

# **KIT-PBL Education Program for Strengthening Student's Skills of Creativity and Innovation**

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# KIT-PBL + Innovation Education System

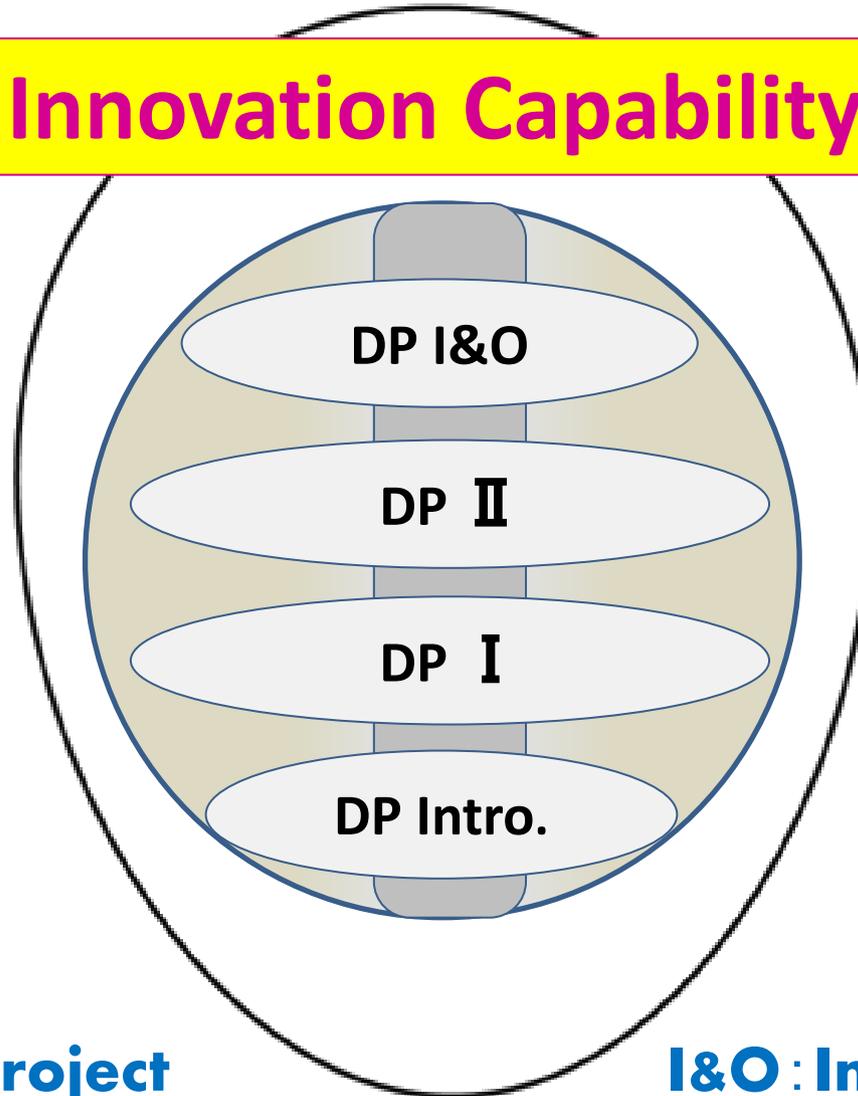


Innovation Capability

CDIO

**Knowledge education**

Foundational Courses  
Specialized subjects



**Practical education**

Experimental exercises  
Computer literacy

**Note DP: Design Project**

**I&O: Implement & Operate**



# KIT-PBL Education Program

First year

2nd year

DP Intro.



DP I



DP II



DP I&O

Experimental Technique

Problem Finding

Idea Creation

Idea Creation

Design

Embodiment

Implementation & Operation of Ideas



presentation

Feedback

Brush up

major

wisdom

Exp.

Feedback

Brush up

solution

idea

Feedback

Brush up

Observation plan

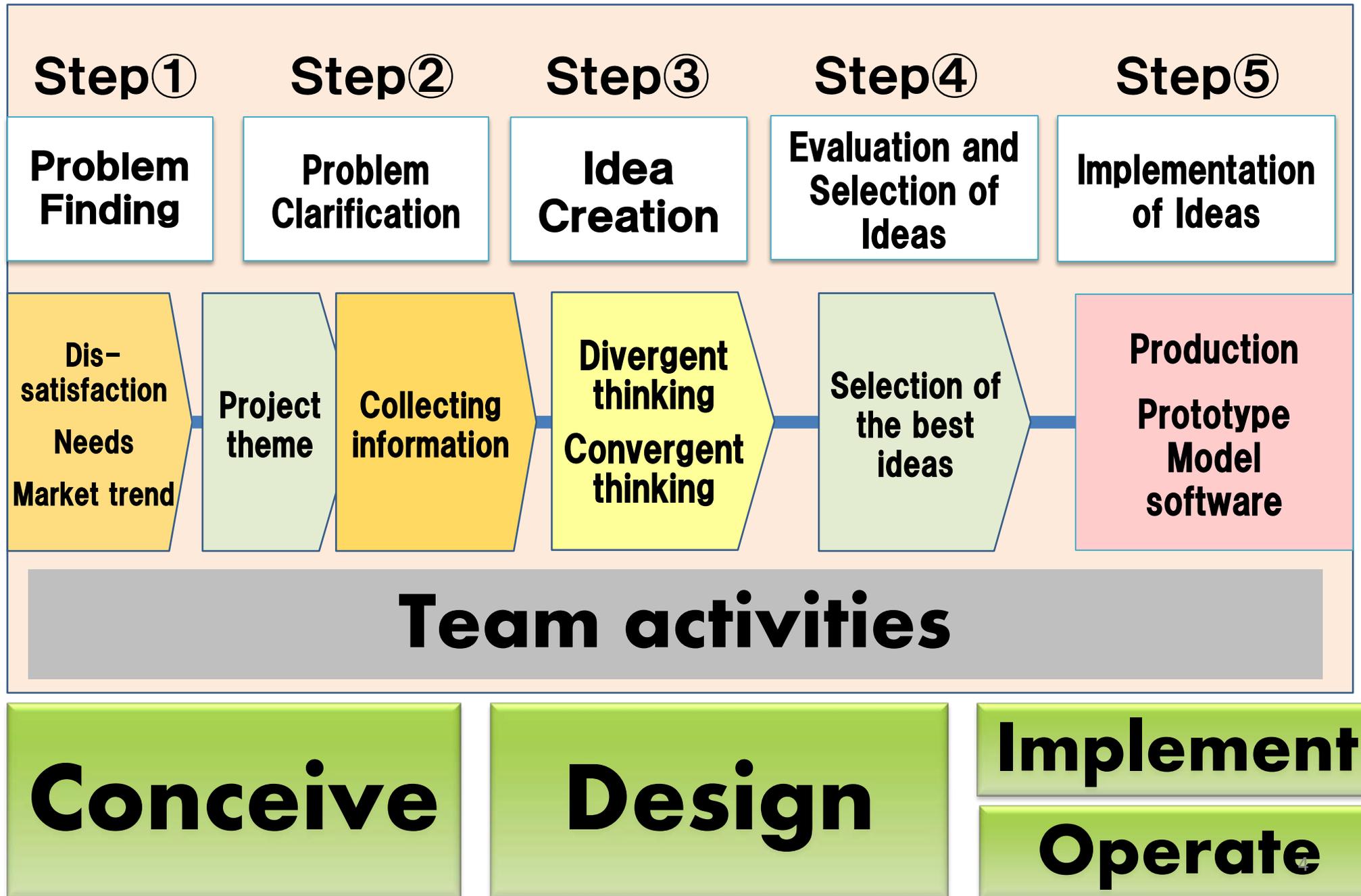
Basic Exp. Safety

Subject

Note DP: Design Project I&O: Implement & Operate



# KIT-PBL Design Process and CDIO



# Key Point of KIT-PBL Education

KIT-PBL education is aimed at developing the habit of thinking independently and acquiring useful technical thinking and skills that are useful for society.

It is necessary to carry out the education, as follows

**Students are happy to study matters of interest.**

**Wisdom =  
knowledge + knowledge**

**Praise  
the student**

To, instill **confidence** from interest  
To **motivate** through praise  
To **inspire** with high achievement

**Basic academic  
skills + Curiosity**

**Invention**

**Discovery**

# Practical Examples of Regional Cooperation with CDIO

**Project theme :**

## **Efficient Wind Turbine Generator**



2013  
2EM-E5 Team

# Step① Problem Finding

## Problem:

Direction of natural wind changes often.  
Power generation efficiency decreases.



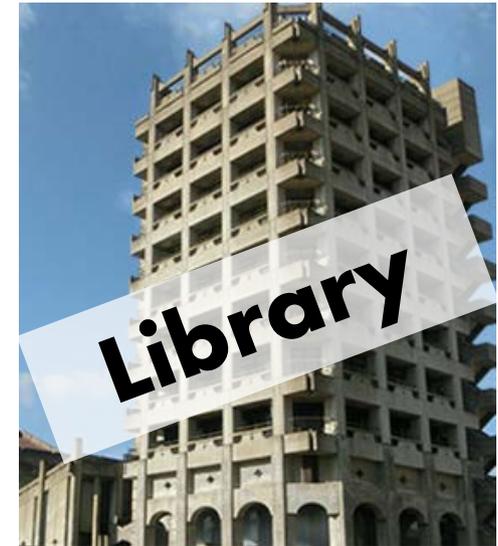
# Step② Problem Clarification

## Collecting information

Internet



Books

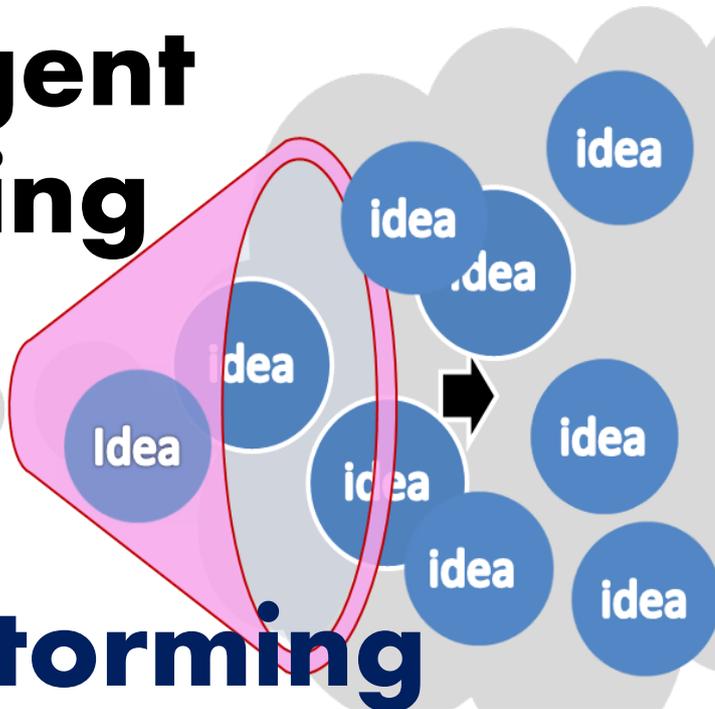


## Collected Wind Turbine Generator Examples



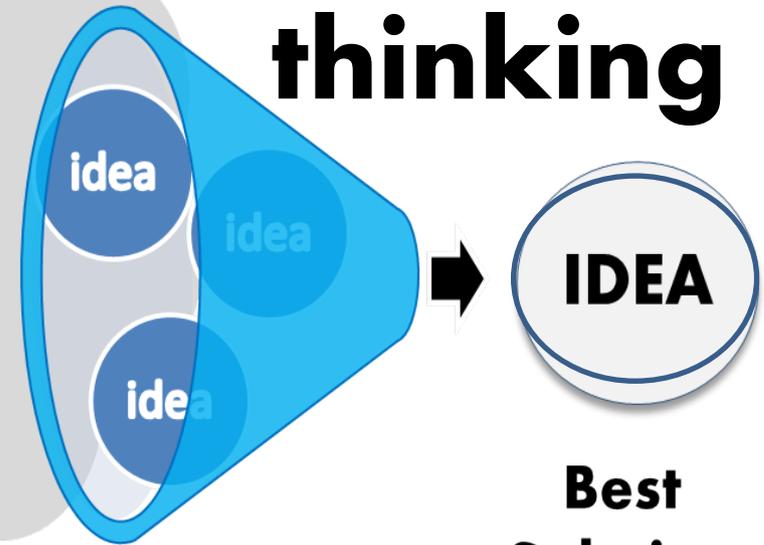
# Step③ Idea Creation

**Divergent thinking**



**Brainstorming**

**Convergent thinking**



**Best Solution**

**View Point**

**Novelty!**

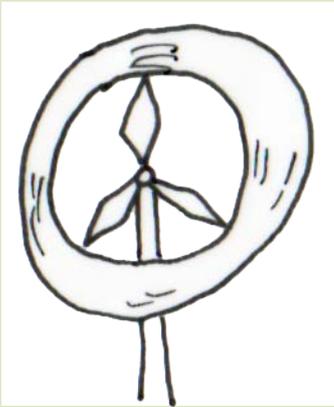
**Inventive step!**

**Practical applicability!**

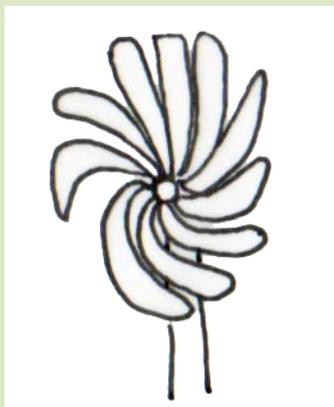


# Step④ Evaluation and Selection of Ideas

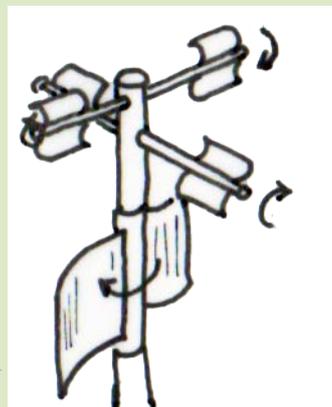
Ideas Created by team members



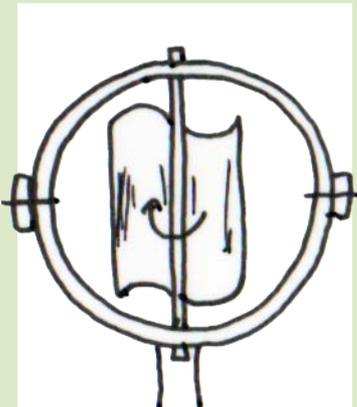
IDEA1



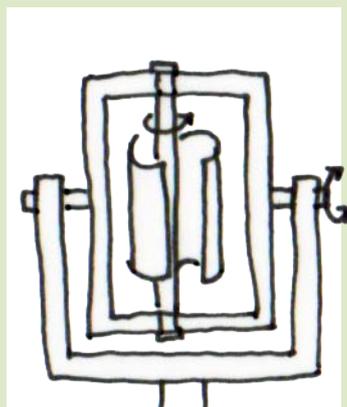
IDEA2



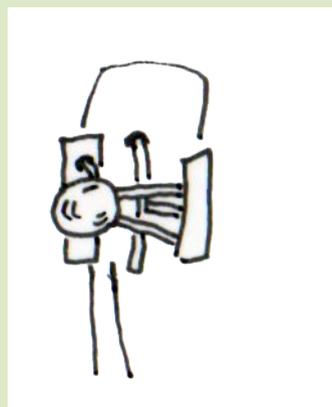
IDEA3



IDEA4



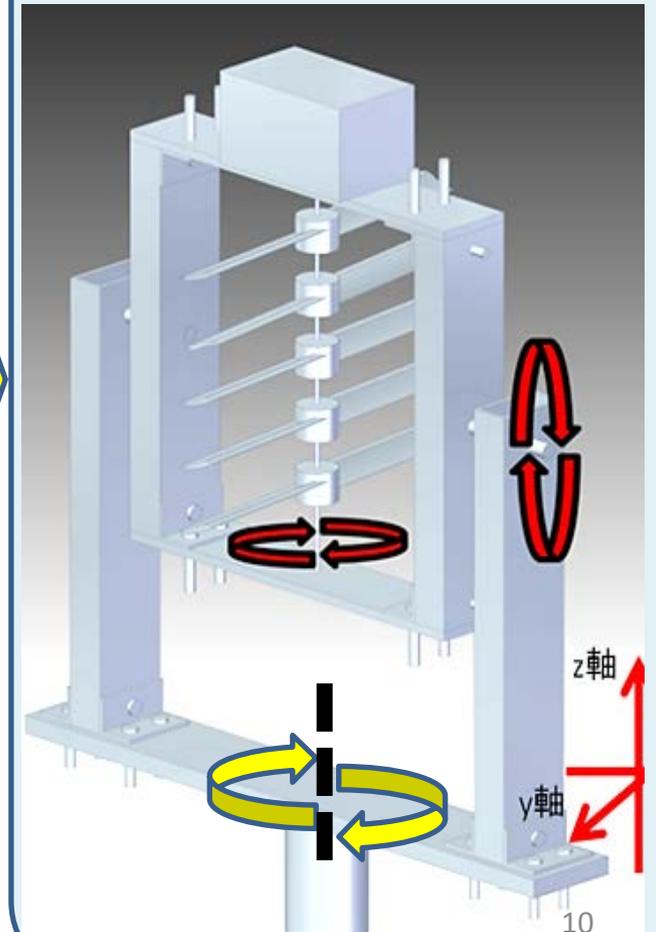
IDEA5



IDEA6



## 360° Rotative Wind turbine

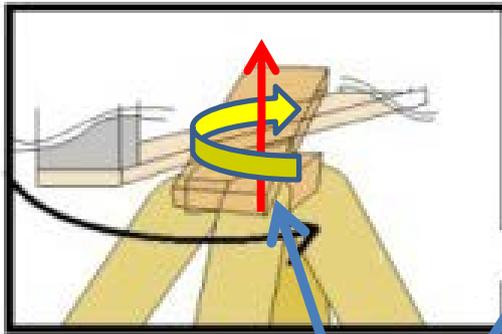


# Step ⑤-1

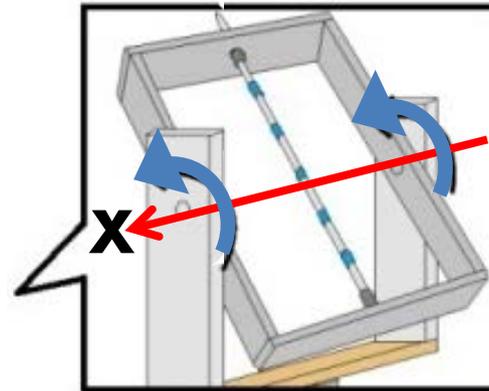
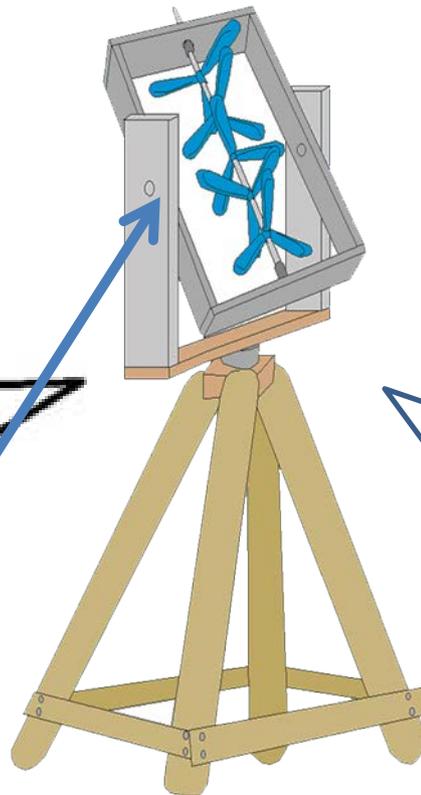
## Implementation of Ideas

Implement Mechanism to capture the wind from any direction

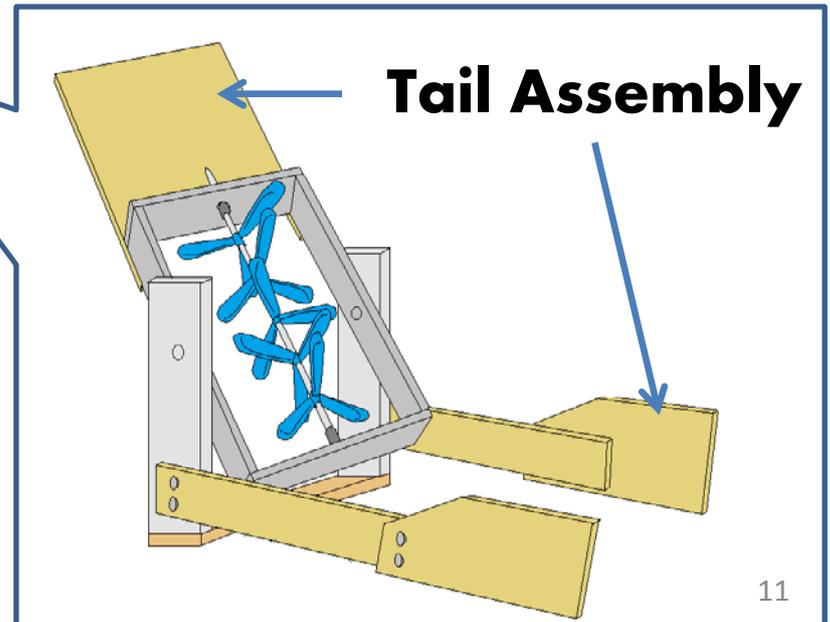
Smooth rotation using a bearing



Bearing



Rotation about X-axis

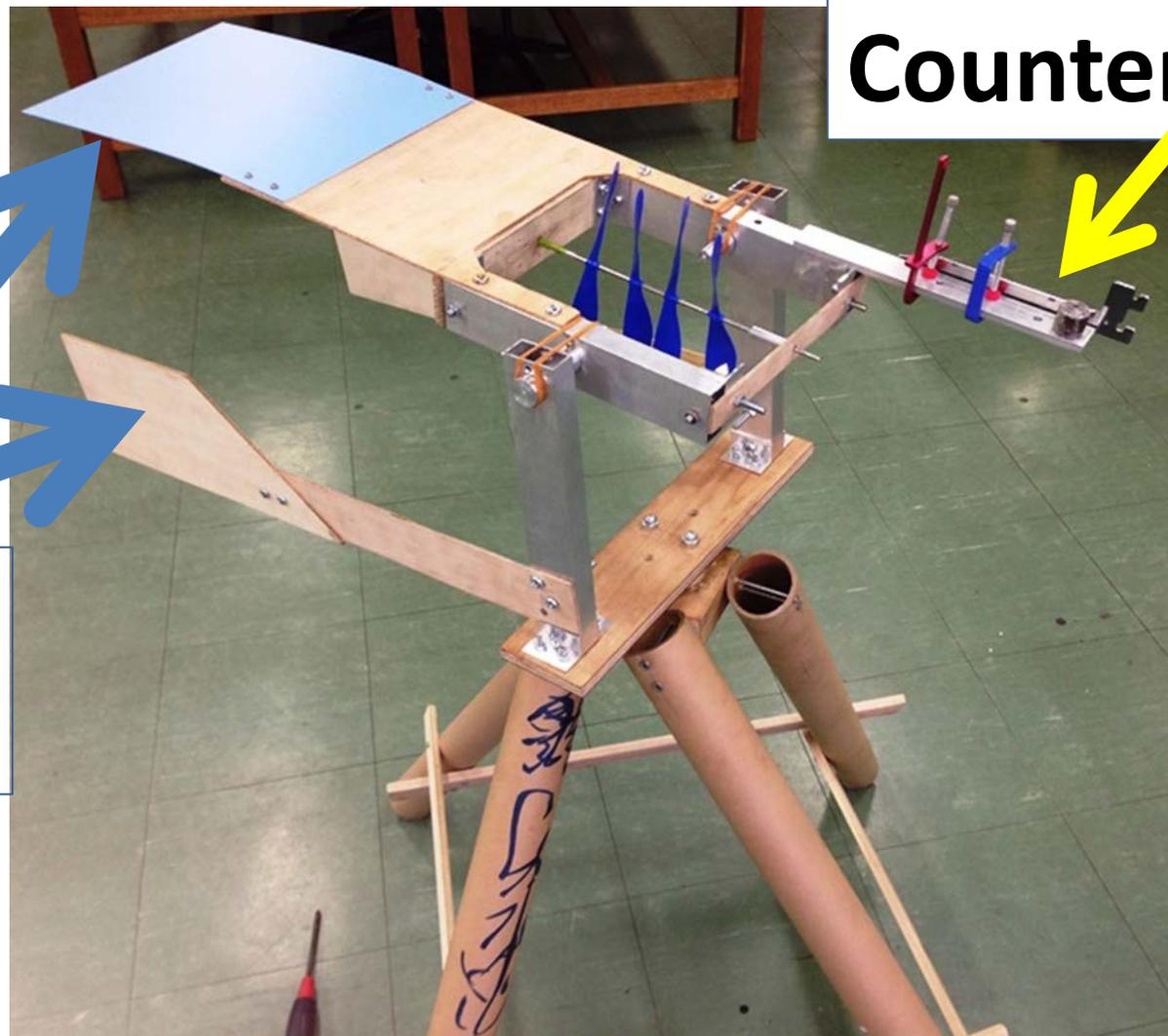


Tail Assembly

# Step⑤-2

# Implementation of Ideas

## Completed Wind Turbine Generator



Counterbalance

Tail Assembly

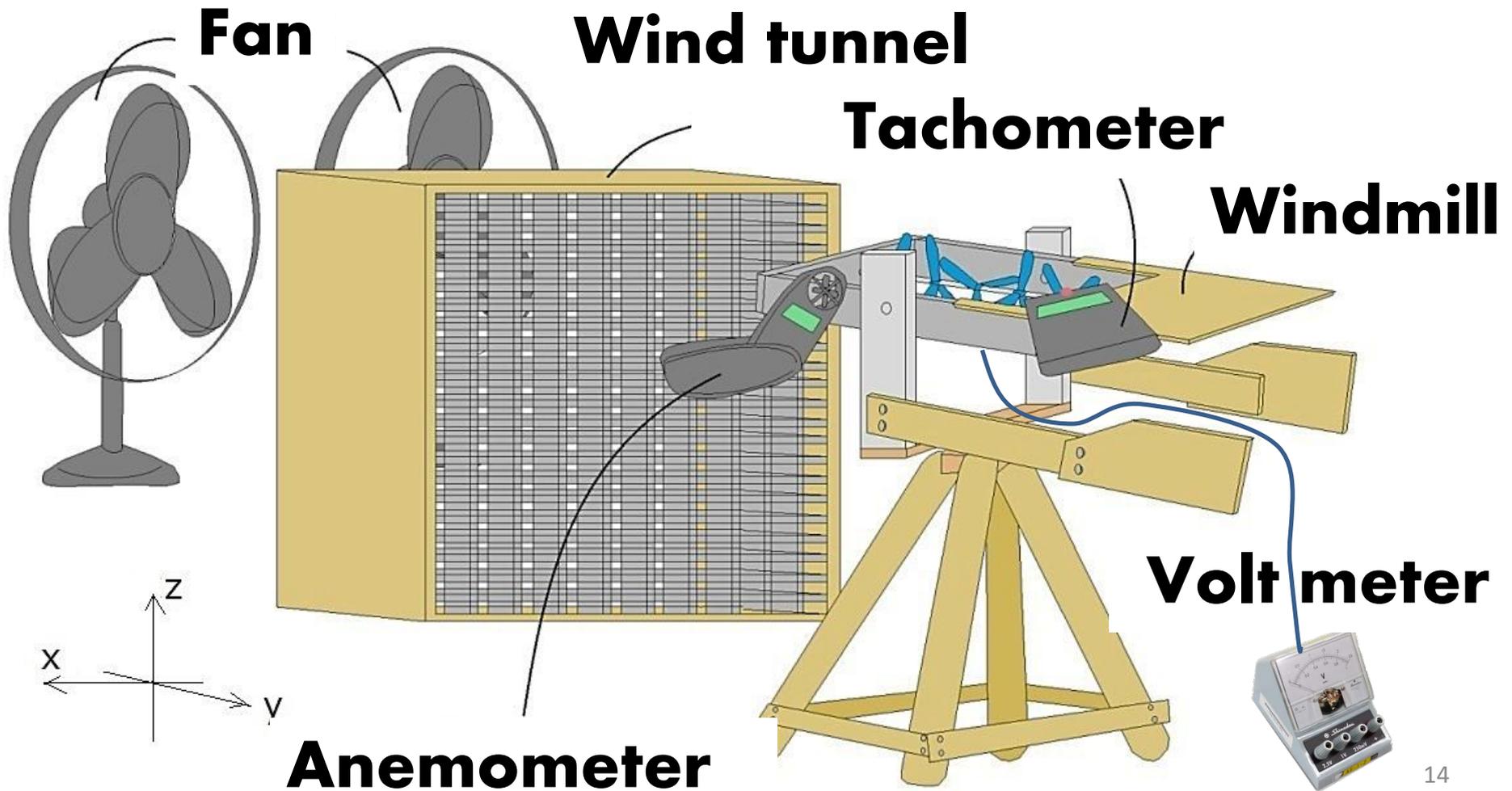
# Step⑤-3 Operate

About 50 laboratory tables  
And 5 laboratories



# Step 5-4 Operate

## Power generation experiment with varying wind direction



# Presentation & Mutual Evaluation

Check item: **Novelty! Inventive step! Practicability!**

Advice: **Information, New ideas, Improvement**



# Thank you for your listening



**Best Poster Award**