

Germany-Japan Joint Symposium for University Presidents (April 26-27, 2018)

**“Education, Research, and Innovation-The Universities’ Way
Forward in Collaboration with Society, Business and Industry
while Enhancing Academic Core Values”**

**A: Universities’ Collaboration with Soc.-Bus.-Ind. in Education
Introductory Statements**

Prof. Dr. H. Sakaki

Toyota Technological Institute: TTI 豊田工業大学 (2007-2018)

University of Tokyo (1964-1973-2007)

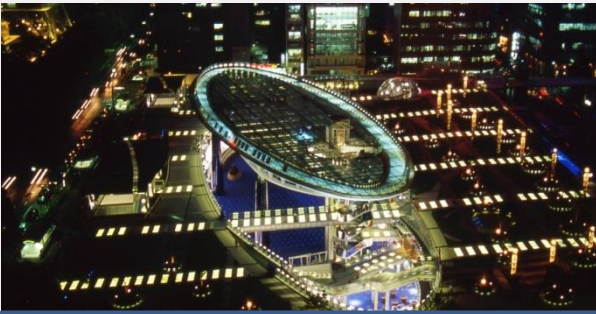
Semiconductor Electronics

Kyoto University (Advisory Board Member)

Technical University Munich (IAS: Advisory Board)

TTI-Chicago (Board of Trustee Member)

IBM Watson Research Lab. Dr L. Esaki’s Group (1976-77)

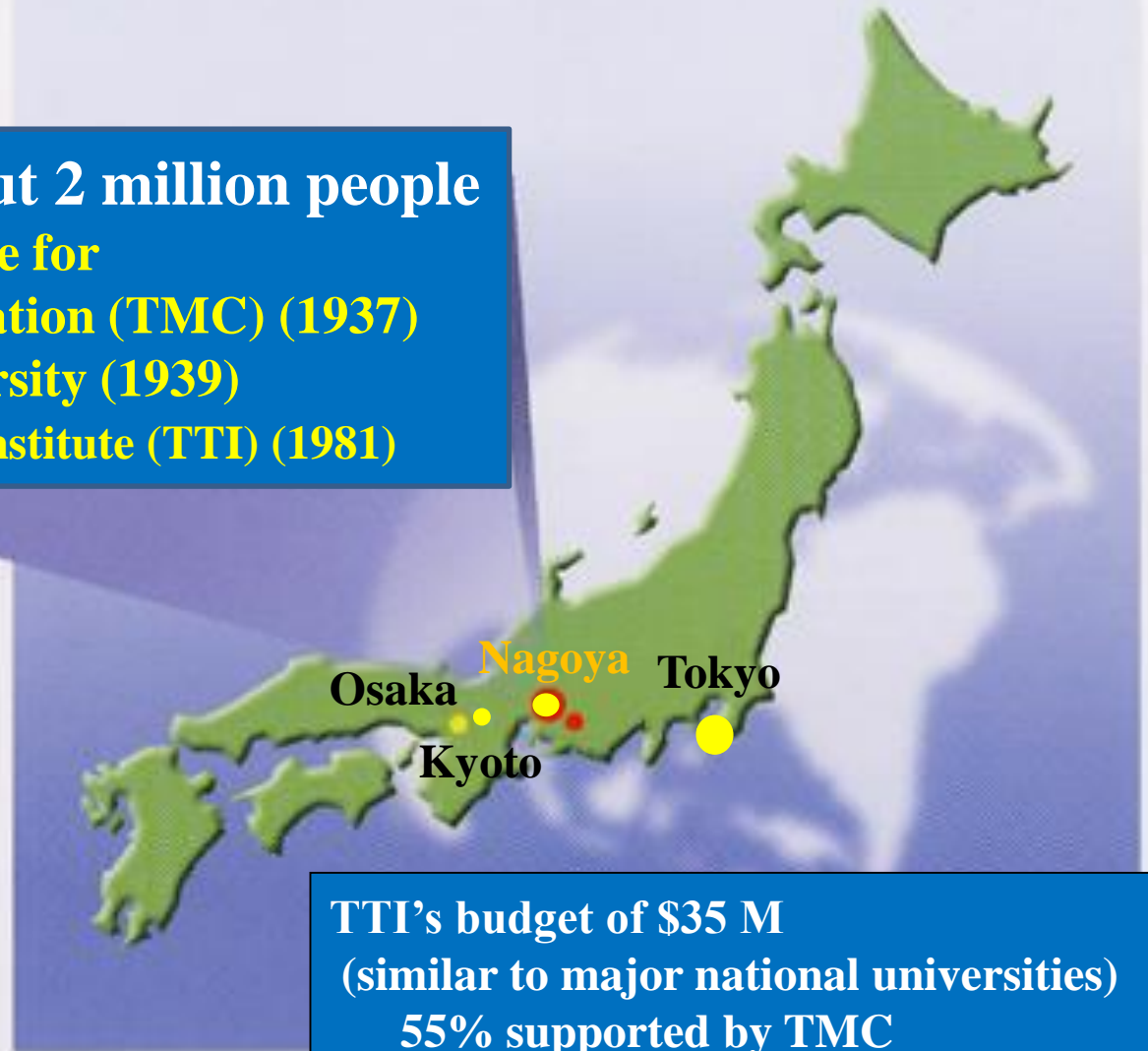


Nagoya, Toyota, Nagoya Univ. and TTI

Nagoya: city of about 2 million people
the home for
Toyota Motor Corporation (TMC) (1937)
Nagoya University (1939)
Toyota Technological Institute (TTI) (1981)

TTI: a tiny college of engineering
400 students
100 graduate students.

.....
Founded in 1981
as one of TMC's
social contributions



TTI's budget of \$35 M
(similar to major national universities)
55% supported by TMC
35% earned by funding etc.
10% from the tuition (\$6k/yr)

Toyota Technological Institute (TTI) 豊田工業大学

was founded on the basis of the idea of *Ki-Ichiro Toyoda*, who founded TMC in 1937. He was a graduate of Tokyo University (Mechanical Engineering) and noticed that the progress of technology, industry and society is made possible only by quality professionals. **He wished to build a college in future to educate such professionals in order to contribute to society.**

Sakichi, Ki-Ichiro's father, a self-educated inventor, developed in 1900-25 advanced automated looms and formed Toyota Group; he left the words:
***“Respect the spirit of research and creativity,
and always strive to stay ahead of times”***

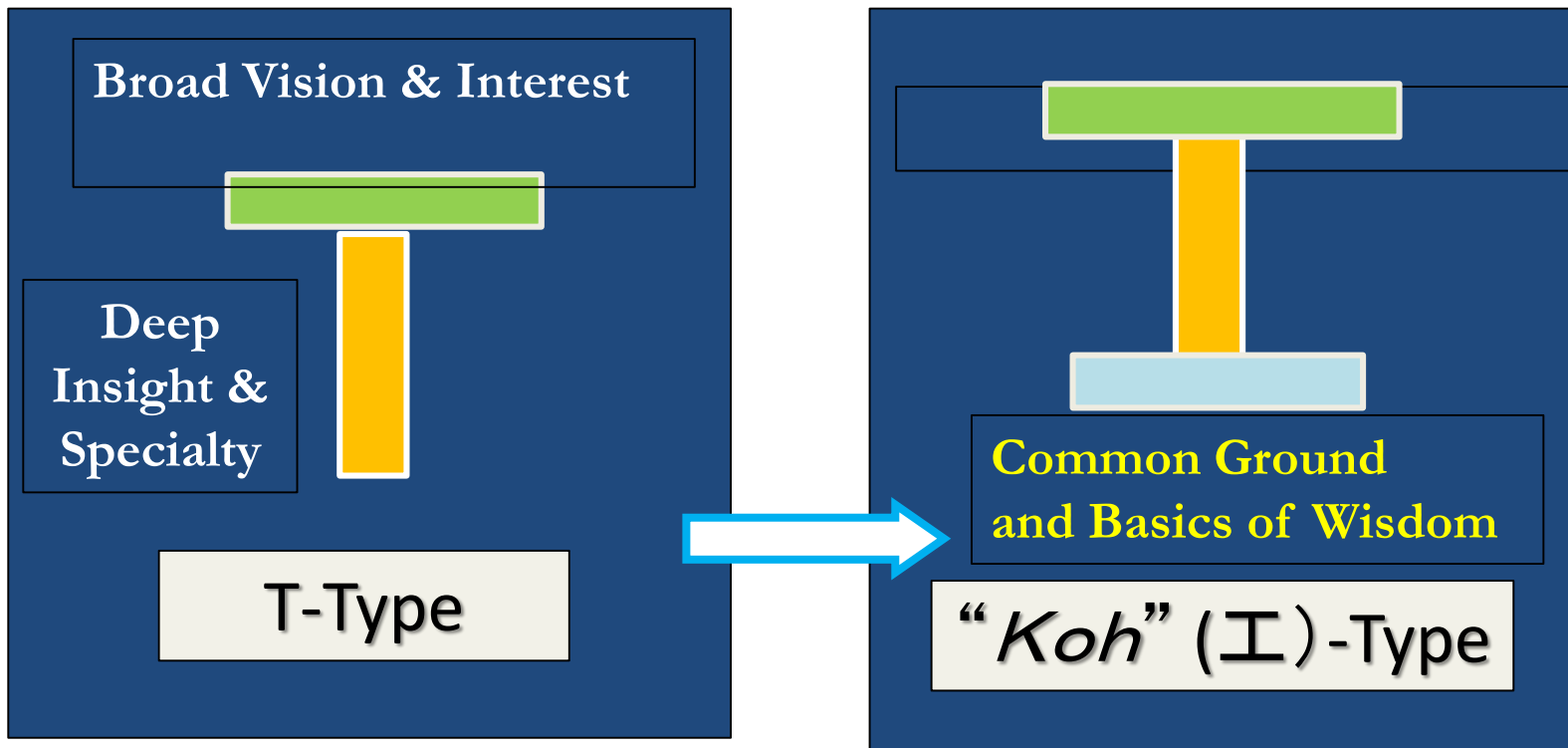
This motto is taken as TTI's guiding principle of its education and research.

Two Questions Given by The Symposium Organizers:

- 1. How Do We Interlink Subject-Specific and General Education?***
- 2. How Do We Let Students Acquire Management Skills and Entrepreneurial Mindset (Competences to Work in Society and Create Future Society) ?***

Way to Interlink Subject Specific and General Education

J. S. Mill (1867) Universities Should Educate Those Who Know
Everything about Something and Something about Everything

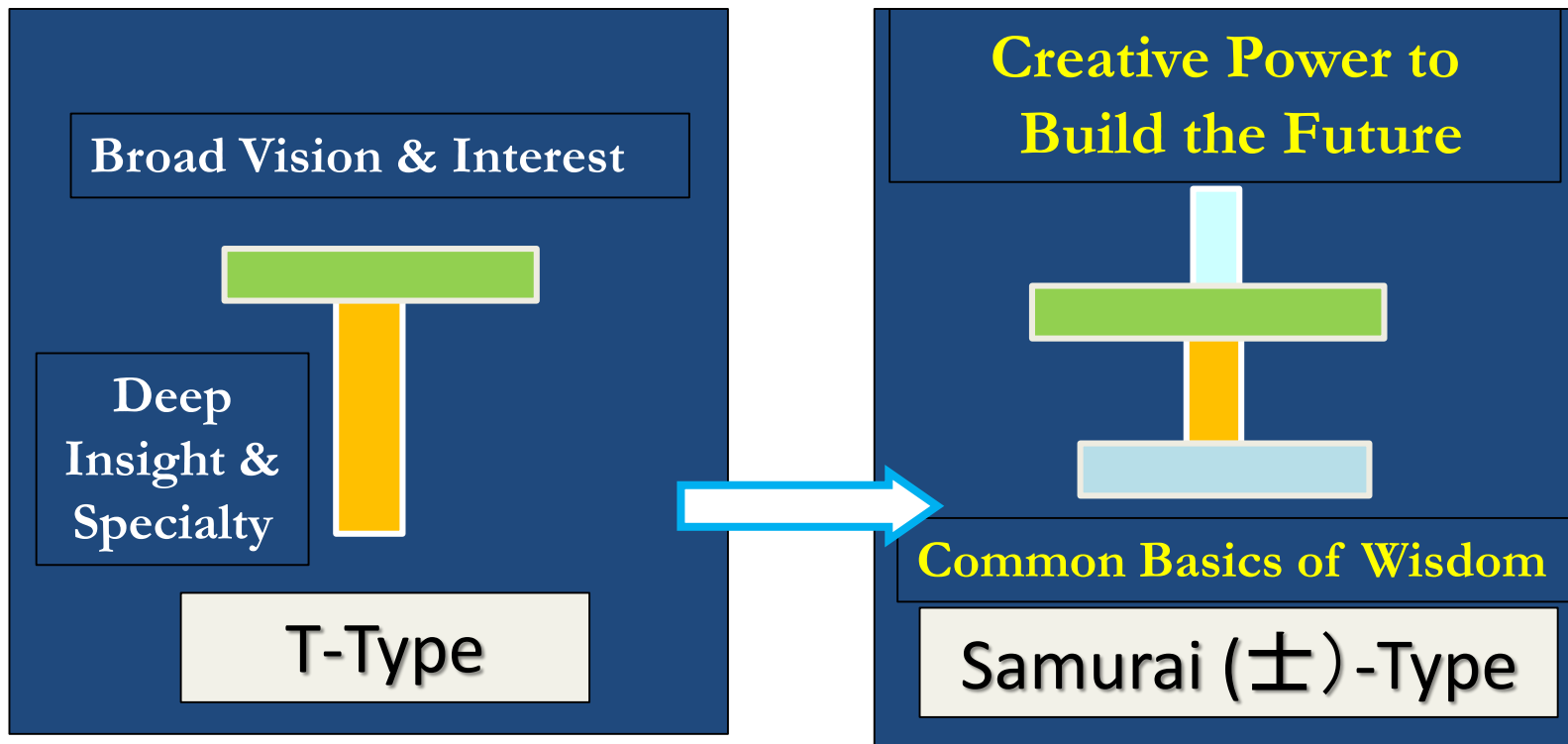


A Mere Collection of Vast Knowledge Is Time Consuming

Mastery of the Common Ground of Wisdom Is More Important

If One Can Understand Various Phenomena in Terms of Key Concepts

How Do We Provide Students Opportunities to Acquire
“Management Skills and Entrepreneurial Mindset” ?
“*Competences to Work in Society and Create Future Society*”



“Creativity” is give to everybody and driven by the mind to improve the situation around you, no matter small small it may be”

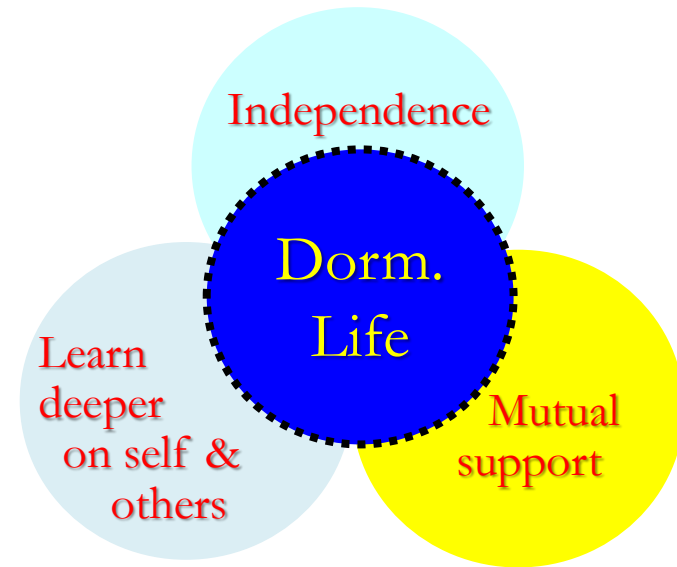
5 Key Features of Education at Toyota Technological Institute

- (A) Building **Broad Vision and Sense of Humanities**
via Liberal Arts Education and Dormitory Life
- (B) Mastering **Common Basics of Techno-Disciplines**
via Basic STEM and Field-Specific Education
- (C) Emphasis on **Experiential Education**
via Campus and Off-Campus-Intern Programs
- (D) Building **the Spirit of Creativity** Step by Step
from the 1st Day to the Graduate Research
- (E) Building **Global Cultural & Verbal Adaptabilities**
via On-Campus and Oversea Programs

A. Building Broad Vision and Sense of Humanities

▼ Dormitory Education (1st Year)

Away from home and amid new friends students forge themselves through the mutual support of daily studies and life.



▼ Advanced Liberal Art Education

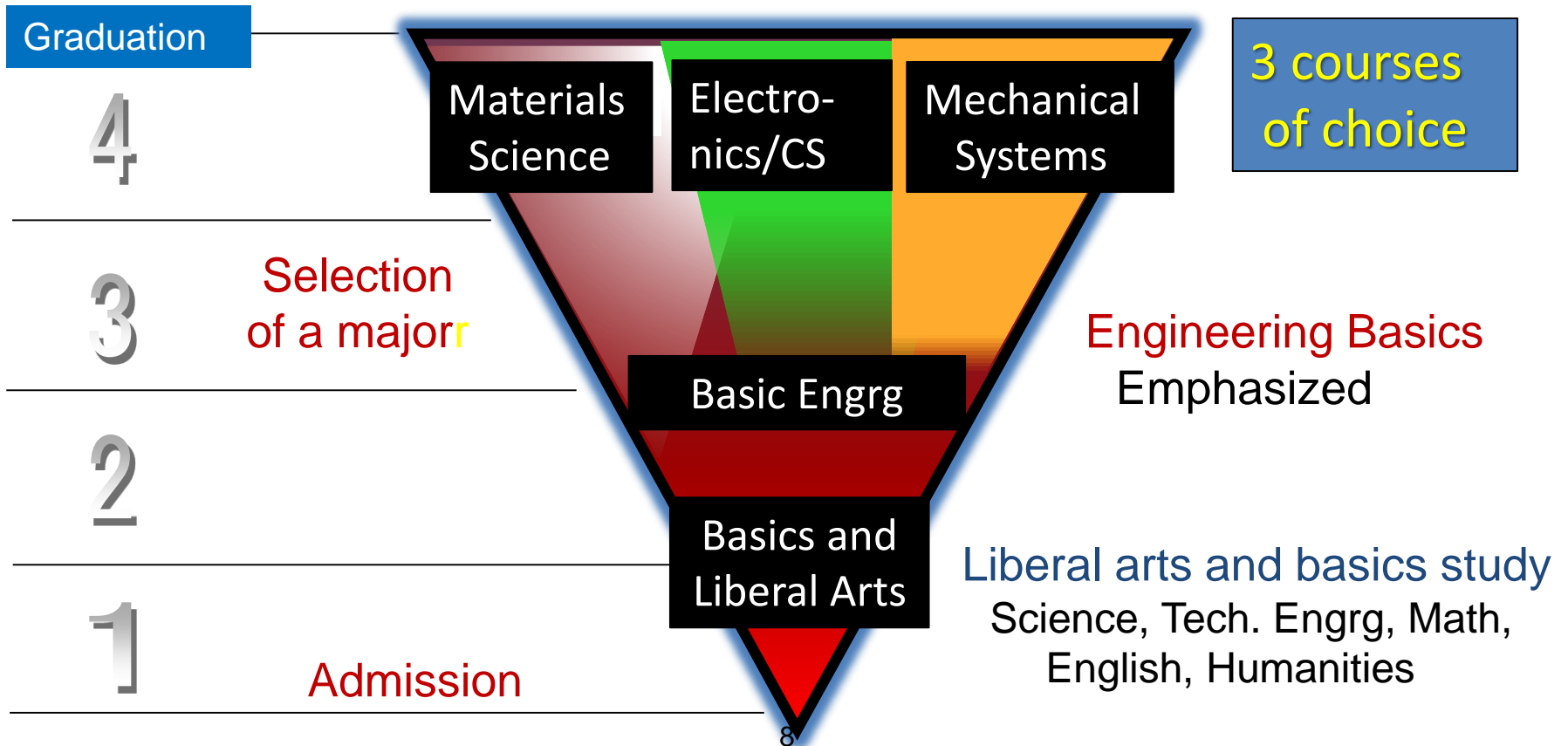
From "Philosophy Study" to "Sci-Tech & Man-Society" Class



- Humanity education, strengthened by using the support of a partner, Nanzan University.
- Humanity lessons for graduate students broaden their views: guest speakers include lawyers, CEOs, journalists, brain scientists.

B. Mastering Common Grounds and Basics of Various Academic Disciplines

Choice of a course as major in the 3rd year
Taking a 2nd course as minor recommended



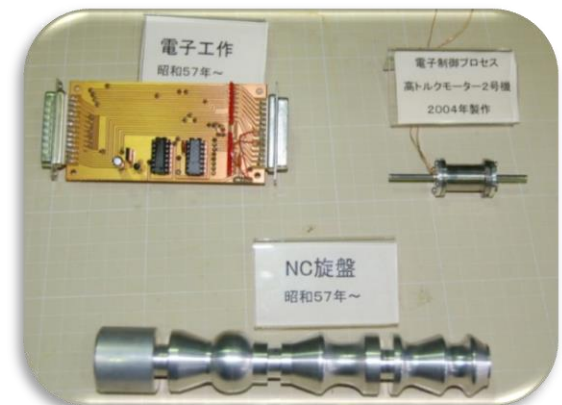
C. Emphasis on Experiential Education

Hands-on-experience of “mono-dzukuri”

1st /2nd year students learn by experience key fabrication steps by using machine-shop and clean-room facilities

Internships in industry and overseas

Every BA student gets twice one-month internship in industry:
1/3 of master-degree students get oversea R/D internships



D. Building **the spirit of creativity** step by step



“Innovation Contest”

In the 1st 3 months of admission, each group of 8 new students in the dorm competes each other by finding a daily-life problem and solving it in an innovative way.

▼Ex. Label peeler for PET bottles



▪ Challenge in the 2nd/3rd year

Fabrication of EV-Robots

Developments of smart machines by cross-disciplinary teams

▪ Challenge in the 4th year

Undergraduate Research

▪ Others Bird-man contest