

Novel Japan University Model

Reform of Education in Graduate School

May 9, 2024. Seoul
Korea-Japan President Meeting



Hokkaido University

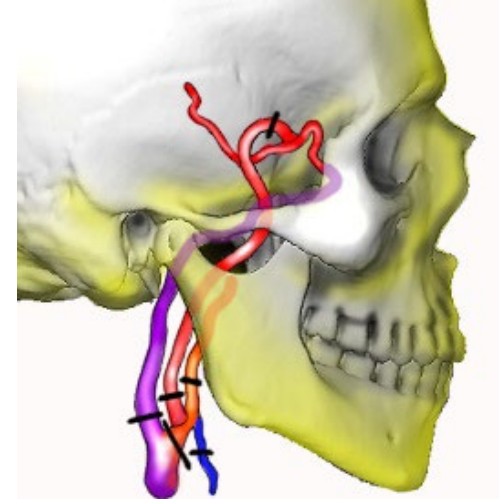
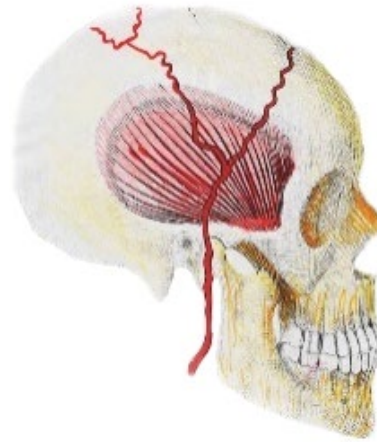
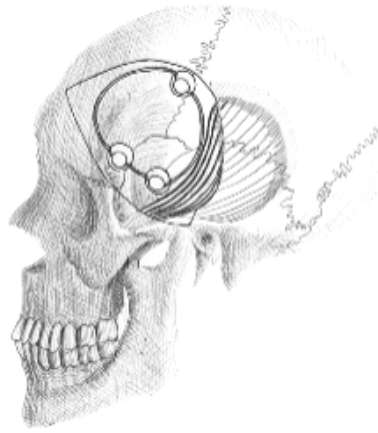
President Kiyohiro Houkin



Self-Introduction



- 1954 Born in City of Sapporo
- 1973 Grad. Sapporo Minami High School
- 1973 Enter Hokkaido Univ.
- 1979 Grad Hokkaido Univ.
- 2001 Prof. Sapporo Medical Univ.
- 2010 Prof. Hokkaido Univ.
- 2013 President of Hokkaido University Hospital
- 2020 President of Hokkaido University





Today's Topics

1, Brief Introduction of JANU and Hokkaido University

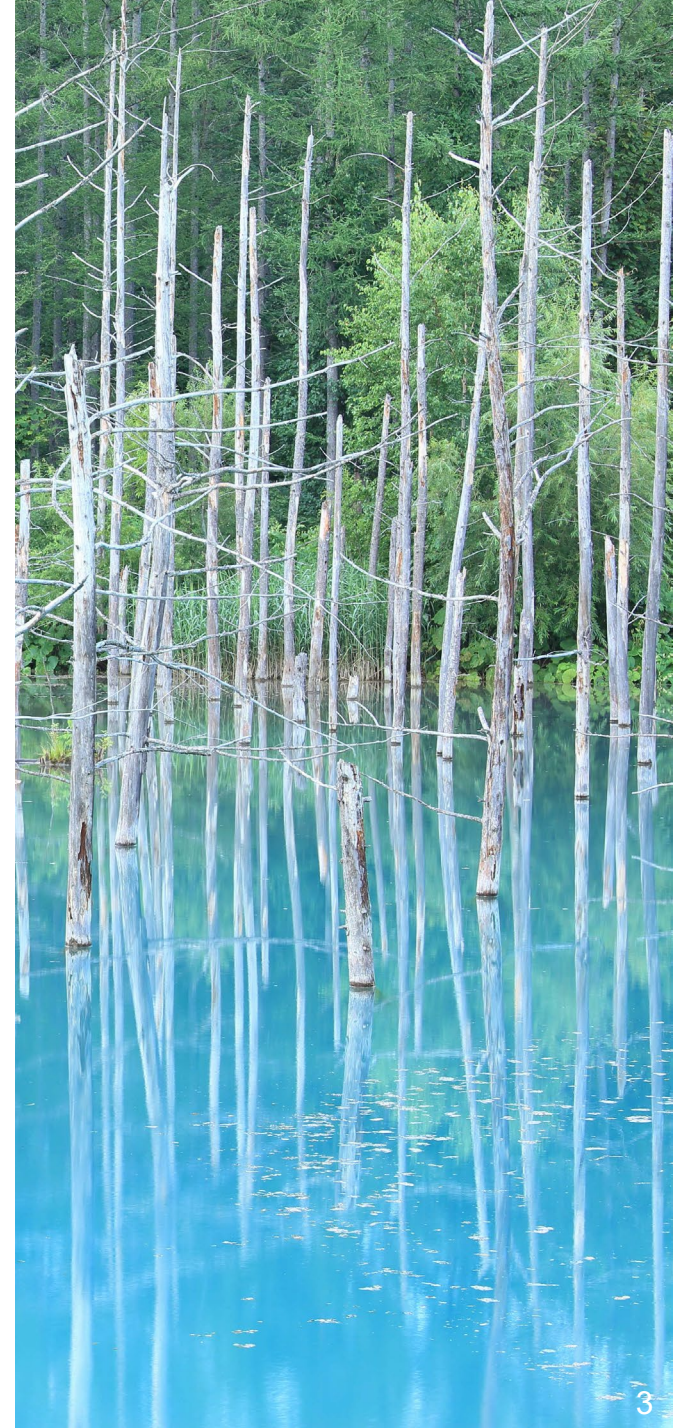
2, Novel Japan University Model

3, Reform of Education in Graduate School

a) Current Situation of Ph.D. in Japan

b) Reform of Graduate School

c) Take-home message





About JANU



The Japan Association of
National Universities

➤ History

Founded in 1950

➤ Members of the JANU

- All national universities in Japan; **86**
- Inter-University Research Institute Corporations ; **4**

➤ Activities

Research on various policy issues on higher education and research.

Issue statements and proposals to the government and to the general public.

Support to national universities their better management and development, etc.

Edo Period (~ 1868)



William S. Clark

1876 Established as **Sapporo Agricultural College**

1907 Became **Tohoku Imperial University**

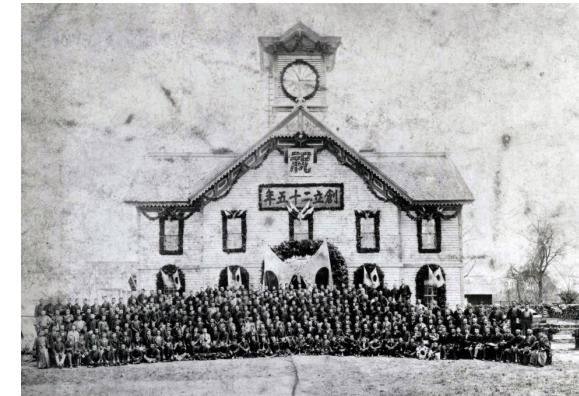
1918 Became **Hokkaido Imperial University**

1947 Renamed to **Hokkaido University**

2004 Became **National University Corporation Hokkaido University**

2021 History of over 145 years !

2026 150th anniversary



12

Undergraduate Schools



Humanities & Human Sciences



Education



Law



Economics & Business



Science



Medicine

11,561 Students



Dental Medicine



Pharmaceutical Sciences & Pharmacy



Engineering



Agriculture



Veterinary Medicine



Fisheries Sciences

21

Graduate Schools



Law



Fisheries Sciences



Environmental Science



Science



Agriculture

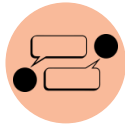


Life Science



Education

6,552 Students



International Media, Communication & Tourism Studies



Health Sciences



Engineering



Chemical Sciences & Engineering



Economics & Business



Medicine



Dental Medicine

18,171 Students



Veterinary Medicine



Biomedical Science & Engineering



Infectious Diseases



Global Food Resources



Humanities & Human Sciences



Information Science & Technology



Public Policy

Including 2,057 International Students



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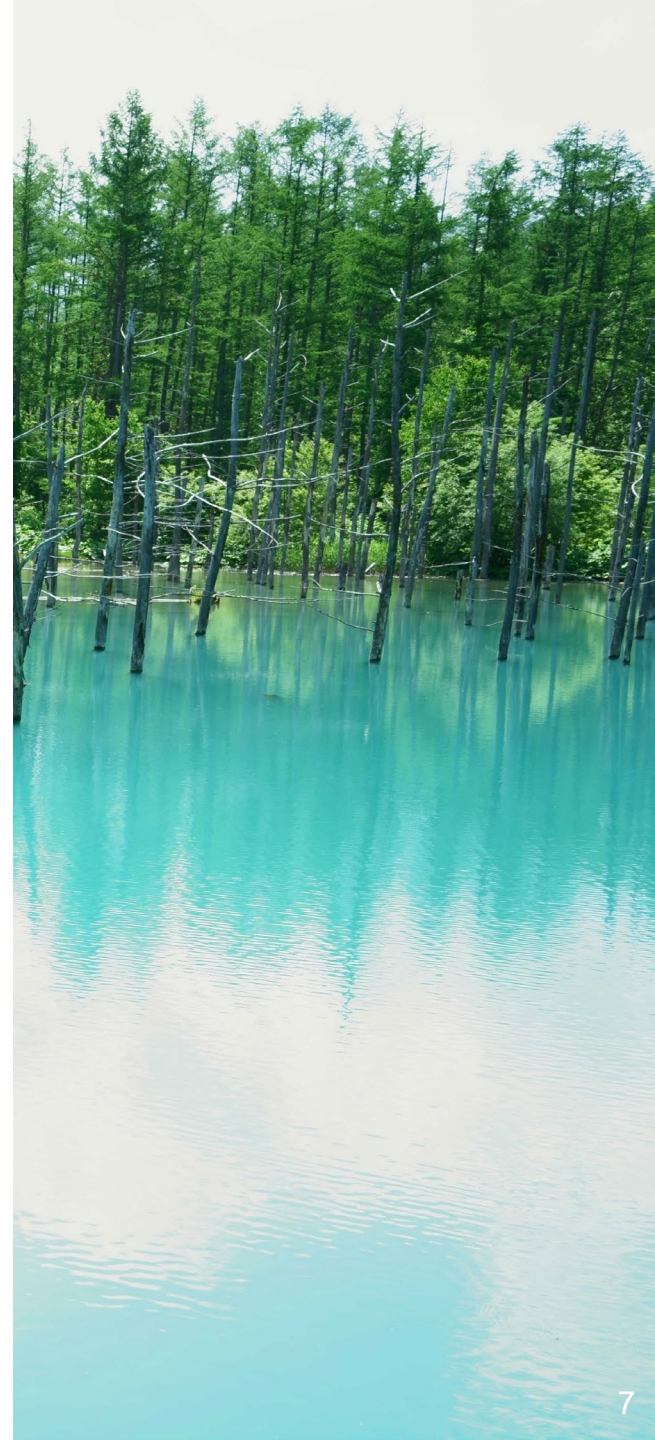
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Transition in Philosophy of Modern University

1, Humboldtian Model of Higher Education : Berlin University in 1810

Holistic combination of Research and Education

Integration of Arts and Sciences

In 1800s, 80% of Japanese scholars studied in Germany

Comprehensive general learning and cultural knowledge

2, Land Grant Colleges in USA in 19th century (Morrill Act)

M.I.T. Professional Education

Social service station university

pragmatism

Graduate School University

Harvard, Yale, Princeton, Columbia



Hokkaido Univ. : Land Grant University (Only one in Japan)

Morrill Land-Grant Acts (1862)

Laws that allows the creation of land-grant University (Agriculture and Engineering College using proceeds from sales of federal owned land.

3, Neoliberalism University (Academic Capitalism)

Bayh-Dole Act (1980, U.S.A.)



Academia-Industry Collaboration

Digital Transformation and huge Endowment and Investment by University

Harvard, Oxford, Stanford

4, Reform of University in Japan in late 20th century and 21st century

1999 Japanese version of Bayh-Dole Act



University as an engine of reform and innovation of the society



Society 5.0 (Japanese Version of highly digitized society)



Collaboration with Public Sector and Promotion of Start-Up



Humboldt University vs. 21st Century University

	Humboldt University	21 st Century University
Research	Curiosity Driven Research	Issue Driven Research
Education	Liberal Arts	On the Job Training
Goal of Human Capital	Global Citizen	Specialty. Human Resource
Co-creation with Society	Social Impact	Industry-Academia Collaboration
Relation to Politics	University Autonomy	Policy Supporting University

Novel Japan University Model

	Humboldt University	21 st Century University	Novel Japan University
Research	Curiosity Driven	Issue Driven	Dual Driven Research
Education	Liberal Arts	On the Job Training	Convergence Knowledge
Goal of Human Capital	Global Citizen	Human Resource	Global Citizen
Co-creation with Society	Social Impact	Industry-Academia Collaboration	Social Impact Colab/ Regional Public Sector
Relation to Politics	University Autonomy	Policy Supporting University	Social Innovation

Population Increasing Society Model

New American University Model



We measure ourselves not by who we exclude, but rather by who we include and how they succeed.



HU

Hokkaido University



Novel Japan University Model

Population Declining Society



Excellence

Education & Research Excellence
in Science and Technology

Novel Japan University Model

HU VISION 2030

Creation of Sustainable Well-being in Society

Pursuit of Sustainability

Co-creates with education, research, and society and with "SDGs" as a common language and contributes to the resolution of global issues by maximizing the vast and rich field assets along with the campus environment

Creates an international campus in addition to promoting collaborations with partners and people from various countries, regions, and organizations

Supports university operations through transverse initiatives

Fosters education and research environments to ensure diversity, equity, and inclusion

International Collaboration

Diversity, Equity, and Inclusion

Education

Fosters people who play an active role in global and regional societies by acquiring advanced expertise, broad knowledge, and skills through interaction with diverse groups of people

Research

Enhances world-class research capabilities by leveraging the vast and diverse geographical fields and the wide range of scientific research that HU excels in

Co-Creation with Society

Promotes the resolution of issues for the future on both the local and global level and contributes to the achievement of sustainable development and well-being

Foundation of Activities

Governance

Achieves the proper university operation

generally recognized by society by ensuring fair and transparent decision-making

Financial Base

Pursues sustainable growth through

autonomous administration and a "virtuous cycle of people, knowledge, and funds"

HU VISION 2030

Ability to Expand Education and Research into Society and Solve Regional Issues

Extension

Core Values of Hokkaido University

Four Basic Philosophies

Frontier Spirit

Global Perspectives

All-Round Education

Practical Learning



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c) Take-home message

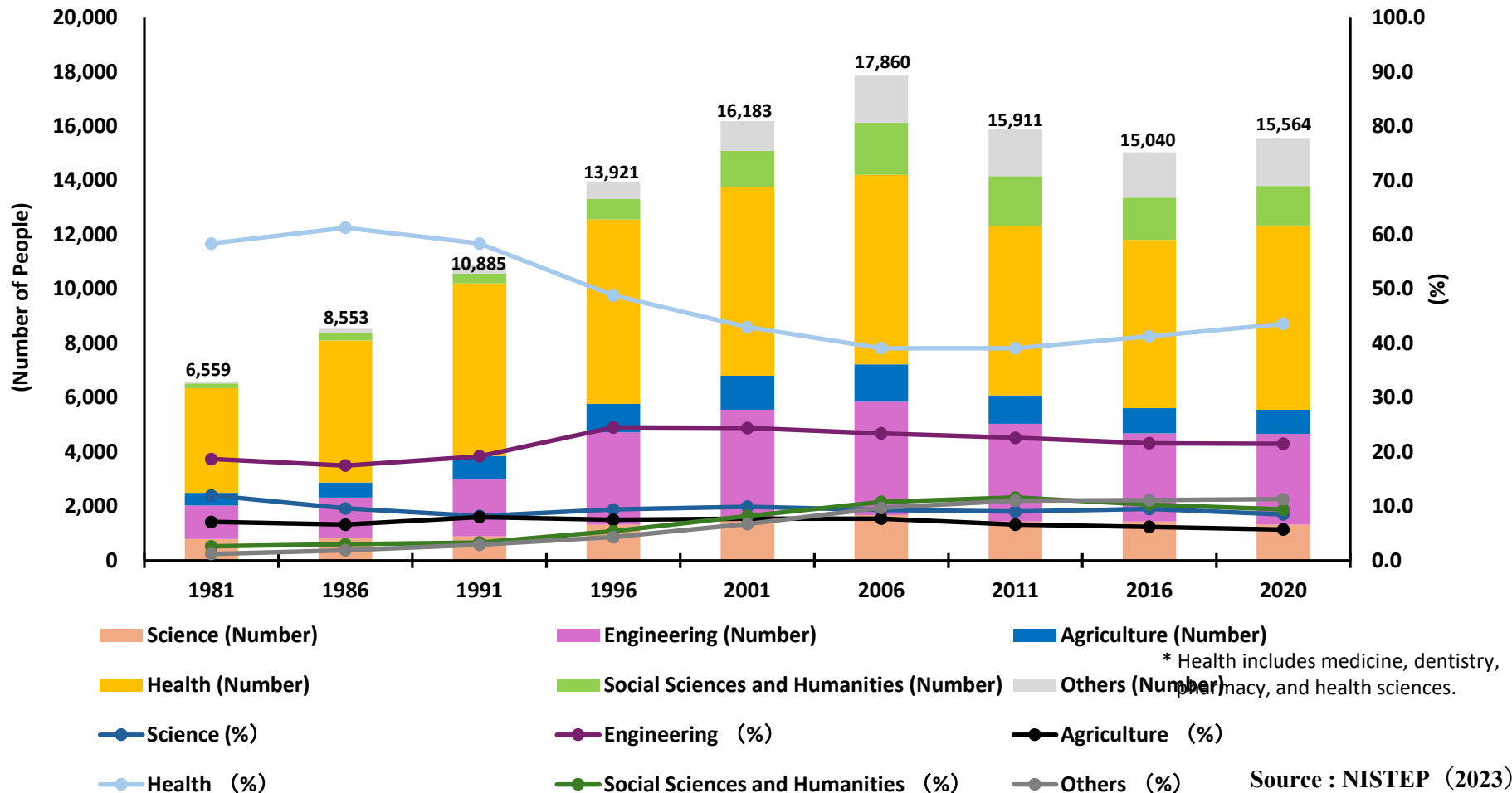




Doctoral degree holders in the present situation

Comparing the number of doctoral degree holders in major countries, Japan has a smaller number than other countries. In addition, the number of doctoral degree holders by main majors had continued to increase, but in the 2000s, the growth slowed, peaked in 2006, began to decline, and has remained almost flat since 2015.

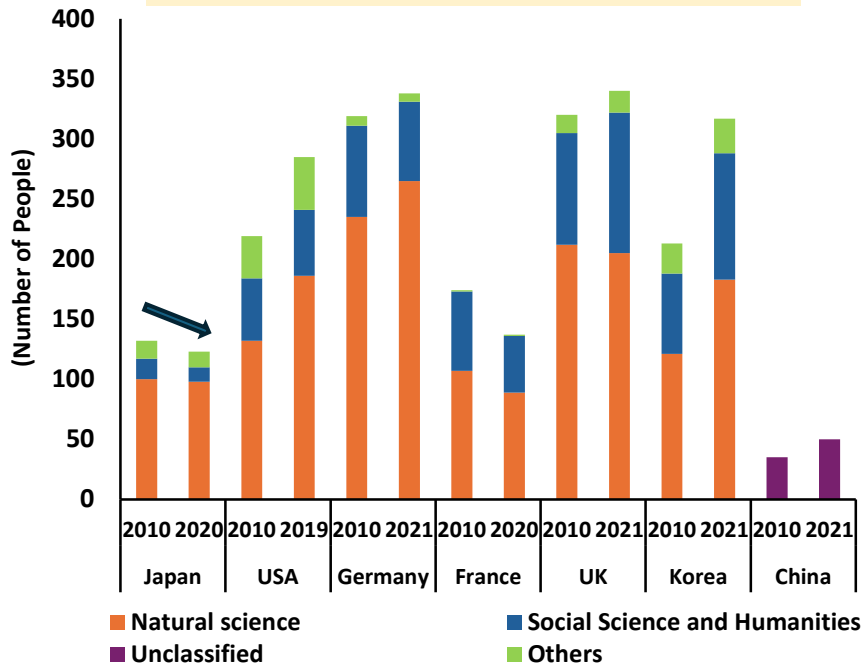
(3) Trends in the number of doctoral degree holders by main majors in Japan





Doctoral degree holders in the present situation

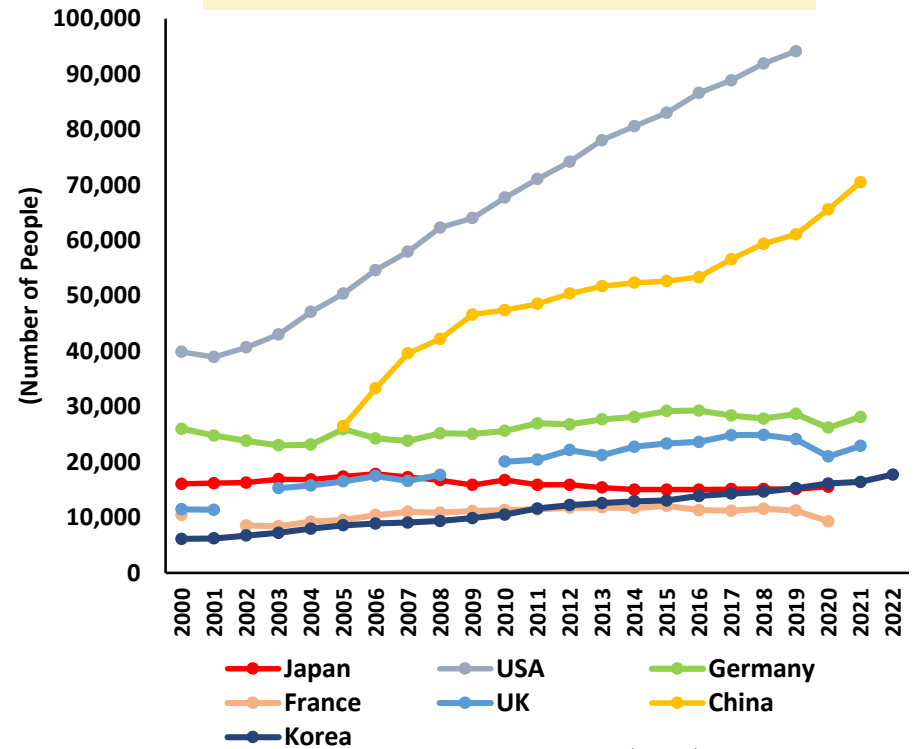
(1) International comparison of doctoral degree holders per a million people



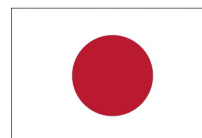
Source : NISTEP (2023)

Four of the G7 leaders graduated from graduate school.

(2) Trends in the number of doctoral degree holders in major countries



Source : NISTEP (2023)



Only one doctoral degree holder out of 35 postwar prime ministers in Japan.



Current Situation of HR Development

Single Line HR Development

Undergraduate School

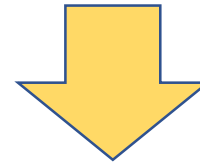


Bachelor

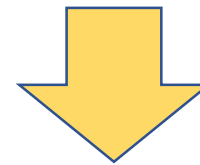


Business/Public Sector

Graduate School



Master/Doctor



Academic Position/Researcher



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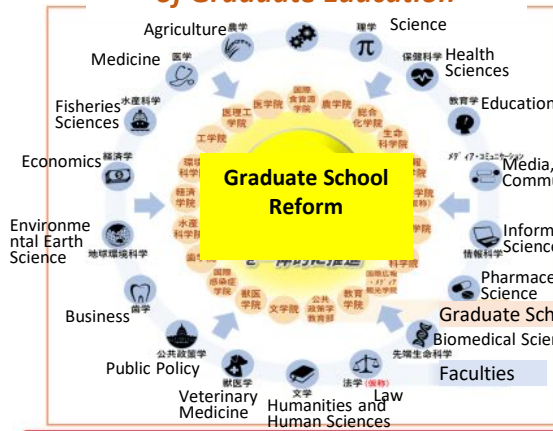




Creation of Diversity in Career Paths

University create diverse career paths for PhDs, including not only in academia and the private sector, but also promote entrepreneurship.

Institute for the Advancement of Graduate Education

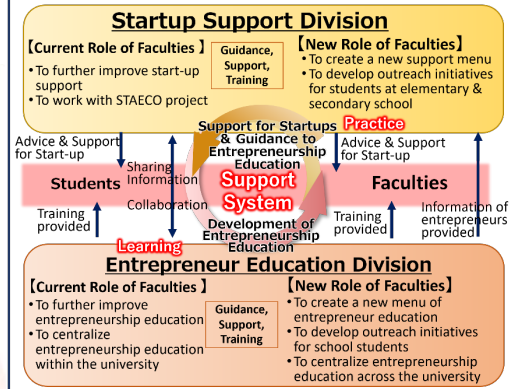


Regional Creation through Innovation Doctoral Human Resources



Institute for the Promotion of Business-Regional Collaboration

Startup Creation Department



Co-Creation Education Center

Doctoral students with advanced expertise and entrepreneurship will bridge the gap between society and innovation in the real world

Joint camp for doctoral students from different fields



DEMOLA HOKKAIDO



Industry-Government-Academia Programs



Science Festival



Expected Role

- To strengthen entrepreneurial teachers at the primary and secondary levels
- To make further use of entrepreneurial faculty in education throughout the university.
- To build a center for the creation of comprehensive knowledge and new value that draws out the potential of doctoral students

Business game practice



Prefectures for high school students





Transferrable Skill Development



Doctoral Graduates driving Society 5.0

<p>Connect with society</p> <p>— Connecting industry and academia</p>	<p>Career Path Support</p> <ul style="list-style-type: none"> • PhD. Dialogue • DX internships 	<p>Securing/maintaining on-campus posts</p> <ul style="list-style-type: none"> • Ambitious Distinguished Assistant Professor • Career path support for PhDs 	<p>Private Sector</p> <p>Academia (Research institutes and universities)</p>
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DX Doctoral Fellows driving Society 5.0

<p>Challenging and interdisciplinary research</p> <p>Ability to conduct research independently</p>	<p>Independent Research Proposal</p> <p>Integration studies, International Joint Research, Corporate Joint Research, Mentorship, Assistance in submitting academic paper, Analysis support</p>	<p>Laboratories placement in different field</p> <p>Collaborative Research, Research Internships</p>	<p>Supervisors in different field required</p>
<p>Proactive learning</p> <p>Abilities in:</p> <ul style="list-style-type: none"> • Promoting DX • International communication • Identifying challenges and leading to a solution • Integrating and developing research with different fields 	<p>Data Science Education</p> <ul style="list-style-type: none"> • Basic Skills Training Program • MANABIYA Courses: OJT-type training (cutting-edge research) • Doctoral Internships in IT industries 	<p>Entrepreneur Education</p> <ul style="list-style-type: none"> • EDGE-NEXT • HOKUDAI TECH GARAGE <p>Practical International Education</p> <ul style="list-style-type: none"> • Hokkaido Summer Institute 	<p>Cross-disciplinary Education</p> <ul style="list-style-type: none"> • CHANE Program • Liberal arts educational program

Clarifying student competencies

- Portfolio: Course and skill acquisition management system (online)
- Digital Badge

New Graduate School based on MANABIYA

Novel Laureate



Specially Appointed Professor and
Hokkaido University Professor
Benjamin LIST, Ph.D.



Chemical Reaction Design & Discovery



MANABIYA System



◆ MANABIYA courses (OJT-type training) by PI and Jr-PI

Academic



- Researchers in Academics
- PhD Graduate Students

Researcher Course

- ◆ Collaborative research
- ◆ Fostering young researchers

- MS Graduate Students

Young Researcher Training Course

Education

Industry

Researchers in Companies

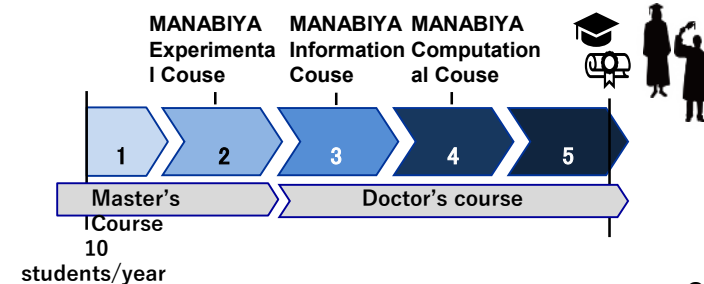
- ◆ Joint research with companies

- ◆ **Recurrent education programs**

Certificate of Chemical Reaction Design and Discovery

- ✓ Integrated five-year MS/PhD program
- ✓ Education by international faculty members
- ✓ Problem-based active learning
- ✓ Three MANABIYA courses are compulsory (experimental, information, and computational course)

Five-year Program Schedule





High Fluidity HR Development

Multiple Lines HR Development

University



Undergraduate School

Recurrent Education

Bachelor

Graduate School

Doctor • Master

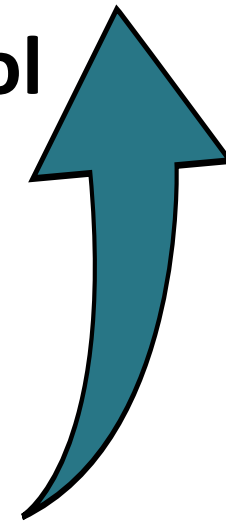
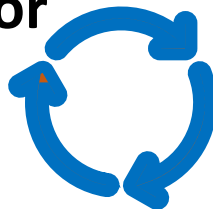
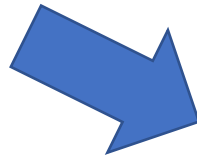
Public Sector

Company A

Start-up

Company B

Researcher



University where innovators are nurtured

Melissa Schilling Ph.D. New York City University

Marie Curie

University of Paris

Albert Einstein

ETH Zurich

Thomas Edison

No higher education

Steve Jobs

Withdrawal from University

Nikola Tesla

Withdrawal from ETH Graz

Jack Ma

Failure to pass/
poor grades

**Harsh learning environment,
poverty, lack of understanding of
surroundings**

Strange, unusual, obsessive-compulsive

Non-specialist

Boundaries of academic discipline

Elon Musk

Withdrawal from Stanford
University



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Summary (Take-Home Message)



1) The current postgraduate training system makes it difficult to train the highly skilled human resources demanded by a highly fluid VUCA society.

2) Systemic changes are needed to ensure that advanced liberal arts re-learning and transferable skills are 'acquired' in graduate school.

Drastic postgraduate reforms

3) In postgraduate education, the active participation of business is essential, using systems such as cross-appointment as a practical faculty member. This should be boldly promoted to become an ADVANCED CASE for joint industry-academia education.

Industry-academia collaboration and on-the-job training

4) With the declining birth rate, the domestic population of talented students is certain to decline, making it essential to attract overseas talent.

Acquisition of Overseas Students: Academic Immigration Policy