Career Development Skills Training for PhD Students and Graduates in Japan

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─── ＜Abstract＞ ───

This report aims at contributing to the international discussion on career development training for PhD students and graduates by outlining expectations and current trends in Japanese universities.

The need for more diverse career options for PhDs has been a topic of discussion in recent years both in Japan and abroad.　Experts in Japan have delivered recommendations and reports on the basis of practices abroad and the Japanese government has issued relevant policies. There is now a need for universities to offer training programs that will contribute to PhD career development, either in the form of extracurricular activities or as a part of the regular curriculum.

Several challenges have arisen from the Japanese cases.　Thus, discussion must take place concerning how to formulate these training programs, how to connect them with existing specialized courses or academic department programs, how to raise awareness among faculty members in individual graduate schools, and how to handle organizational issues such as program administration and management of the faculty in charge.

1.　Global Trends: Background to the Present Report

Reforms in the area of human resource development are currently underway at graduate schools around the world.　However, because graduate school programs differ in each country, there has been much discussion around the concept of transferable skills.

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This trend was spearheaded by the Joint Statewent of the UK Louncil's Training Requirements for Research Students, which issued in 2001 (Saitoh & Kobayashi, 2007). The statement outlined 36 transferable skills that doctoral students are expected to develop during their training, and demanded that universities and other institutions ensure that their postdocs and graduate students who hired for the Councils-funded projects acquire these skills. The Joint Skills Statement was used as a point of reference for a revised Code of Practice issued by the Quality Assurance Agency for Higher Education in 2004, which pushed some universities to step up their efforts in transferable skills training.

In the United States, a lack of graduate school policies on the national level meant that efforts to improve the quality of doctoral education took place through grassroots initiatives. One of these programs was the "Re-envisioning the PhD" project, an effort to take a fresh look at graduate education throughout the US (Nyquist & Woodford, 2001). The project fostered discussion on changing the goals of doctoral programs and the ways in which educational methodology should be altered to support those new goals. The nationwide Council of Graduate Schools has also been implementing a variety of related projects. Though all of these efforts have focused on the so-called "transferable skills" first put forth in the UK, they are often referred to as "professional development" in the United States.

Discussions are also moving forward on an international stage as well. In the European Union, the European Science Foundation published a report titled "Research careers in Europe: landscape and horizons", which defines transferable skills and provides a list (Sholtz *et al.*, 2009). It is similar in content to the UK's Joint Skills Statement. One of the working parties in relation to science, technology and innovation of the Organisation for Economic Co-operation and Development (OECD) conducted an international comparative survey on transferable skills training in 2011. The survey also focused on internships as a way to acquire transferable skills. The scientific journal *Nature* did a special feature on problems facing graduate schools in its April 21, 2011 issue. The feature discussed current issues like reforming human resource development and methods while also pointing to the need to work towards developing transferable skills.

2.　Japan Today: An Overview of the Present Report

The need for more diverse career options for PhDs has been a topic of discussion in recent years either in Japan.　Experts have delivered recommendations and reports based on practices in other countries, while the government has issued relevant policies.　There is now a call for universities to offer training programs that contribute to PhD career development, whether as extracurricular activities or as part of the regular curriculum. When that happens, it is likely that development will be based on an awareness of international standards for graduate education and the international market for PhD holders.

This report contributes to the international discussion by outlining expectations and current trends in career development training for PhD students and graduates at Japanese universities.　Below, it outlines a history of related reports and policies in an effort to clarify the background and events informing current expectations for PhD career development and associated training programs.　It then provides examples of skills training programs currently being offered to doctoral students and postdocs by Japanese universities, categorized into three groups: (1) policy-derived extracurricular seminars and the like, (2) university-wide graduate education platforms individually developed by institutions, and (3) efforts on formulating the training system.

3.　Governmental Perspectives

3.1　Japan's Policy Process

Japan's government agencies have put together councils comprised of experts and have structures for determining policy based on council's advisory reports (Pempel, 1978).　The council that handles graduate education is the Central Council for Education established through the Ministry of Education, Culture, Sports, Science and Technology (MEXT)[1].　However, a different MEXT council called the Council of Science and Technology also handles human resource development for those in science and technology fields.

Historically, Japan's education-related government agencies did not get overly involved in the details of undergraduate or graduate education[2]. Doctoral programs were focused only in discussions about science and technology personnel[3]. However, under the concept of New Public Management, universities had to introduce market principles and the government began exercising control via financial resource allocation and evaluation systems.

3.2　Japan's Graduate School System

The structure of Japan's graduate schools is based on the Standards for the Establishment of Graduate Schools, and features a two-year master's program (or first-stage doctoral program) followed by a three-year doctoral program (called a second-stage doctoral program if there is a first-stage doctoral program). There is no real difference between a master's program and a first-stage doctoral program; both have historically served as an entry point for training in the world of academia (Ushiogi, 1993)[4].

Generally speaking, a high percentage of master's program graduates in fields like engineering and agriculture go on to take jobs in the industrial or governmental world, while a good portion of those in the sciences or humanities enter master's programs with the idea of continuing on to get a doctorate[5]. As a result, career development training for PhDs depends on the field and can apply to both master's and doctoral programs.

3.3　Graduate Educational Reform at Governmental Level[6]

In 2005, the Central Council for Education issued a report entitled *Shinjidaino Daigakuin Kyoiku; Kokusaitekini Miryokuaru Daigakuin Kyoiku no Kochikunimukete* (*Graduate Education for the Next Generation: Building Graduate Education with International Appeal*; hereafter referred to as the "*Graduate School Report*"). In response to this report, MEXT issued the *Daigakuin Kyoiku Sesaku Shinko Yoko* (*Guidelines for the Advancement of Graduate Education Policy;* the "2006 Guidelines") in 2006. These documents essentially established a direction for graduate school reform that aimed to make graduate education more substantial. (Here, "substantial" was taken to mean more strictly operated on an hours-based credit system

- and in Japan it was often argued that this was tied to making coursework more extensive.) They also laid out a set of priority measures for achieving this goal. Actually, it has been fourteen years since the graduate schools as a whole were addressed in the Council report; *Daigakuin no Seibijujutsu ni tuite* (*Upgrading Graduate Schools*) and *Daigakuin no Ryuoteki Seibi ni tsuite* (*Quantitative Restructuring of Graduate Schools*) both released in 1991.

The same year that MEXT issued the 2006 Guidelines, *Kagakugijutsu Kankei Jinzaino Career Path Tayouka Sokushin Jigyo* (*the Career Path Diversification Project for Human Resources in Science and Technology;* the *"Career Path Project"*) was begun as one of the initiatives funded by the Special Coordination Funds for Promoting Science and Technology. To carry out the project, the national government consigned organizational support initiatives designed to enhance the career options available to postdocs and other young scientists. The project was adopted over the course of two years (nine institutions adopted it in the 2006 academic year, four in 2007), with implementation periods of three years each.

Then, in 2008, MEXT launched *Innovation Soushutsu Wakate Kenkyu-Jinzai Yosei Jigyo* (*the Project for the Development of Young Scientists Driving Innovation;* the *"Innovation Project"*), again funded through the Special Coordination Funds for Promoting Science and Technology. The aim of this project was to construct systems to develop human resources in the form of young scientists, who form the crux of creative innovation. It set out to develop people who not only had expertise in narrow academic fields, but who also had the creative ideas and broad international perspective demanded by industry and other parts of the real world. Most of the institutions that had implemented the *Career Path Project* were adapted again in the *Innovation Project*.

Recruitment for the Global Centers of Excellence (GCOE) Program started in the 2006 academic year. As a reformation of the 21st Century COE (21COE) Program, the Global COE placed human resource development at the forefront, while the 21COE aimed at "cultivating a competitive academic environment among Japanese universities by giving targeted support to the creation of world-standard research and education bases (centers of excellence)". Specifically, GCOE "provides funding support for establishing edu-

Table 1. Brief Overview of Governmental Reform on Graduate Education

Year	
1988	○Increasing Flexibility Among Graduate Schools
1991	○Upgrading Graduate Schools ○Quantitative Restructuring of Graduate Schools
1993	○Evening Master's and Doctoral Programs
1996	◇Science and Technology Basic Plan I (the fist time of describing diverse career paths of S&T personnel in the governmental documents)
1997	○Correspondence Graduate Schools
1999	○Improving Selection of Graduate School Applicants
2001	□21st Century Centers of Excellence Program
2002	○Standards for the Establishment of Law Schools ○Developing Sophisticated Professionals at Graduate Schools ◇Fostering World Premier Researcher – 1st Report
2003	◇Fostering and Securing Research Personnel for Global Competitiveness – 2nd Reports
2004	◇Fostering Human Resources with a Viewpoint of Science, Technology and Society -3rd Report △Fostering and Promotion of Human Resources on Science and Technology
2005	○Graduate Education for the Next Generation: Building Graduate Education with International Appeal ◇About the Varying Career Paths of Young Researchers □Attractive Education in Graduate Schools initiative
2006	□Guidelines for the Advancement of Graduate Education Policy □Career Path Diversification Project for Human Resources in Science and Technology
2007	□Support Program for Improving Graduate School Education
2009	◇To Foster and Promote Personnel Who Leads Knowledge-based Society
2010	○Revising the Standards for the Establishment of Graduate Schools
2011	○Graduate Education in a Global Society: Getting Graduates from Graduate Schools to Take an Active Role in Diverse Worldwide Fields □Guidelines for the Advancement of Graduate Education Policy □Leading Graduate Schools Project

Source: Author's original.　Notes: ○ = Reports by Central Council for Education, ◇ = Recommendations by the Council of Science and Technology, △ = Reports by Council for Science and Technology Policy, □ = Polices and programs by MEXT.

cation and research centers that perform at the apex of global excellence to elevate the international competitiveness of the Japanese universities" and is designed to "strengthen and enhance the education and research functions of graduate schools, to foster highly creative young researchers who will go on to become world leaders in their respective fields through experiencing and practicing research of the highest world standard." The program is described as a way to "dramatically strengthen the university's function of educating young researchers capable of playing active international roles in all areas of society, including the industrial world".

In addition to these efforts, MEXT launched the Attractive Education in

Graduate Schools Initiative in 2005. The Initiative sought to provide targeted support for ambitious and creative educational efforts at graduate schools aimed at strengthening universities' ability to develop highly creative young scientists capable of responding to the new demands posed by modern society. Just two years later, in 2007, the Initiative was repackaged as the Support Program for Improving Graduate School Education. The goal of the new program was to promote more substantial graduate school education, and it provided targeted support for outstanding organizational and systematic educational efforts within university master's and doctoral programs to foster sophisticated human resources that could play active and far-reaching roles in multiple areas of society.

In 2011, the Central Council for Education issued a report entitled *Gurobaruka Shakai no Daigakuinkyoiku; Sekaino Tayou na Bunya de Daigakuin Shuryosha ga Katsuyaku suru tame ni* (*Graduate Education in a Global Society: Getting Graduates from Graduate Schools to Take an Active Role in Diverse Worldwide Fields*; hereafter called the "*New Graduate School Report*"). It asserted that sophisticated human resources who could take leadership in the international community through wide-ranging industrial, academic, and government partnerships were essential, and claimed that the world demanded leaders with the ability to; drive to the heart of matters by taking a wide view of situations, with a perspective rooted in broad-based knowledge containing a high degree of expertise and an international perspective; challenge themselves to identify problems beyond their own areas of expertise, propose a hypothesis, and take a creative approach to solving them; and put forth a clear vision backed by firm ethical and historical principles and summon the courage to carry it out. The report went on to urge PhD programs in the cultural and social science fields as well as those in the hard sciences, engineering and agriculture to establish organic connections between coursework, guidance on written work, dissertation reviews, and other aspects of doctoral education. Programs should integrate these elements, it said, while developing five essential attributes in students: (1) the ability to propose original research content, (2) the ability to design research methods, (3) the ability to communicate and deliver information so that they can appropriately present their papers or perform during oral examinations,

(4) broad basic-knowledge that extends beyond their own field of research, and (5) an international mindset.

In response to the *New Graduate School Report*, MEXT revised its *Guidelines for the Advancement of Graduate Education Policy* in 2011. In the same year, the Program for Leading Graduate Schools was launched as a continuation of the GCOE Program. The project was designed to more accurately target the development of next-generation leaders as proposed in the New Graduate School Report, and at the time of writing the present report, was in the process of reviewing application topics.

4. Individual University Initiatives

4.1 Outcomes from the Governmental Programmes

A variety of different training programs can be found at the websites under the Career Path Project. Even within the seminar format, there were workshops on business etiquette, advice on preparing application documents, career seminars led by those who could serve as role models, entrepreneurial seminars, project management seminars, and so on. In addition, universities sponsored short-term internships, individual career counseling, and online matching services for businesses and PhDs as well as in-person matching events.

There was less variety in these initiatives once the Innovation Project began, since the project only covered internships. Still, many of the adopting institutions that also had experience with the Career Path Project continued their previous activities. Yet these efforts less often take the form of university-wide programs and instead tend to be run by specific departments such as departments for industry-university partnership outside of the standard curriculum.

4.2 The Introduction of Common Graduate Educational Platforms

With the government issuing new concepts for human resource development and educational goals, Japanese universities began searching for concrete ways to make them a reality. One fresh approach was the idea of common educational platforms at the academic department or university

level that relieved individual majors from the burden of coping with new initiatives that were not specific to any one field (Kobayashi, 2010). The universities that pioneered the introduction of common educational platforms at the university level were Kyushu University, Osaka University, and the University of Tsukuba[7]. While these platforms do not necessarily focus solely on skill development, they are characterized by a strong emphasis on related issues.

Kyushu University[8]: launched its program in the latter half of the 2006 academic year. It was called Shared Foundations in Graduate Education and funded by the Special Funds for Education and Research of MEXT. The program is designed to (1) give graduate students a renewed awareness of how their field of expertise fits into the context of society as a whole, (2) teach shared knowledge that is common to diverse fields and that forms the basis of all social activity, and (3) create a solid foundation that allows students to resolve different problems by applying their expertise in a flexible and far-reaching manner[9]. Within its given budget, Kyushu University assigned two special-appointment faculty members to the program and operates it through the Center for Research and Advancement in Higher Education, the organization that oversees education among all of the university's college programs. When funding was cut off in the 2011 academic year, Kyushu University set up the Faculty of Arts and Science and is now working on future development of the program by renovating its administrative system.

The University of Tsukuba[10]: the University-wide Shared Graduate Education System was developed when one of the academic departments started looking for the means of reforming graduate education. A trial run was conducted in the 2007 academic year, and the program was officially launched the following year with an aim of enriching humanities through acquiring well-balanced comprehensiveness. The courses were drawn up by a committee, while individual academic departments handled the details of implementation. Still, the faculty members actually teaching the courses have added plenty of their personal effort, while the graduate students have taken many of them voluntarily as they are not necessarily required for

Table 2. Course groups and sample courses at Kyushu University

Course group: addressing the three principles set forth in the Kyushu University Education Charter	Sample courses (as of 2009, 64 total courses)
Shared foundations: supporting expertise	Lecture on Scientific Research Introduction to Mathematics with High Functionality Composite World—Science and Ideas, *etc.*
User *KANSEI*: developing humanity along with rich scholarship	Philosophy of *KANSEI* Physiology of *KANSEI* Theory and Practice of *KANSEI* Marketing, *etc.*
Disaster management: Addressing social problems	Risk Theory for Natural Disaster Prevention Theories of Groundwater Circulation Systems Disaster Prevention Geo-technology, *etc.*
International cooperation and social development: Contributing to the global community	Introduction to Social Development 1 Introduction to ODA Introduction to Human Security, *etc.*

Source: Author's original, referring Okamoto (2011).　Note: The term *KANSEI* means sensitivity, sensibility, and intuition, and is used as *KANSEI* engineering, *KANSEI* design, *etc.*

Table 3. Course groups and number of courses at the University of Tsukuba

Course group	'08	'09	'10	'11
Life, environment, and research ethics (building ethics based on global regulations)	6	6	6	6
Research management (developing the ability to discover and establish your own research questions and build your own research methods)	5	5	5	5
Communication skills (improving your ability to communicate and deliver information)	8	9	10	12
Global citizenship (improving the skills needed to make a difference in the global community)	0	0	0	9
Career management (developing a rich array of skills needed to impact the industrial world and/or local communities)	5	5	6	11
Building intellectual foundations (cultivating broad-based knowledge and culture outside of your own field of research)	10	10	20	17
Building mind-body foundations (building personal development skills for a healthy body, warm heart, and sound mind)	3	8	8	10
Other	11	—	—	—

Source: Author's original, referring Kobayashi (2011).

graduation. The courses are mainly held on weekends or during break periods, while some are offered in the form of educational training at outside institutions such as at the National Museum of Nature and Science, which can be taken for credit.

Osaka University[11]: launched its Graduate School Minor Programs in 2008 with the aim of educating students in a broad range of fields in addition to the

Table 4. Programs at Osaka University

Program	Est.	Numbers and examples of offering pro-grams/courses	Required credits
Advanced Sub-major Program	2008	3 Cognitive Brain System Finance and Insurrance Advanced Nanoscience/Nanotechnology Interdisciplinaty Research Training	14 or more (7 should not be double counted with requirement of Major)
Advanced Minor Program	2008	31 Basic program for Innovation Leaders development Career deign Techniques and development of language information processing Advanced information network specialist Communication design Legal interpreting and translation Development of personnel Acquired intellectual property law, *etc.*	8/9/10/11/14 or more (4 should not be double counted with requirement of Major)
Advanced Liberal Arts	2011	221 (46 are for UG grade 3 or up)	Free ("Design program yourself")

Source: Author's original, referring Osaka University Website.

curriculum offered by their individual academic departments or majors. The Graduate School Advanced Minor Program aims at "developing students' advanced specialties and a broad education related to their major in accordance with education goals in order to cultivate an interdisciplinary and panoramic viewpoint as opposed to a more narrow one from their major". In the Graduate School Advanced Sub-major Programs, students can "learn subjects systematically as means to acquiring a wide range of knowledge and flexible thinking". These programs were apparently created under the powerful leadership of the president of the university at the time, who was a philosopher. In terms of earning credits, students who fulfill the requirements of the program receive a certificate, with most of the programs requiring eight or ten credits in total. One of the unique features of the Osaka's programs is that individual courses or completion certificates are offered by Centers[12] as well as traditional academic departments.

Osaka University added the Advanced Education in the Liberal Arts "Intellectual Gymnastics" in 2011. The Curriculum is "designed for students who have attained a certain level of specialized professional knowledge and who plan to be entering the real world where broad comprehension and

abilities are needed in addition to one's specialized professional knowledge＂. The curriculum contains both knowledge- based and skill-based courses and arranged around the four keywords: World (designed to assist persons move out into a world stage), Different fields (integrating different fields), Maturity (creating mature individuals for civil society), Tough (Brightening society through assisting students become intellectually tough).

4.3　Systemization Efforts at Nagoya University

This section describes the development of the training programs targeting graduate students and postdocs in the Center for the Studies of Higher Education (CSHE) at Nagoya University, as an example of pursuing systemization in the form of extracurricular seminar activities[13].

One of the unique features of CSHE efforts is that they all begin with the concept of faculty development (FD). In planning the Preparing Future Faculty program, the center began to pursue a concept of widening the scope of development out of teaching methods and education, referring the UK idea of transferrable skills (see Appendix).

Based on these experiences, the center decided to hold extracurricular seminars for graduate students and postdocs in 2010. The seminars were based on the UK idea of transferrable skills with the aim of aiding in the design of courses to be included in the standard curriculum. The content focused on topics currently not offered by other departments at the university, as well as the different information and methods than what was already available[14].

The theme of the 2010 extracurricular program was ＂communication＂, and the 2011 theme was ＂research activities and the surrounding climate＂. The program covered topics like speaking skills, creating slides and posters, facilitations, coaching, scientific illustrations, critical thinking, science and technology policies, and responsible conduct of research. The center is now actively working to co-host the program with academic departments and the GCOE program and the program for Leading the Graduate Education with the hope of incorporating the trial program into the standard curriculum in the near future.

Table 5   The CSHE Seminars for Postgraduate at Nagoya University in Contrast with Skills Category by RCUK

RCUK Joint Skills Statement	Nagoya courses
(A) Research Skills and Techniques	Introduction to Critical Thinking: through Cases in Science, Technology, and Society
	Research Evaluation: What Researchers must Know and Better to Know
(B) Research Environment	Introduction to Responsible Conduct of Research: to be away from involving in Research Misconducts
(C) Research Management	Guiding your Members to Success: Introduction to Coaching Method and Skills
(D) Personal Effectiveness	# Research Management Seminar for New Faculty by CSHE
(E) Communication Skills	Designing your Slides and Posters
	Introductory Science Illustration
	Public Speaking
(F) Networking and Teamworking	# Seminars offered by Academic Writing Unit
	Get Start Facilitation!
	(Group works: cross curriculum)
(G) Career Management	# Seminars offered by Office for Career Path Support

Source: Author's original, referring RCUK (2001) and the CSHE website.   Note: # =Related seminars

5. Future Challenges

The biggest challenge we face is formulation and organization of the system of training.   It must be said that simply putting together courses voluntarily offered by individual faculty members will make systemization difficult.   In addition, recent research indicates that the training offered though existing specialized courses and laboratory works effectively teaches a variety of skills, making it critical that installing general courses alone is not the best way.   It is not appropriate to consider the new programs as something separate from the existing curriculum in specialized fields.

Furthermore, from the perspective of making graduate education more substantial, it is now essential that this training be considered either a prerequisite or graduation requirement.   This makes it necessary to assign

concrete value to these programs, whether by allocating them a certain number of credits in/out of students' total graduation requirements, determining the number of hours per week that graduate students can be away from their research labs, or figuring out which class periods are most convenient for scheduling sessions.

It is also critical for universities as a whole to understand the significance of these types of training. It will be difficult to revise the curriculum to incorporate the programs or attract great numbers of participants at schools where the programs were started due to an influx of project funding or given free reign because they were extracurricular activities. Though getting faculty members at individual graduate schools to understand the significance of the programs is the most important thing, since faculty members tend to prioritize research lab activities. However, once individual faculty members begin to understand these programs, it is sure to foster an environment where graduate students can easily participate in them.

Successful offer of training opportunities will take the kind of faculty understanding mentioned above, and presents the additional problem of creating a foundation for their implementation; in other words, administrative organizations and faculty members in charge. In terms of platforms, though it may seem that so-called "general education" organizations for undergraduates would be an ideal choic0e, it is hard to take a unified approach among universities. If faculty members in each major start teaching courses open to students from any majors, it is likely to create problems not only in terms of funding and compensation, but also in terms of evaluation of each faculty members inside and outside the department/university.

Notes

1) Until 2000, the University Council existed alongside the Central Council for Education as part of the former Ministry of Education, but the two were combined in 2001 when the ministry was reorganized into its current form.
2) For example, Pempel (1978) described the expantion of university entrants as a result of policymaking, while the business sector requested the change of

educational goals and contents.

3) For example, Tsukahara, S. & Kobayashi, S (1996).

4) On the other hand, recently introduced institutions such as law schools and graduate schools of education offer a professional master's degree in contrast to graduate schools that offer academic training. These professional master's programs are beyond the scope of this report.

5) See Gakkou Kihon Chousa (Basic Survey on Education) by MEXT.

6) All the reports and policies described in this chapter are shown at the either websites of the Ministry, the Japan Science Promotion Society, or the Japan Science and Technology Agency (mostly in Japanese only).

7) Another groundbreaking effort was the Common Graduate Course program offered by Waseda University's Open College.

8) See Daigakuin Kyotsu Kamoku no Goannai (Kyusyu University Website) and Okamoto *et al.* (2008, 2010, 2011).

9) Okamoto (2011), who designed the program, indicated three elements of basic knowledge: philosophy, history, and mathematics. The raised examples were (1) economic and business topics, (2) environmental and safety topics, and (3) intellectual property and professional ethics topics. Examples of skills-based topics were (1) expression: writing reports, high-level expression techniques, presentation and communication techniques, and (2) searching for and processing information.

10) See Kobayashi (2011) and "Daigakuin Kyoutsu Kamoku" (University of Tsukuba Website).

11) See Osaka University websites; "Advanced Education in the Liberal Arts -- Intellectual Gymnastics" and "Advanced Minor Programs & Sub-major Programs" and Osaka University Kyoiku Jouhoushitsu (2009).

12) Centers such as; Center for the Study of Finance and Insurance, Institute for NanoScience Design, Global Collaboration Center, Intellectual Property Center, Center for the Study of Communication-Design, Institute for Higher Education Research and Practice.

13) See CSHE website and the Annual Reports of Nagoya Consortium for Faculty and Staff Development (CSHE, 2009, 2010, 2011).

14) CSHE is also moving forward with discipline-specific PhD career sup-port programs, which are held jointly with individual academic depart-ments. One of the project aims at diversifying PhD career, departing from pure mathematics. As such, it includes career seminars as well as semi-nars on teaching and learning and outreach activities. The other is on the theme of communicating Japanese literature and culture in English.

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Appendix

The Programme for Preparing Future Faculty at Nagoya University

The Programme for Preparing Future Faculty at Nagoya University was started along with the faculty development (FD) movement in Japan, placing an emphasis on improving teaching skills. The Center for the Studies of Higher Education, Nagoya University (CSHE) targets FD as one of its research and development topics, launched the Preparing Future Faculty programme in 2005. This program consists of a series of seminars on teaching methods aimed at teaching assistants and other graduate students at the university. The idea for the program came about when graduate students asked to participate in the lunchtime FD seminars being held for younger faculty members at the university. Other considerations included the limitations in Japan's teaching assistant program, which only allows assistants to play a supportive role in classroom activities; in other words, they are never put in charge of instructions or allowed to participate in grading.

In 2007, the center switched to a two-day intensive summer seminar format in order to incorporate content that addressed an increasing array of career paths as well as the need to develop transferable skills. This change was brought about by the idea that faculty needed to develop a broad range of abilities—including teaching, research, community service, and university administration—and that these abilities in fact constituted a set of transferable skills. The center thus revised the concept from preliminary faculty development to providing graduate students with part of their career education, and thus moved away from the "Teaching Workshop" title.

The programme's initial role as an extracurricular offering came to an end as it was incorporated into the standard curriculum in the 2010 academic year as the Research into Higher Education I: Preparing Future Faculty Course offered by the Graduate School of Education and Human Development, and further, when the Tamagawa University Press published the Preparing Future Faculty Course textbook by faculty members of CSHE in March 2010. The book represented a clear departure from

previous Japanese publications describing the characteristics of university faculty, moving instead to an emphasis on the skills and knowledge required of university faculty members. Still, the content focused primarily on teaching duties—first, because several books had already been published on becoming a researcher, and second, because it was intended to be a required textbook for the Graduate School of Education and Human Development course.

Ap. Table 1.　PFF programme 2005-2009

2005	2006	2007	2008	2009
Objective: Support graduate students looking to become university professors in acquiring teaching skills		Objective: Provide information on the realities of a university faculty position, critical topics and methods, career considerations and the like to graduate students and postdocs looking to become university faculty members as a way of aiding them in their future career and academic plans		
Sessions: Introduction to course planning, introduction to university teaching, theories of university student learning and development	Sessions: Practical tips on introducing a lesson, getting students to participate in class, learning styles and goals among today's university students, creating a syllabus that motivates students to learn	Sessions: Trends in higher education policy, today's university students, ethics in research, career issues, creating a syllabus, teaching fundamentals, grading methods, conducting lessons	Sessions: The university faculty member position, today's university students, teaching fundamentals, information technology in the classroom, becoming a better speaker, opening doors in your career, ethics for university faculty, becoming a better writer, teaching in English, conducting lessons	Sessions: The university faculty member position, course planning, teamwork in university education, various institutions of higher education, research management, outreach considerations, keys to teaching in English, the lifecycle of university faculty, conducting lessons
40 min. each	60 min. each	60 min. each	45–80 min. differ	40–80 min. differ
3 days (lunch time)	2 days (lunch time)	Intensive 2-day programme		

Source: Author's original, referring the CSHE website.

Ap. Table 2.　Contents of *Preparing Future Faculty Course*

Chapter 1: The university faculty member position
Chapter 2: Course planning
Chapter 3: Teaching fundamentals
Chapter 4: Assessing educational outcomes
Chapter 5: Making students better writers
Chapter 6: Helping build students' careers
Chapter 7: Teamwork in university education
Chapter 8: Research management
Chapter 9: Community service
Chapter 10: University faculty and internationalization
Chapter 11: Ethics among university faculty
Chapter 12: Institutions of higher education
Chapter 13: The life path of a university faculty member
Chapter 14: First steps

Source: Natsume *et al.* (2010).

博士のキャリア展開のためのスキルトレーニング
－日本の動向－

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──────＜要　旨＞──────

　本稿では、国際的な議論の場に資するために、日本の大学における博士のキャリア展開に資するトレーニングについての期待と現状を整理した。

　近年、日本でも諸外国と同様に博士のキャリアパス多様化の必要性が議論されるようになった。専門家からは海外の事例を踏まえた提言や答申が出され、行政による施策も講じられている。大学には、博士のキャリア展開に資するようなトレーニングを正課または課外で提供することが期待されている状況にある。

　一方、大学においては、博士のキャリア展開に資するようなトレーニングの実践と研究はまだ緒についたばかりである。政策誘導による課外トレーニングが実施されているほか、機関独自に発展させた大学院共通教育の事例や、体系性を追求した正課外教育の取り組みが見られる。

　今後の課題としては、トレーニング体系をどのようにつくるか、既存の専門科目や研究室教育との関係をいかに作るか、各研究科の教員に意義を理解してもらえるか、トレーニングの運営組織や授業担当者をどうするか、といった点が浮かび上がった。

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