Internationalization of University Education in Japan



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Japan launches multimillion dollar program to internationalize university education

The inception of the Top Global University Project was precipitated by the perception amongst university administrators that Japan is losing ground in the globalization of education and research. The Japanese government is now undertaking a program to improve world rankings, increase international student ratios, and change the mindset of faculty and staff at select universities.

By Adarsh Sandhu

n September 2014, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) announced the selection of 37 Japanese universities for the 10-year, multimillion dollar Top Global University (TGU) Project, with the goal of "enhancing the international compatibility and competitiveness of higher education in Japan" (see Top Global University Project designations). Notably, the funding for this project is aimed at internationalizing education at Japanese universities, in contrast to funding for research-based reforms that was the aim of the 10-year Program for Promoting the Enhancement of Research Universities launched in the fall of 2013 (1).

The annual funding for the chosen universities is divided into Type A (¥420 million, US\$3.5 million) for those that have the potential to be ranked as one of the top 100 in the world, and Type B (¥172 million, US\$1.4 million) to support "innovative universities" in their efforts to internationalize.

With a view to openness and accountability, MEXT has posted the original 37 winning proposals for this project on its website (2). An examination of the proposals reveals many common goals and aspirations as well novel initiatives based on the history of each institute. Several universities are planning to introduce a new quarterly semester system to align Japan's academic calendar with the rest of the world, thereby enabling the launch of new English language dual-degree programs. Another common theme is a commitment to growing the number of international students. Many universities have promised the construction of new "international dormitories" to house overseas and domestic students in the same space as well as an expansion of the powers of university presidents to hire new faculty and set competitive salaries.

Sense of crisis within Japan's university administration

The TGU Project highlights a sense of crisis among Japan's university administrators who feel that the country is slow in coming to terms with the globalization of education. Some recent statistics published by MEXT that compare the performances of Japanese universities with those in the United States and Europe underscore these concerns. For example, only 2.9% of students enrolled at Japanese universities are from overseas and in Japan only 5.1% of teaching staff are from abroad, compared with 29.5% at Harvard University (U.S.) and 41.4% at Cambridge University (U.K.).

Another, and perhaps equally important issue, is encouraging Japanese students to study abroad. According to MEXT, only approximately 57,500 Japanese students went abroad in 2011, compared with around 83,000 in 2004. The consensus amongst Japan's academia to explain this trend is that there is no real need for Japanese students to go overseas because they can find everything they need for their studies and careers in Japan. A major concern is that such inward-looking students will not readily become part of the global network of scientists, thus further isolating Japan in terms of research and education in the future.

Paying for education

There are 775 universities in Japan: 86 national, 86 public, and 603 private, with approximately 5% of the 2.8 million students studying at national or public institutes. So why are Japan's university administrators spending so much time and energy on internationalization? There are two main reasons.

The first is the realization that the dramatic fall in Japan's birth rate–in 2014 there were 1.001 million births and 1.269 million deaths according to the health ministry–will lead to excess capacity, with the possibility of serious financial problems for both national and private universities. The drive to recruit more international students is intended to fill those places not taken by domestic students.

In terms of public sector university financing, national universities have had to justify their existence following passage of the National University Corporation Law in 2004 that gave Japan's national universities much greater autonomy to manage their own affairs, but importantly, required them by law to submit strategies and plans to the government in order to receive subsidies. Another significant change in government funding support was the introduction of a 2005 policy that reduced the annual government subsidy by 1% each year. In 2007, the government also began to reduce subsidies to private universities by 1% annually. In general, government subsidies cover approximately 80% of the running costs of national universities and about 10% of private institutes.

Tuition fees are an important source of income for universities. The annual tuition fee at Japan's national universities is approximately ¥550,000 (US\$4,600), while at private universities it is between ¥1,000,000 (US\$8,400)

for arts, sciences, and engineering and over ¥3,000,000 (US\$25,200) for medicine and other medical degrees. Since this income is insufficient to cover the running costs for most universities, they must compete for government funding.

The second reason that projects to internationalize Japan's universities are being supported is the poor showing of these universities in world ranking tables. University presidents are puzzled and irritated in equal measure to find that only the University of Tokyo and Kyoto University were in the top 100 of the 2014 Times Higher Education World University Rankings. This contrasts with three each from China and South Korea, and two from the tiny nation of Singapore. The performance of Japan's top universities appears to reflect the large disconnect between how universities are evaluated within Japan when compared with the criteria used internationally. The president of one of Japan's top institutes confides, "We ignored the rankings for many years. However, the recent world rankings were a trigger that led us to devise new initiatives to improve our global competitiveness."

The search for new career paths for university graduates

Another driving force behind the TGU Project is that Japanese companies have a greater presence overseas now than a decade ago, especially in Asia. They are increasingly global in their outlook and operations, and need employees with a multidisciplinary education and the ability to work globally. In response to the demands of Japan's industrial sector, the proposals submitted by the 37 selected universities contain plans to give students opportunities to study interdisciplinary undergraduate courses and go abroad on industrial internships as well as to provide internships for overseas students at companies in Japan.

The next 10 years and beyond

Only time will tell whether Japan's top 37 universities will achieve their project goals, in particular whether they are able to improve their world university ranking. It seems theoretically possible to achieve all these aims given innovative management, financing, and strategic global networking. However, some prominent academics in Japan have lingering concerns about just how far such internationalization should go, with some saying that the ultimate question will be whether Japan's taxpayers want to support universities that are educating so many overseas students.

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REFERENCES

- Japanese Universities Gain a Competitive Edge, Science 343, 1524 (2014) www.sciencemag.org/site/products/ advertorials/Japanese_Univ_low_20140408.pdf.
- 2. www.jsps.go.jp/j-sgu/h26_kekka_saitaku.html (in Japanese).



Top Global University Project designations

Type A Universities

Hokkaido University Tohoku University University of Tsukuba National The University of Tokyo Tokyo Medical and Dental University National Tokyo Institute of Technology Nagoya University National Kyoto University Osaka University National Hiroshima University National Kyushu University Keio University* Waseda University*

Type B Universities

Tokyo University of the Arts National Nagaoka University of Technology Kanazawa University National Toyohashi University of Technology Kyoto Institute of Technology Nara Institute of Science and Technology **Okayama University** Kumamoto University Akita International University (Public) The University of Aizu (Public) Hosei University* International Christian University* International University of Japan* Kwansei Gakuin University* Meiji University* **Rikkyo University* Ritsumeikan University*** Ritsumeikan Asia Pacific University* Shibaura Institute of Technology* Soka University* Sophia University* Toyo University*

*Indicates private university; all others are national universities.

Osaka University— Modernizing Japanese strategies for internationalization

Osaka University envisions *World Tekijuku* boosting diversity and internationalization in academics for the 21st century.



Osaka University is of one of Japan's top-tier research-based comprehensive universities. Its roots grew out of the philosophy on which *Tekijuku* was built, explains Toshio Hirano, president of Osaka University. *Tekijuku*–a private school established in 1838 by

Ogata Koan during the Edo period–was based on the Dutch educational system, or *Rangaku* (literally, "Dutch learning"), and exposed students to Western concepts. The curriculum primarily focused on medicine and used a rare collection of Dutch dictionaries and encyclopedias owned by Ogata, a prominent physician and scholar of the time.

During that time, Japan was isolated from the rest of the

world, but the unique, global education enabled "graduates to play pivotal roles in the modernization of Japan during the Meiji Restoration in the late 19th century," says Hirano. "The Tekijuku evolved into the forerunner of Osaka Medical School, and then, following the strong financial, administrative, and logistical support from the people of Osaka, in 1931 the Japanese government formally established what is now the modern Osaka University as Japan's sixth Imperial University."



Toshio Hirano

Tekijuku goes global

Humans have faced a number of unique challenges over the past century–including the rapid proliferation of information technology, unprecedented growth in the world's population, and increased mobility of people. "We launched the idea of *World Tekijuku* to help advance global efforts of finding



Demographics

Schools, Faculties, and Institutes at Osaka University

Osaka University encompasses 11 undergraduate schools, 16 graduate schools, 28 research institutes and centers, two university hospitals. In 2007, the university merged with Osaka University of Foreign Studies, which provides majors in 25 different languages.

Main Campuses: (area in square meters)

Suita (997,071), Toyonaka (445,851), Minoh (140,400), and Nakanoshima Center (1,000)

Budget

¥151.826 billion (2014) (US\$1.28 billion)

People

23,429 students, 2012 international students, 3,460 academic staff members, 2,822 nonacademic staff members, and 860 international researchers.



Student exchange programs

Osaka University's Short-Term Nondegree Programs www.isc.osaka-u.ac.jp/en/education/student_exchange_programs.html

Osaka University Short-Term Student Exchange Program (OUSSEP) www.osaka-u.ac.jp/en/international/inbound/exchange_program/oussep/ oussepguide

FrontierLab@OsakaU

www.osaka-u.ac.jp/jp/international/iab/e/Frontierlab.html

Japanese Short-Stay In-Session Pogram (J-ShIP) ex.ciee.osaka-u.ac.jp/shortstay-programs/JShIP/index.html solutions to some of the major issues facing humankind in the 21st century," says Hirano, an internationally respected immunologist and a recipient of the Crafoord Prize for his discovery of interleukin 6, an important mediator of inflammation. One of the goals of World Tekijuku is reforming Osaka University to become a research-based, globally recognizable institute that ranks as one of the top 10 universities in the world by



its centenary in 2031. "The world is full of diversity," says Hirano. "Our ultimate goal is to eliminate barriers due to diversity and prevent conflict by mutual understanding and respect of people with different cultures and religions through the common human language of scholarship. That is the meaning of creating 'harmonious diversity through scholarship,' building on the philosophy and spirit of free scholarship and inquiry taught by Ogata Koan at the *Tekijuku*."

The university's Institute for Academic Initiatives (IAI), which plays a key role in initiating interdisciplinary and global research, is in charge of promoting initiatives to support World Tekijku. "The IAI was established in 2012 and is managed directly under the leadership of university president Hirano," says Yasuyuki Okamura, executive vice president in charge of international strategies. "The institute offers five doctoral programs and has world-class research divisions which focus on drug development, cognitive neuroscience robotics, photon science and technology, and global history." Importantly, students enrolled in these courses will have the opportunity to establish international collaborations to both enhance the quality of their research and gain first hand insights into the global socio-economic issues being faced by their research partners in other countries. This direct exposure will improve their understanding of other cultures and expose them to different ways of thinking, engendering cooperation rather than conflict-the central goal of Tekijuku.

In 2014, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) selected Osaka University for the Top Global University (TGU) Project as a Type A institution (see editorial on page 1492), based on the university's proposal to advance *World Tekijuku*. "The funding from the highly competitive TGU Program will be used to continue reforms at Osaka University to realize the goals of [this initiative]," says Hirano.

"The original *Tekijuku* successfully nurtured scholars who led the modernization of Japan and the birth of the Meiji era," continues Hirano. "This was an epoch-making period in Japan's history. We are confident that the concept of the *World Tekijuku* will play an important role in the resolution of diversity engendered conflicts by creating harmonious diversity through scholarship."

World Tekijuku strategies

• Establish a new generation of World Tekijuku graduate schools by 2017 to accelerate international, interdisciplinary research projects and related personnel management systems initiated by the Institute for Academic Initiatives (IAI).

• Introduce a new quarter-based configuration for the academic year, consisting of three terms and a summer vacation, not widely used in Japan, but commonly used internationally. This will enable more students to study overseas and more international student to enroll in the university's summer programs, such as the Osaka University Short-Term Student Exchange Program (OUSSEP), FrontierLab @OsakaU, and J-ShIP (see student exchange programs box).

• Create a new entrance examination system that can increase the number of international students accepted and improve their Japanese language proficiency.

• Quadruple the number of international joint research laboratories in which established scientists from overseas can conduct research at an Osaka University campus.

• Introduce highly competitive salary systems and a "crossappointments" system with institutes around the world to double the number of international faculty within three years.

 Offer high-quality courses to students globally as part of the massive open online course (MOOC) platform, founded by the Massachusetts Institute of Technology and Harvard University in 2012. (Osaka University joined the consortium of top universities offering classes via edX in 2014.)

• Construct the Osaka University "Global Village" using a private, finance initiative to build 2,600 new student housing units for both domestic and international students as well as faculty and staff.

• Invite the University of California to set up an overseas office on the Osaka University campus to enhance the interaction between the institutions' researchers and initiate new summer programs.

• Enhance Osaka's global presence by collaborating with other universities via international frameworks and initiatives (for example, in June 2015, Osaka University will organize and host the annual meeting of the Association of Pacific Rim Universities, an organization of 45 universities from across the globe).

Prizes

Winner	Prize	Achievement
vviiniei	11120	Achievement
Hideki Yukawa	Nobel Prize in Physics 1949	Theoretical prediction of the existence of mesons
Hidesaburo Hanafusa	Lasker Award in 1982	Demonstration of how RNA tumor viruses cause cancer
Tadamitsu Kishimoto and Toshio Hirano	Crafoord Prize in 2009	Isolation of interleukins
Shizuo Akira	Gairdner International Award in 2011	Discovery of proteins that play a key role in innate immunity
Tadamitsu Kishimoto and Toshio Hirano	Japan Prize in 2011	Discovery of interleukin 6
Osamu Hayashi	Wolf Prize in Medicine in 1986	Discovery of oxygenase enzymes
Mikio Sato	Wolf Prize in Mathematics in 2002-2003	Foundation of algebraic analysis

Toyohashi University of Technology—Creating an international campus to nurture global technology architects

Established in 1976, Toyohashi University of Technology (Toyohashi Tech) is one of the smallest and youngest national universities in Japan with around 2,000 students and 200 faculty members.



"About 80% of our students are from Japan's technical colleges who enroll as third year undergraduates, and the majority of them continue on to do a Master's degree," says President Takashi Onishi, an expert on urban regional development and president of the

Science Council of Japan. "Our graduates continue to make important contributions to society as industry engineers, university educators, and researchers at institutes all over the world."

Toyohashi Tech's research and education success has been recognized by being selected for four major program awards from Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), including the Program for Promoting the Enhancement of Research Universities; the Program for Leading Graduate Schools on "Brain Information Architect," a joint project with Universiti Sains Malaysia (USM) to establish an overseas education base in Penang, Malaysia; and, most

Education centers at Toyohashi Tech

Institute for Global Network Innovation in Technology Education (IGNITE)

Accelerates the university's globalization and human resources efforts. ignite.tut.ac.jp/english/index.html

International Cooperation Center for Engineering Education Development (ICCEED)

Facilitates international exchange and alliances with the university.

ignite.tut.ac.jp/icceed/english/about/index.html

Center for International Relations

Contributes to the internationalization of the campus by serving as a meeting place for students. ignite.tut.ac.jp/cir/english/

Center for International Education/TUT-USM Technology Collaboration Center in Penang Malaysia

Serves as an overseas education base. ignite.tut.ac.jp/cie/penang/english/



Takashi Onishi

Takaaki Takashima

recently, the Top Global University (TGU) Project launched in October 2014.

Top Global University Project

"Selection for the Top Global University Project Type B [see editorial on page 1492] will enable us to increase our efforts to raise our global profile," explains Onishi. "Over the next 10 years, we want to create a multicultural campus for students from Japan and overseas befitting the title of our program, 'Creative Campus for Nurturing Global Technology Architects.'"

The main features of the Toyohashi Tech TGU Project include the introduction of bilingual language education at the undergraduate level and industrial internship opportunities for foreign students of the Global Technology Architects course at leading technology companies in Aichi Prefecture, where Toyohashi Tech is located, as well as across Japan. Notably, Aichi is the home to the headquarters and manufacturing base of Toyota Motor Corporation and affiliated companies. Additionally, it has the third largest gross domestic product in Japan after Tokyo and Osaka.

"We will also support foreign students who graduate from this course by helping them to find jobs in Japan," says Takaaki Takashima, who is responsible for implementing and managing the TGU Project and was one of the first graduates of Toyohashi Tech. "We have many close links with companies in Aichi and in other parts of Japan. We are confident that students from this course will be able to embark on career paths of their choice."

Takashima graduated in 1982 and immediately joined IBM, he explains. His initial role required him to communicate in English–a task that his time at Toyohashi Tech helped facilitate. "I was lucky to have had opportunities to travel overseas during my student days," explains Takashima. "Also, around 50% of the course textbooks were in English, so I gained confidence in my ability to communicate in English. This experience was important for my role at IBM because my first boss was not a native Japanese speaker."

Since then, Takashima has had a productive 32-year career at IBM and has worked on projects related to personal computer development, hard disk business sales engineering, intellectual property business development, and sales and contract management.

Takashima commutes to Toyohashi from his home approximately 250 km away near Yokohama–approximately 100 minutes on the Kodama Shinkansen (bullet train) from Odawara Station. "I come here on Mondays and return on Fridays almost every week, staying locally during the weekdays," says Takashima. "I would not have moved away from my home to the rather remote location of the Toyohashi campus if I had not been a graduate of this university. I am looking forward to managing this project to a successful conclusion over the next 10 years."



Milestones for the Top Global University Project

The first group of undergraduates accepted for the "Global Technology Architects Course" will be graduates from technical colleges who will enroll as third-year students in 2017. Thereafter, the first group of graduating high school students will enroll as first-year entrants in 2018. A total of 440 students (240 domestic and 200 international) are expected to enroll in the course over the subsequent 10 years of the project. The aim is to boost the total percentage of international students from the current 10.3% to 27.2%. Toyohashi Tech is making major changes to its curricula, with the ultimate goal of making all courses bilingual within 10 years. The university will introduce new tutoring systems incorporating mentors to strengthen language skills in English and Japanese, with the aim of nurturing students to achieve the best scores possible in language proficiency tests for both languages.

The construction of a new multicultural boarding house is one of the flagship projects of the Toyohashi Tech program. The boarding house will be built with private financing and consist of several buildings, with a total of 200 shared rooms. "The aim is to have 42% of all students living, eating, and studying in an international environment on campus, where 25% are international students," says Takashima.

The university also plans to increase the number of Japanese students with international experience from 0.3% to 20.5% by sending them on overseas internships and dual-degree programs.

There are also plans to increase international exchanges between nonacademic staff with overseas partner universities, increase foreign nonacademic staff from 1.4% to 7.1%, and increase the number of nonacademic staff attaining top language proficiency scores to at least 30%. Regarding faculty members, the university plans to have at least 50% of academic staff showing excellent language proficiency and to increase overseas staff from 16.8% to 23.4% and female staff from 5.2% to 12.9%.

Toyohashi Tech TGU Project overview www.tut.ac.jp/english/docs/tgup2014-overview.pdf

Toyohashi Tech TGU Project concept description www.tut.ac.jp/english/docs/tgup2014-concept.pdf

Research centers at Toyohashi Tech

Electronics-Inspired Interdisciplinary Research Institute (EIIRIS)

Research flagship established in October 2010 to fuse strengths in electronics, life sciences, medical care, agricultural science, environment, telecommunications, and robotics. eiiris.tut.ac.jp

Venture Business Laboratory

Develops innovative technology and training programs for the electronics industry. www.vbl.tut.ac.jp

Incubation Center for Venture Business

Offers space and facilities for growing ideas from the bench to the market place. www.vbl.tut.ac.jp/icvb

Research Center for Collaborative Area Risk Management

Improves the disaster prevention capacity of the Higashi Mikawa region. www.carm.tut.ac.jp/index_eng.html

Research Center for Agrotechnology and Biotechnology Introduces information and sensing technology into agriculture.

www.recab.tut.ac.jp/contents/intro.html

Center for Human-Robot Symbiosis Research

Develops robot applications for rehabilitation and nursing, support in daily life, and education and human resource development.

robot.tut.ac.jp/english/index.html



Hiroshima University— **Knowledge creation** for the prosperity of humankind

Hiroshima University is one of the largest comprehensive academic institutes in Japan with an annual income of ¥85.9 billion (US\$732 million). It offers courses in subjects ranging from law, economics, and education to science, engineering, and medicine. The university has approximately 11,000 undergraduate students, 4,200 graduate school students, and 1,100 international students from 66 countries as well as 1,700 faculty and 1,600 nonacademic staff.



"The founding principles of Hiroshima University are embodied in its motto: 'a single unified university, free and pursuing peace,'" says Masaki Sakakoshi, executive and vice president responsible for international education and peace. "The university is committed to nurturing students in a

stimulating, international environment where scholars pursue cutting-edge research for the prosperity of humankind. Our mission is to be a base for knowledge creation."

The roots of Hiroshima University go back to 1874 with the establishment of the Hakushima School. The modern university was formed in 1949 by combining Hakushima with six other schools. "The university worked closely with the city of Hiroshima to rebuild after the devastation of the first atomic bomb attack in history," says Sakakoshi. "We decided to move out of central Hiroshima and by 1995, had merged and relocated 9 of our 11 faculties to the Higashi-Hiroshima campus. The faculties of Medicine and Dentistry, and Hiroshima University Hospital are located at the Kasumi campus, while some departments of the faculties of Law, Economics, and the Graduate School of Social Sciences and the Law School are at the Higashi Senda campus.

Top Global University Project

In 2014, Hiroshima University was selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) as one of Japan's top 13 universities for the Type A (see editorial on page 1492) Top Global University (TGU) Project.

"The selection of Hiroshima University by MEXT for this highly competitive project underscores our accomplishments providing world-class research and education to date," says Hajime Nishitani, vice president for internationalization. "Some of our ambitious goals over the 10-year duration of the project include increasing the number of international students to 20%, offering 50% of courses in English, and increasing international faculty members to 50%."

Objective assessment of the quality of education is a high priority at Hiroshima University. One of the measures that will be implemented as part of the TGU Project is peer review of the new educational programs by representatives from the international universities involved in the Student Experience in the Research University consortium.

Research is an integral part of the university's strategy for global-



Masaki Sakakoshi



Hajime Nishitani

ization. Internationally renowned research facilities include the Research Institute for Radiation Biology and Medicine (RIRBM)set up in 1961 to provide medical care for survivors of the August 1945 atomic bomb-and the Institute for Amphibian Biology, which holds unique expertise in rearing amphibians for studying the development, inheritance,



Fusahito Yoshida

and evolution of inbred strains of tropical clawed frogs. "Our excellence in research was acknowledged in 2013 when we were selected by MEXT for the Program for Promoting the Enhancement of Research Universities," explains Fusahito Yoshida, executive and vice president for research. "We are an open-minded university that welcomes the global community of students and scholars to join us to solve challenging problems of the 21st century." Notably, researchers at the RIRBM are now studying the effects of radiation on people affected by the Fukushima nuclear reactor accident caused by the earthquake

and tsunami in March 2011.





Institute for Amphibian Biology

Session on radiation emergency medicine in a Ph.D. program

Aiming for the top

Hiroshima University is committed to creating knowledge on a global scale. "We offer a wide range of innovative educational programs, run unique research programs, and have launched highly successful industry-academia partnerships," explains Sakakoshi. "We want to improve our global visibility over the next 10 years to enhance our presence on the international stage. One of the goals of the TGU Project is to improve our international standing and be one of the top 100 universities in the world within 10 years."

Hiroshima University

www.hiroshima-u.ac.jp/index.html

Nara Institute of Science and Technology—Creating new career paths through interdisciplinary education and research

Nara Institute of Science and Technology (NAIST) is Japan's new national graduate school university. Located in Japan's first capital city, Nara, NAIST was established in 1991 and focuses on information, biology, and materials science. By implementing the concept of "education through research," NAIST has been consistently recognized among Japan's top-ranked universities in quality of research (Thomson Reuters' Essential Science Indicators). To date, approximately 6,300 Master's level students and 1,200 doctoral students have graduated from NAIST and taken up leading positions both in Japan and overseas.



Notably, NAIST has nurtured internationally renowned scientists including Shinya Yamanaka, director of the Center for iPS Cell Research and Application in Kyoto and 2012 Nobel laureate in physiology or medicine, who conducted his early research at NAIST. "With the extremely high level of

both its research environment and faculty, NAIST is one of the top research universities in Japan," explains Yamanaka. "Although I am now researching iPS cells at Kyoto University, most of the core members supporting me in my lab are colleagues and former students from my time at NAIST who came to Kyoto to work with and support me. Nara is really an excellent place to conduct research."

Interdisciplinary education and research

"The institute's selection for the Top Global University [TGU] Project by the Japanese government in 2014 and for the Research University Enhancement Promotion Project in 2013 acknowledges the high quality of our graduate school education and cutting-edge research," says Naotake Ogasawara, president of NAIST.

The TGU Project is a 10-year initiative funded by Japan's Ministry of Education, Culture, Sports, Science and Technology



Naotake Ogasawara

Mikio Kataoka

education and cultural diversity; and (4) reorganizing the current three graduate schools into a single entity to establish a unique and massive interdisciplinary platform to meet the needs of the information society of the 21st century.

Forging new career paths

"Society is changing at a rapid pace," says Ogasawara. "In an increasingly cyber-based society, scientists of the 21st century will require a greater understanding of diverse topics such big data, information and communication technology, and data sciences. Indeed, the scope of science is expanding rapidly, while at the same time its role in society is also changing dramatically. To meet such challenges, we are transforming our three divisions of information, biology, and materials into a single platform to prepare our students for new career paths in the interdisciplinary world of the future where knowledge of a wide range of specialties will be essential."

Specific targets during the 10-year TGU Project include increasing the number of foreign doctoral students from the current 30% to 50%, and sending NAIST students for one-year stays overseas at partner universities such as Paul Sabatier University in France and the University of California, Davis in the United States.

"Creating new career paths is an important part of the project," says Mikio Kataoka, executive director and vice president of NAIST. "We want to extend the abilities of our graduates so that they can

(MEXT) with the aim of strengthening the international competiveness of Japan's academic institutes. The objectives of NAIST during the decadelong TGU Project include: (1) launching new joint degree programs with foreign universities to enhance its portfolio of doctoral course programs; (2) reforming the university's governance for more flexibility in hiring staff in new research fields; (3) creating a global campus environment to support interdisciplinary

NAIST Global³



become not only research scientists, but also have choices of other careers, such as in government policy and journalism."

The goals of the project are formidable and achieving them will require the full support of the staff at NAIST. "One of the key issues will be changing the mindset of staff at NAIST," stresses Ogasawara. "We are entering an era where academics and university administrators must think globally and outside of the box."

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