Toward Excellence in Graduate Education: A Mixed Methods and Interdisciplinary Study

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＜Abstract＞

A conceptual framework is provided for assessing excellence in graduate education: 1) quality of academic leadership, 2) quality of faculty, 3) quality of students, and 4) infrastructure.

The methodology consists of four triangulated approaches:

- A meta-synthesis of literature about quality graduate education
- Factor analyses of empirical data on the top 76 graduate programs in the field of education in the U.S. to ascertain key dimensions of quality
- Participant-observation based on forty years of experience graduate education
- Observations and interviews conducted in Japan

Based on the empirical results of the study, a normative blueprint for excellence in graduate education is proposed:

- Graduate students need more rigorous training in research methodology, to become productive life-long learners and researchers.
- Graduate students also need exposure to interdisciplinary perspectives.
- There must be recognition that not all graduates will become academic researchers and requirements need to be more flexible.
- Advisor-student relationships need to be strengthened.
- In an increasingly globalized intercultural era, graduate students need proficiency in other languages and intercultural competency.
- Future academics should be required to take an interdisciplinary doctoral seminar related to becoming an effective academic scholar and teacher.

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1. Conceptual Framework for the Study

A key problem in thinking about strategies for improving graduate education is the complex issue of defining what is meant by quality and excellence. There is no agreed upon definition. The tetrahedron is a geometric figure coming from the field of physics. It is a useful device for providing a visual image of the essence of excellence in graduate education. The tetrahedron is particularly appropriate to use to depict four complexly interconnected and intertwined factors. The tetrahedron in Figure 1 shows the four key components of quality and excellence:

1) Quality of academic leadership
2) Quality of faculty members
3) Quality of students
4) Quality of learning and research infrastructure

Of the four components above, the third, while still problematic, is probably the easiest to operationalize. In this study GRE test scores are used as a proxy for quality of students. For quality of faculty members, grant funding received is the key empirical indicator. In the U.S. applying for research grants is an exceedingly competitive activity and may serve as a proxy for excellence in research. However, assessing the quality of teaching is much more problematic (Weinberg, Fleisher, and Hashimoto 2007). Student evaluations at the end of a semester are actually a measure of student satisfaction with a class, not the genuine quality of the instruction and learning.

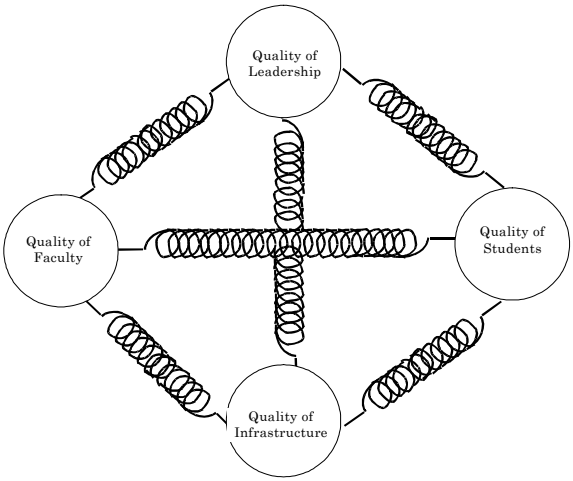
The first and fourth factors are probably the most difficult to measure, but they are extremely important. Many scholars have emphasized the importance of decisive and visionary leadership as universities face incredibly new challenges in the 21st century.

Assessment of the physical infrastructure can be done through crude quantitative indicators such as square meters of space, but an authentic assessment clearly involves what Elliot Eisner (1998) at Stanford terms connoisseurship.

Perhaps one of the best empirical indicators of quality is what happens to graduates of a program. Few universities do systematic and rigorous

tracer studies of their graduates. Perhaps that is the true test of the quality of a program. The Singaporean economist of education, Dr. Pang Eng Fong (1975, 1976) (Pang and Liu 1975) is the pioneer of trace studies and emphasizes their importance in evaluating the quality of educational programs. The University of Washington has just completed a study of what happens to social science Ph.Ds five years and beyond (CRIGE 2007).

Figure 1 Components of excellence in graduate education



2. Methodology of the Study

This study is a mixed methods one, involving both qualitative and quantitative approaches (Creswell & Plano-Clark 2007). Four primary methods are:

1) Meta-synthesis of the literature related to quality of graduate education and related problems and policy issues
2) A factor analysis of data on the top 76 graduate programs of education in The United States
3) Participant-observation as an individual with many years of experience as an administrator of graduate programs in diverse settings

4) Informal interviews with professors and graduate students at various universities in Japan

The use of triangulated diverse data should strengthen the credibility and rigor of the study.

2.1 A Meta-Synthesis

Fortunately, this task is greatly facilitated by previous research sponsored by the Pew Charitable Trusts (Nyquist and Woodford 2000, 3). This involved:

> An "environmental scan" to document current promising practices as well as concerns about Ph.D. education as identified by institutions preparing Ph.D.s, by graduate students, and by those who hire Ph.D.s.

The research team for this project examined and synthesized over 400 articles and documents related to the state of doctoral education. In addition to their meta synthesis of related written and research materials, the researchers conducted over 300 interviews, five focus groups, six sets of e-mail queries, and one major mail survey. Their interviews were with an incredibly diverse set of stakeholders representing nine key sectors. Examples of organizations included in the study are Harvard University, the Carnegie Corporation of New York, General Motors, American Council of Learned Societies, Bell Labs, and many others.

2.2 Factor analysis of data on the top graduate programs in education in the U.S.

This part of the study is also empirically rich. Key data on each of these graduate programs were brought together in an aggregated data set comprised of 10 key empirical indicators.

These data are then factor analysed. It is initially hypothesized that these data can be largely explained by three factors: 1) program reputation, 2) quality of students, and 3) quality of faculty.

2.3 Participant-Observation

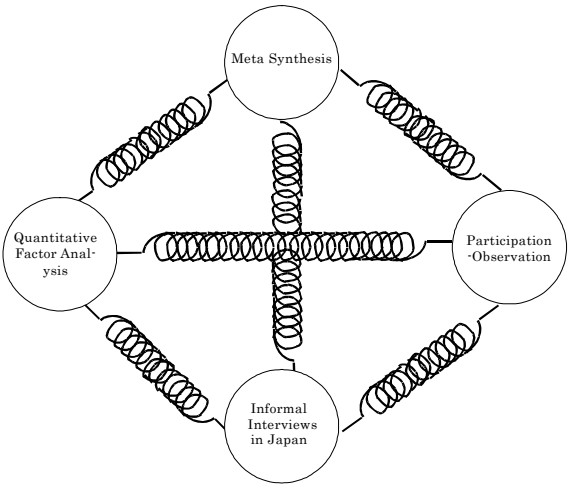
For over forty years I have been involved with graduate education

primarily at the University of Oregon but also at the University of Minnesota where I was a director of graduate studies. Reflecting and drawing on this diverse and rich experience also provides valuable practical information to the challenge of improving graduate education and achieving excellence. This method is inspired by the book of reflections by W.M. Chace (2006) titled *100 Semesters*.

2.4 Interviews and observations in Japan

Being a relative newcomer in Japan and given my ignorance of Japan, it is not feasible for me to study systematically graduate education in Japan. Also there are wide variations across institutions, fields, and individual professors. This makes any generalizations difficult and hazardous. Nevertheless, it is valuable to get some input from faculty members and graduate students here in Japan about the topic of this research. Thus, that will be a fourth and final set of data used in this study. These were informal conversations and interviews with faculty and students conducted during the period October-2006 through February 2007 while I was a visiting professor at Nagoya University in Japan. The tetrahedron shown in Figure 2 summarizes the methodology used in this study.

Figure 2 Methodology of the study: Mixed methods and interdisciplinary approach



3. Major studies of the meta-synthesis

3.1 Nyquist and Woodford study (2000)

This study of the status of graduate education funded by the Pew Charitable Trusts is probably the most comprehensive ever undertaken. As mentioned earlier, it is a mixed methods study with data from many diverse sources, which enhances its rigor and credibility. It basically covers studies done up until 2000. Its major results are posted on the project's Web-site which is still being maintained by the University of Washington (see Appendix I).

The authors start their study by noting the outstanding international reputation of graduate programs in the U.S. and how they have contributed to advances in many fields such as engineering, medicine, and science. Thomas Friedman in his most recent book on globalization states:

> According to a 2004 study by the Task Force on the Future of American Innovation, an industry-academic coalition, basic research performed by leading U.S. Universities—in chemistry, physics, nanotechnology, genomics, and semi-conductor manufacturing— has created four thousand spin-off companies who hired 1.1 million employees and have annual world sales of $232 billion (Friedman 2005, 265; see Clark 1998; Lyall and Sell 2006).

Major companies such as HP, Nike, and Google have their roots at Stanford University which spawned world-renown Silicon Valley as a center of innovation and technological dynamism (see Yusuf and Nabeshima 2007). China is also now beginning to foster such university-industry linkages (Chen and Kenney 2005). In Japan at Osaka University and in the U.S. at Princeton, researchers are working on the development of applied practical hydrogen energy, which has tremendous implications for human welfare.

Among many doing cutting edge and useful (Lindblom and Cohen 1979) research here at Nagoya University are Ryoji Noyori (Nobel laureate in chemistry); Isamu Akasaki (blue LEDs); Akira Tomimatsu, a physicist having solved a major problem posed by Einstein; and Katsuo Hasegawa,

a mathematician looking at the diverse functions of the human brain, which has implications for many fields such as education, cognitive science, linguistics and language learning, and sports performance. The Akasaki Institute has a special unit focusing on university-corporate relations. Nagoya University also has a Headquarters for Industry, Academia and Government Cooperation headed by Professor Akihiko Watanabe.

Six major conclusions emerged from the extensive empirical work of this study:

- Shortening the time to complete the Ph.D.; deciding what is its essence and absolutely essential (see *Asahi Shimbun*, February 12, 2007).
- Diversifying the doctoral student population.
- Enhancing doctoral students' capability in understanding and using technology in both teaching and research (see Bullen and Janes 2007; Inoue 2007).
- Preparing doctoral students for a much wider variety of professional options.
- Incorporating a global perspective into their training (see Dunning 2000).
- Making interdisciplinary work a more integral part of their training (Nyquist and Woodford 2000, 7).

One of the most alarming findings from the Nyquist and Woodford study was the graduate students themselves and their reflections on the quality of mentoring they have received in their doctoral studies. They state (p. 13):

> Despite many engaging relationships between students and advisors, anoverwhelming number of students reported that the lack of quality mentoring and support they expect to receive from faculty was disappointing. They stressed that mentoring needsto begin earlier, to be more systematic, to be based on a multiple-mentor model and to formally include teaching and curriculum concerns and career planning.

Several years earlier, the American Association of Universities (1998) also presented recommendations for improving graduate education.

3.2 Reflections by former university presidents

As part of the meta-synthesis of this paper, written reflections by several former university presidents are analysed (see also Fisher and Tack 1998; Padilla 2005). The work of three past presidents are reviewed: Akito Arima (former president of Tokyo University), James J. Duderstadt (former president of the University of Michigan), and Donald Kennedy (former president of Stanford University). In fact, many former prominent university presidents have written extensively about their experiences. It would be valuable to conduct a meta synthesis of their writings as a means to develop a deeper understanding of excellence in graduate education.

Akito Arima's perspectives on the future of higher education in Japan

In delivering the Third Annual Michio Nagai Memorial Lecture, he provides an excellent overview of the major challenges facing Japanese higher education. Arima pays tribute to Nagai's (1971) critical analysis of Japanese universities and its persisting relevance. Arima notes that the greatest success in Japan has been in the improved funding for research, particularly after the passage of the Science and Technology Basic Law in 1995. Arima also provides a valuable comparative table showing how much various OECD countries spend on higher education. The United States is spending much more on higher education than countries such as Japan, France, Germany, and the United Kingdom. It is extremely interesting that Korea ranks number one in the world, primarily because of its large private expenditures on higher education. Among major countries, Finland ranks number one in the world in public support for higher education. Not surprisingly, it is often ranked number one in terms of innovation.

Table 1: Expenditures on higher education (public and private)

(as a % of GDP)

Country	Public Expenditures	Private Expenditures	Total
Republic of Korea	0.44	2.07	2.51
United States	1.07	1.22	2.29
Canada	1.53	.32	1.85
Iceland	1.74	.04	1.78
Finland	1.68	x	1.68
France	1.01	.12	1.13
United Kingdom	0.83	.28	1.11
Germany	0.97	.08	1.05
Japan	0.43	.60	1.03
OECD average	0.93	.67	1.60

Source: Arima 2002, 9

China seems to be following the path recommended by Arima Sensei by investing in developing a select number of world-class universities (Mohrman 2006). This is an integral part of their strategy to catch and pass the United States in this century to become the world's economic and technological leader.

Arima concludes his analysis by emphasizing several additional points:

- There needs to be more emphasis on basic research and there currently is an over-valuation of application-oriented research.
- There needs to be more intense collaboration between universities and industry, while preserving the university's important intellectual independence and autonomy.
- Efforts must be made to enlarge public expenditures for higher education in Japan.
- To promote internationalization, the size of the foreign teaching staff needs to be increased.

Professor James J. Duderstadt's (2001, 2005) reflections on preparing future faculty members

Professor Duderstadt is the former President of the University of

Michigan, one of the premier public research universities in the United States. In an article published in the journal, *Liberal Education*, Duderstadt (2001) forcefully argues that the "currently highly specialized form of research-dominated graduate education may no longer respond to the needs both of our students and our society." He notes, for example, that less than half of those entering academic doctoral programs ever complete their degrees. This represents both inefficiency and waste. He also discusses the complex issue of the extensive utilization of graduate students as undergraduate teachers, particularly in large research universities.

Professor Donald Kennedy calling for another revolution in higher education

Professor Donald Kennedy is the former President of Stanford University (1980-1991). Writing for *Change Magazine* (1995) he calls for another revolution in higher education. He harshly criticizes the laissez faire system which characterizes graduate education in the United States:

> In the most distinguished research universities, faculty members often have few prescribed teaching obligations, no regulations governing their availability to students, no requirements with respect to advising, and no enforced limits on the time they spend away. ….Even the most cautious application of productivity analysis to such an enterprise suggests that such people are falling short of any reasonable standard.

Interestingly as described by Professor Kennedy the culture of graduate education in the U.S. is surprisingly high context. The French in response to this problem have introduced a low context system with explicit contracts between faculty and graduate students with respect to explicit and exact expectations for both faculty and students(Natsume 2007).

Kennedy mentions that at a Stanford symposium, a distinguished senior scientist stated "that there is little point in trying to teach people how to teach; if one knows the subject matter, the rest simply follows. That is not the good news. The good news is the audience actually booed."

Unfortunately, reflecting these views of that professor, many doctoral students in the U.S. receive inadequate training related to becoming an effective teacher.

Kathryn Mohrman's analysis of China's aspirations to create world-class higher education (2006)

Professor Mohrman is Director of the Washington office of the well-known Nanjing Center for Chinese and American Studies. She has recently written an insightful article about China's future strategies related to its higher education sector. China clearly aspires to pass both the United States and Japan economically and technologically in the current century to make it the China Century. To accomplish this lofty ambition, China realizes that it is imperative to create a group of world-class universities (about 40 in number). China's goal is to have its top 40 universities be comparable to the top research universities in the U.S. and world (Lu 2006). Related to this goal is so-called Project 985, which provides special funding to the top targeted elite universities.

In a major study of Chinese higher education cited by Mohrman done by *McKenzie Quarterly*, Farrell and Grant (2005) are highly critical of the quality of Chinese higher education arguing that many Chinese professors expect their students to memorize textbooks and lectures rather than to develop creative insights. Farrell and Grant also found that 90 percent of young engineers in China lacked linguistic and intercultural skills to work effectively in internationally-related jobs.

Mohrman concludes her study by praising China for realizing that it must invest in knowledge production and educate people who will advance intellectual discovery.

The keen competition among China, Japan, Europe, and the United States to have the best system of graduate education should bring many global benefits as this competition will contribute to innovations and discoveries, which will benefit mankind.

4. Quantitative Data Analysis

4.1 Research questions and related objectives of the quantitative analysis

The basic question to be addressed by this dimension of the research is to assess empirically the factors associated with quality graduation education in the United States and the relative importance of each major factor. A secondary question is then to rank 76 graduate education programs in the U.S. based on results of the first analysis and compare these rankings with those of the *U.S. News and World Report Magazine* (2005). Rankings will also be compared based on the use of factor weights versus unweighted indicators. This will represent a sensitivity analysis.

4.2 Data Set

The data set for the quantitative part of this research is comprised of ten key empirical indicators related to the quality of graduate programs in education. The data are for the 76 top ranked education programs in the country *(U.S. News & World Report).* The ten empirical indicators and variables are indicated in Table 2

4.3 Factor analysis of data set: 10 empirical indicators related to program quality

The factor analysis presented in Table 5, is based on a principal factors analysis with an oblique varimax rotation, which allows factors to be correlated with each other. Three key factors emerge from the analysis, which explain 67.2 percent of the variance in the data. The first factor is quality of students and program selectivity. The second factor is program reputation and productivity. The third factor is faculty quality. Table 3 presents the explained variance results of the factor analysis.

Table 2: Factor analysis of 10 variables related to quality of graduate programs

Variable	Loading on Factor I	Loading on Factor II	Loading on Factor III
GRE (V)	.91	.07	.07
GRE (Q)	.86	.28	−.04
Ph.D.Ed.D. acceptance rate	−.67	.19	−.25
Peer assessment	.41	.77	.30
Percent of doctoral students	−.16	.74	−.11
Superintendent assessment	.34	.66	.23
Number of Ph.Ds/Ed.Ds granted	−.21	.61	.51
Funded research /faculty member	.07	−.22	.75
Funded research (total)	.07	.19	.91
Student/faculty ratio	.02	.16	.66

Table 3: Three factors and relative variance explained

Factor	Percent of Variance Explained
Factor I: Quality of students and program selectivity	34.1
Factor II: Program reputation, size, and productivity	19.5
Factor III: Quality of faculty	13.6

Using the factor scores from the factor analysis, the education programs of the 76 universities are ranked. Also the universities are ranked using simple *z* scores for the 10 empirical indicators. This means that each indicator has an equal weight. The third ranking is that reported *by U.S. News and World Report*. Their rankings are also derived from subjectively weighting the various indicators. Their weights are based on experts' judgments. The rankings of the top 20 programs are shown in Table 4.

Table 4: Top 20 Universities by three alternative indicators and methods

Institution	Factor Score	Z score	*U.S. Newsand World Report*
1. Harvard University*	1	2	1
2. Teachers College, Columbia University*	2	1	2
3. Stanford University*	3	5	4
4. Vanderbilt University*	4	5	5
5. UCLA	5	3	6
6. University of California- Berkeley	6	6	7
7. USC	7	3	28
8. NYU	8	17	11
9. Northwestern*	9	16	10
10. University of Wisconsin--Madison	10	9	8
11. University of Michigan	11	11	9
12. University of Pennsylvania*	12	13	7
13. University of Texas--Austin	13	10	16
14. University of Minnesota—Twin Cities	14	8	12
15. Michigan State University	15	12	14
16. Indiana University--Bloomington	16	14	20
17. University of Virginia	17	15	20
18. University of Illnois—Urbana-Champaign	18	19	18
19. University of Washington	19	18	13
20. University of Georgia	20	21	23

*Private universities

The Kendall Tau's nonparametric correlation among these rankings is in the range .73-76, reflecting how the rankings are rather sensitive to methods used, since the empirical data base for all three rankings are identical.

5. Participant-Observation

In a fascinating book on higher education, W.M. Chace (2006) reflects on his experiences as a student, teacher, and university administrator. Inspired by his book, I would like to do something similar in this study. I

have now been involved with graduate education for over 40 years. Reflecting on these diverse experiences, I would like to share the following thoughts:

- Crucial to quality graduate education is the advisor-student relationship. Faculty need to demonstrate a deep commitment to their students and helping them to be the best they can be (Tsukuba 2004). Many students across the globe feel that they do not get adequate attention from their mentors and advisors.
- In an era where complex problems cannot be adequately understood by any single discipline, there is great value in interdisciplinary studies (Kline, 1995; Klein, 2005).
- In an era of globalization and rapidly increasing intercultural contacts and connections, the development of intercultural competency and the learning of other languages is essential for our graduate students. In addition to their native tongue, graduate students should have knowledge of one Western and one non-Western language. This also greatly enhances their inquiry skills. The idea of language *or* statistical skills to meet doctoral requirements is a totally false dichotomy. Graduate students need *both* of these important skills.
- The notion of research versus teaching is also a false dichotomy in top-flight research universities.

6. Reflections on Graduate Education in Japan

Given my ignorance of Japan and my relative short stay here (a little over five months at the time of this being written), these reflections should be considered tentative and heuristic. They are based on observations and informal conversations/interviews of faculty and/or graduate students from Nagoya University, International Christian University, Waseda University, Kyoto University, Aichi University, Nagoya University of Foreign Studies, Aichi University of Education, Osaka Seiki University, and Kyoto Womens' University. Most of the observations and interviews were at Nagoya University, where I was based. Also an important qualification is that there, of course, important differences across universities,

fields, and individual professors.

6.1 Five major areas of concern

Too many professors, particularly senior ones with strong research capabilities are spending excessive time on bureaucratic matters such as meetings and report writing. Perhaps under the new policy of autonomy there is less trust, requiring extensive monitoring and bureaucratic requirements. Also, the important Japanese cultural value of *nemawashi* also means extensive discussions and meetings prior to decisions being made. However, all of these activities represent serious opportunity costs taking professors away from their most serious responsibility, teaching and mentoring well and producing new, useful knowledge.

The second concerns that those becoming professors in Japanese universities and colleges have not been adequately prepared to be effective, dynamic teachers. Thus, it is important that Japan has established centers such as CSHE to deal with this national problem and issue.

The third area is that stressed by President Arima above, the inadequate public funding for universities. With Japan trying to catch the United States in graduate education and with Korea, China, and India chasing Japan, it is imperative that Japan enhance funding for higher education. The winners in the race to the future will be those that have the best graduate education. The case of Finland illustrated by data presented above provides strong evidence supporting this assertion.

The fourth area relates to the shrinking college age population in Japan (Akihiko 2006). Thus, Japan's graduate schools face a daunting challenge in terms of having adequate numbers of high quality graduate students. Thus, international initiatives such as AC-21 at Nagoya are critically important.

Fifth probably too much time is spent teaching students things that they will not really use. In an age in which knowledge production is exploding exponentially, what is critical is not to give students fish, but to teach them how to fish. There is probably not enough attention given to preparing students to be committed life-long learners and teaching students how to learn.

6.2 Major areas of strength

Though it is certainly less strong than in the past, Japan still retains a system of research groups, particularly prevalent in the natural sciences, focusing on graduate students who are part of a "lab" directed by a senior professor and his *kohai* professors. Among the graduate students, there are similarly important *senpai-kohai* relations with much *mutual learning* taking place at all levels. In fact such system epitomizes the ideal of cooperative wet rice culture. As a concrete example, Nagoya's Nobel laureate, Ryoji Noyori, as a doctoral student at Kyodai was part of the research group of Professor Hotosi Nozaki. Lindsay, et al. (2003) and Ward (2003) have stressed that quality *group work* needs to be enhanced in U.S. universities (see also Walker, et al. 2007).

In terms of its structure, doctoral education in Japan is much more similar to Europe than the United States with students taking far more responsibility for their own learning. The United States system remains highly structured with many formal course requirements. While both systems have their advantages and disadvantages, the Japanese system is much more consistent with the need to enhance the productivity of higher education in the age of the Internet by having students do much more of their learning on their own *(dokugaku*) (see Fry 2002).

7. Blueprint for Excellence in Gaduate Edcation

Based on the results of the four basic mixed methods of this study, I would like to propose the following blueprint for excellence and quality in graduate education. This is a heuristic blueprint intended to encourage debate, discussion, and criticism.

1) Whatever their field, graduate students need rigorous training in research methodology, to enable them to be productive life-long learners and researchers. Better training in methodology will also result in higher quality dissertations and their potential for publication. As part of their training to become researchers, graduate students also need exposure to interdisciplinary perspectives. Related to training in methodology is the need to also be familiar with the latest technologies related to their field (Inoue

2007).

2) Within doctoral training, there must be recognition that not all graduates will become academic researchers and requirements need to be adjusted accordingly, with more track options.
3) Advisor-student relationships need to be strengthened. The French policy to have expectations become explicit in contracts as described by Natsume (2007) deserves careful scrutiny. In U.S. graduate education, for example, too much remains implicit with respect to expectations of advisors and mentors. The Japanese Tokugawa tradition of teaching being a sacred profession and of teachers having a high level of dedication and self-sacrifice is a noble ideal as relevant today as it was then (Rohlen 1983, 214; Murata 1996; JICA 2004).
4) In an increasingly globalized and intercultural era, graduate students need proficiency in other languages and intercultural competency. Each graduate student, in addition to their mother tongue, should acquire proficiency in one Western and one non-western language. Each graduate student should spend at a minimum one semester at an institution of higher education in another country.
5) Each doctoral student should be expected to collaborate with a professor in jointly publishing one research article in a refereed publication.
6) Those doctoral students planning to become future faculty members should be required to take an interdisciplinary doctoral seminar related to becoming an academic scholar and teacher (Kennedy 1995; ACE 1999; Applegate 2002; Austin and Wulff 2004; Johnson 2007). As part of this course, they should observe and report on the pedagogies of some of the most outstanding teachers on their campus. This seminar should also cover important ethical issues.
7) All doctoral students planning to become an academic should jointly teach a course with one of the professors in their department. This apprenticeship should be viewed as an integral

part of their graduate training.

8) If possible, graduate students should be responsible for editing and publishing an academic journal. This is an important tradition of many law schools and some elite universities such as Harvard, Princeton, and Columbia.

9) There should be ample opportunities for unstructured, informal interaction between faculty and graduate students to create a genuine *intellectual community* (Walker, et al. 2007).

In a new volume, Walker (2008) calls for a rethinking of doctoral education and how we prepare scholars.

8. My Dream for Nagoya University and the CSHE

It is my dream for Nagoya University and CSHE to play a leadership role not only in Japan but around the region and world in promoting a blueprint for excellence in graduate education. This can be done through the CSHE Web-site, its newsletter, publications of its staff, its journal, special training workshops and conferences, and consultation. Recently, for example, Masahiro Chikada of CSHE was at the Vietnam National University—Ho Chi Minh, helping with faculty development there. GSID faculty are currently helping the Royal University of Phnom Penh to establish a quality graduate program in Development Studies.

Also in developing this blueprint, Japan can draw upon its impressive eclectic tradition of taking the best from various models around the world. Excellence in graduate education will have an important influence on a country's potential for innovation and its being a global leader in improving the quality of life, not only for its own people but for all the people of our planet. In the race to the future among Europe, North America, Japan, China, Korea, South and Southeast Asia, the quality of graduate education will be a key factor influencing the outcome.

Appendix: Some important Web-sites related to excellence in graduate education.

The Lilly Conferences on College Teaching, (http://www.iats.com/)
Preparing Future Faculty http://www.preparing-faculty.org/
Professional and Organizational Development Network in Higher Education, (http://www.podnetwork.org/)
TLT Group on Teaching and Technology http://www.tltgroup.org/
Web-sites of exemplary U.S. universities in terms of preparing future faculty:
University of Washington (one of the best)
Center for Innovation and Research in Graduate Education (CIRGE), (http://depts.washington.edu/coe/cirge/)
Harvard University's Center, (http://bokcenter.harvard.edu/)
Searle Center at Northwestern University http://teach.northwestern.edu/
Stanford University's Center, (http://ctl.stanford.edu/)
http://www.cultural-typhoon.org/ example of interdisciplinary initiative
University for Peace, (http://www.upeace.org/)
Relevant Web-sites from France related to contracts between faculty and graduate students and *charte des theses*:
Model by Ministry of Education, (http://www.education.gouv.fr/bo/1998/36/sup.htm)
Database of the contracts by some Universities, (http://cdt.jeunes-chercheurs.org/Chartes/)
(http://sceco.univ-aix.fr/ecoledoctorale/chartes.htm)
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優れた大学院教育のための方法論と学際的研究の重要性

ジェラルド・W・フライ

＜要　旨＞

本稿では大学院教育の卓越性を評価するために、リーダーシップの質、教員の質、学生の質、教育インフラに関する概念枠組みを提示する。その方法論は次の４点から構成される。

・ 大学院教育に関する先行研究のメタ統合
・ 全米におけるトップ 76 の教育学系大学院プログラムに関する実証データの要因分析を通して、プログラムの質を決定する要因を明らかにすること
・ 40 年間以上にわたる大学院教育への参与観察
・ 日本の大学院教育に関する観察とインタビュー

実証結果に基づき、優れた大学院教育のための標準的なデザインについて、次のように提案したい。

・ 大学院生は、生産的かつ生涯にわたる学習者・研究者となるために、研究方法論について綿密に学んでおく
・ 大学院生は学際的な視野をもつ
・ 大学教員はすべての大学院生が大学教授職に就くわけではないということを認識し、大学は履修すべき内容についてより柔軟に対応する
・ グローバル化と国際化が進みつつある現代では、大学院生は外国語に習熟し、異文化コミュニケーション能力を身につける
・ 将来大学教員を目指している大学院生は、優れた学者・大学教員になるために、大学院生用の学際的なセミナーに参加する

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