. For long time outside work, unmanned aerial vehicle will carry water, food and oxygen.
- Of course, this suit should be cool and stylish



### 3. Discussion and future works

In this issue, as part of the MEXT Super Science High School Program (SSH), we reported on the results of studies in five technical fields. To make use of the latest technology and materials, we would be grateful for the guidance of JASMA researchers in various fields. we would also like to ask the junior researchers to take over this research for further development into other fields. We would like to devise a high school-operated experiment facility with various functions to contribute to the development of technologies for the Moon and Mars exploration.

### 4. Reference Documents

- 1) JAXA Space Life Story Book
- 2) NASA SSP 5000E INTERNATIONAL SPACE STATION FLIGHT CREW INTEGRATION STANDARD
- 3) NASA SSP50008, INTERNATIONAL SPACE STATION INTERIOR COLOR SCHEME
- 4) NASA SSP50313, DISPLAY AND GRAPHICS COMMONALITY STANDARD, INTERNATIONAL SPACE STATION PROGRAM